# IGNITE 2023 ABSTRACT BOOK





### TABLE OF CONTENTS

TABLE OF CONTENTS	2
SECTION 1: Plenary Keynotes, Mini Keynotes	17
Thinking ahead in a fast-changing world	
Physiotherapy: the hands on profession	
Igniting our rebellious curiosity	
Are technology infused models of care the future of physiotherapy practice?	20
Why me? All physios have a role in reconciliation and Aboriginal and Torres Strait Islander health	
What's the buzz? The latest updates in mobile technology for	
Ignite your passion for physiotherapy	
Climate change, biodiversity loss and physiotherapy: improving planetary and patient health	
Sleep Health and Physiotherapy: what you may not know you need to know	25
SECTION 2: International Keynotes	26
Red Flags: Meeting the challenge of identifying serious pathology in clinical practice	
Pain is a whole person experience - a focus on 'pain vulnerability' and 'trauma-informed care'	27
Long COVID: pathobiology and pragmatic tips for treatment and care of patients	
Ageing well: research lessons from the New Zealand National Science Challenge	29
Evidence-based-practice for work disability prevention	30
Beyond sensitization: How changes in pelvic floor muscle excitability are implicated in vulvar pain and why it matt	ers 31
Lifecourse health development of individuals with neurodevelopmental conditions: visualizing a preferred future.	
Dizziness, falls, and the clinical exam: what's new that can help advance	33
SECTION 3: Invited Presentations	34
Acupuncture for chronic musculoskeletal pain: best evidence from international RCTs	
Needling tendons with tendinopathies, tears or calcifications: aetilogy, techniques and the evidence to date	
Acupuncture in the time of COVID 19 and beyond: challenges, threats and opportunities	
Managing modern complex health problems with an ancient mindfulness art-tai chi. what does the evidence tell u	
Headache assessment: what is in and out of scope for physiotherapy?	
Functional Neurological Disorder – a consideration in musculoskeletal presentations and other areas of physiothe	rapy 39
Optimising cranial cruciate ligament (CCL) injury outcomes: What can we learn from ACL research in humans?	
Moving with the times - the use of novel technologies to assess pain & dysfunction in animal patients	
Aquatic exercise training for coronary heart disease and type 2 diabetes	
Clinical considerations for aquatic exercise and cardiac conditions	
Revisiting screening and risk management in three challenging areas of aquatic physiotherapy practice: seizures, i carer training	
Cellulitis: stopping the cycle	45
Physical rehabilitation after breast cancer surgery: the role of physiotherapy	46
The future is here: implementing tele rehabilitation for cancer survivors	47
Moving the needle on recovery outcomes for people following critical illness	48
Modern management of cystic fibrosis: excitement, challenges and opportunities	48
Human error or outright negligence? Analysis of a medico-legal case occurring in an intensive care unit	49
Incidence of complications after emergency abdominal surgery - Get Exercising (ICEAGE): a multi-centre randomis	
Voor in review ICU robabilitation	
Year in review: ICU rehabilitation	

Chest infection prevalence after surgery (CHESTY): an international multi- centre prospective observational cohort study	51
Remote monitoring and Long COVID symptom burden: making invisible illness visible	52
Cardiorespiratory physiotherapy in trauma care	53
Year in review: airway clearance therapy in chronic suppurative lung disease	53
Time to step up: why hospital inpatients are so inactive and how physiotherapists can lead change	54
Workforce planning for physiotherapists in the acute hospital setting	55
Working it "Our Way". Delivering culturally responsive therapy to families living with Machado Joseph Disease	56
Participation of people with disabilities across the lifespan: what does this mean for physiotherapy?	57
Falls in older adults: evidence and implications	58
Challenges, solutions and successes of physiotherapy for people with dementia and their carers	59
Translating the world guidelines for falls prevention and management for older adults into practice	60
Opening our eyes to elder abuse	61
Beyond the hype: real-world lessons for clinical practice from digital health innovation and artificial intelligence implementatio frontline services	
Inflammageing: An update on mechanisms and management	63
Lifestyle medicine in mental health care	64
How meditation relaxes deeply engrained habits	65
Restoring brain-body equilibrium in chronic pain & mental health conditions with vestibulocortical stimulation therapy	66
Lateral elbow tendinopathy: understanding the challenging presentations	67
A genetic signature for chronic pain—using genome-wide association data to reveal mechanisms of chronic pain	68
An update on entrapment and polyneuropathies: implications for diagnosis and management (and life)	69
Responding to the global burden of musculoskeletal conditions, it's everyone's responsibility.	70
Pathways towards working inclusively with LGBTQIA+ clients: where to from here?	71
A ruptured ACL can heal without surgery: implications for physiotherapy practice	72
Telehealth and technology in stroke recovery, rehabilitation and secondary prevention	73
Evidence-based physiotherapy for people with spinal cord injuries: our program of generating, collating and disseminating the evidenc	74
Igniting future practice with a scientific approach to implementation	75
Stronger together. Harnessing the power of international collaborations to drive change	76
Flexible exercise participation program for people with Multiple Sclerosis	77
Task-specific resistance training for mobility in acquired brain injury	78
Improving physical activity in people with Parkinson's disease	79
Contemporary legislation for psychosocial risks at work and relation to psychological and physical harm outcomes	80
The effect of heat on workers' health and productivity	80
Promoting the value of good work – an important role for occupational physiotherapists in a post-pandemic world.	81
Characteristics of working from home and the impact on work and health outcomes in knowledge workers	82
Short-stay joint replacement models of care in Australia	83
Opioids and arthroplasty: past, present, future	84
'A social activity that happens in the gym' - rethinking physical activity programs for adolescents and young adults with disabili	ity 85
Clinical internships – a win win scenario	86
Earlier biomarkers of neurodevelopmental outcomes in very preterm born infants: the ppremo, prebo and prebo-6 cohort stud	lies87
"Making a move" on function and participation in achondroplasia	88
Consumer involvement: the why, how, when, and who of developing partnerships with consumers in research and practice	89
Machine learning for sensor-enabled activity recognition and habitual physical activity assessment in children and adolescents neuro- impairment	

New directions for psychologically informed management of low back pain	91
From "damaged machine parts" to "active bodies". Shifting the way we	91
Psychologically informed physiotherapy and persistent pain	92
Identifying patient characteristics influencing response to management of painful musculoskeletal disorders	92
Your career path to success: empowering careers and unlocking opportunities	93
Launch of milestone 3 - credential - evidence portfolio pathway (experiential)	94
How can technology help in ACL rehabilitation, augmenting clinical decision-making and maximising outcomes with the ri tools?	
How can hand held dynamometry assist clinical decision making for people with neurological conditions?	
HERknee: can physiotherapists prevent the burden of knee injury for women?	97
Thinking beyond the joint: a contemporary understanding of osteoarthritis for the athlete	
New paradigms in ACL injury management - a novel bracing protocol for ACL native healing combined with exercise based rehabiltation	
Injury prevention and management in elite and community sport – can	100
Performance in sport is the ultimate outcome measure. How to measure ourselves in the context of performance as a goa	al? 101
Surgical decision making in the acute ACL injured	102
How can we provide contemporary physiotherapy for hip-related pain in women?	103
Tight, toned or unknown? How are we assessing muscles for tone and why do we link tone with pain?	104
Hip and groin pain in women: epidemiology, aetiology, and burden	105
Optimising pain science education for women with persistent pelvic pain	106
New innovations in rehabilitation of men's pelvic health conditions	107
Lifting after vaginal delivery	107
Health equity in practice: the story of the Women's Business Shared Pathway	108
SECTION 4: Papers, How to, 5X 5 Presentations	109
Needling in the foot and ankle region, latest evidence, safety concerns and practical techniques	109
Acupuncture treatment of lateral elbow pain: a multisite randomised controlled trial in China, Hong Kong, Australia, and I	taly 110
Safety and appropriateness of management of urgent neurosurgery referrals by advanced musculoskeletal physiotherapis tertiary hospital: a service evaluation	
Implementation of an evidence-based pathway and outpatient clinic for patients presenting to an emergency departmen back pain	
The value of an advanced practice physiotherapist-led new patient rheumatology service: a clinical audit of the musculos assessment clinic	
Exploring episode of care equity between Indigenous and Non-Indigenous Australians within neurosurgical/orthopaedic physiotherapy screening clinics across Queensland Health	114
Understanding episode of care characteristics for indigenous Australians in the neurosurgical/orthopaedic physiotherapy clinic and multidisciplinary services: healthcare providers perspectives	
Clinical frailty scale provides negligible clinical benefit in predicting emergency department re-presentations following an for a fall.	
Patient and service factors influence referral and multidisciplinary service usage in the state-wide neurosurgical/orthopae physiotherapy screening clinics and multidisciplinary services	
Dial-a-Dizzy: a new emergent vertigo hotline for rural and remote emergency departments	118
Adherence to recommended guidelines for low back pain presentations to an Australian emergency department: barriers enablers	
Time to analgesia for musculoskeletal presentations in Tasmanian EDs: a case controlled observational study investigating practice physiotherapists impact	-
Predictors of hospitalisation for non-specific low back pain: a systematic review	121
How are clinically unimportant terms in lumbar spine imaging reports identified? A content analysis of x-ray, CT and MRI	reports 122

Barriers and enablers to virtual hospital care for low back pain: a qualitative study	123
Key movements to observe when assessing quality of movement in horses	124
Effect of caudal traction on mechanical nociceptive levels in a group of horses with clinical signs of back pain	125
Rehabilitation in dogs following tibial plateau levelling surgery for cruciate disease	126
Developing a scoring system and directives for equine quality of movement	127
Aquatic physiotherapy for the geriatric evaluation management population	128
Exercise effectiveness on cognition, motor ability and memory of children/adolescents with Attention Deficit Hyperactivity Dis (ADHD): review and meta-analysis	
Empowering people to move: exploring the clinical reasoning of experienced aquatic physiotherapists managing people with k osteoarthritis	
The effectiveness of early, unrestricted exercise programs on upper limb function following breast cancer surgery: A systemati review and meta- analysis	
Delivering supervised group exercise to patients with cancer via telehealth: an implementation study using the REAIM framew	
Experiences and perspectives of pelvic floor disorders and treatment in women with breast cancer: a qualitative study	133
Do cancer survivors maintain health benefits six to twelve months after exercise-based cancer rehabilitation? A systematic rev and meta- analysis	
How to apply an international guideline for treating / preventing cancer treatment-related oral mucositis	135
Treatable traits in bronchiectasis- new traits and treatments	136
Health professionals perceptions of dyspnoea assessment and management within the Intensive Care Unit setting – a quality improvement survey	137
Experience, impacts and influences on breathlessness amongst people receiving care in the Intensive Care Unit (ICU): a qualita interview study	
The impact of critical illness on patients' physical function and recovery: an	139
The role of near peer-led simulation in physiotherapy education: a mixed methods study	140
Delayed recovery following COVID19: preliminary findings from Australia's COVID19 'epi-centre'	141
'How do I test the waters? How do I go forward?' Co-designing a supportive pathway after Intensive Care Unit admission	142
The effect of self-selected music listening during pulmonary rehabilitation in people with COPD: a multi-centre, randomised controlled trial	143
Feasibility, safety, and acceptability of electronic inspiratory muscle training in patients who require prolonged mechanical ventilation: a dual centre study	144
Using high-fidelity simulation to pilot an extubation cognitive aid for patients with acute cervical spinal cord injury	145
Exploring functional outcomes in adults three months after major upper abdominal surgery: a mixed methods study	146
Do physiotherapists provide different interventions to patients with postoperative hypoxaemia?	147
Engagement and adherence to the mobile Pulmonary Rehabilitation (m- PR) app	148
Synthesis of 'within workshop' feedback reflecting learning experiences of health professionals in the practical management of chronic breathlessness	
Feasibility of delivering personalised self-management education about physical activity and sedentary behaviour to people undergoing pulmonary rehabilitation	150
User experience testing of the mobile pulmonary rehabilitation (m-pr) app	151
Investigation of variables affecting the safe application of early active mobilisation for critically ill adults: a systematic review a meta-analysis	
An international clinimetric evaluation of the short physical performance battery test in critically ill individuals: a retrospective observational study	
Post-operative mobilisation management following lower limb free flap and split skin grafting: an Australian perspective	154
Validity of the 40-step test and one minute sit-to-stand test for hospitalised patients with COVID-19: an observational study	155
Physio at night: treatments delivered by physiotherapists during after- hour oncall and evening shifts	156
Is telehealth a feasible model to deliver pre-operative physiotherapy education to patients undergoing elective upper abdomin	nal

surgery? A prospective study	157
Digital resources providing real-time respiratory equipment support to the on-call physiotherapist at the bedside	158
Pulmonary rehabilitation for people following Covid-19 illness: an observational study	159
Feasibility of group-based telerehabilitation for Long-COVID	160
Student-delivered pulmonary rehabilitation is feasible in people with chronic respiratory disease: a retrospective pre-post col study	
The lived experiences of participating in lung cancer exercise programs: a qualitative evidence synthesis	162
Enablers and barriers to participation in physical activity programs while hospitalized after burn injury: the patient perspective	e 163
A six-week physiotherapy exercise program delivered via home-based telerehabilitation is comparable to in-person programs patients with burn injuries	
How to use Intrapulmonary Percussive Ventilation (IPV) in the clinical setting	165
Improving Rehabilitation EngAgement in Chronic Heart failure with PhysioTherapy (the REACH-PT study)	166
Evolution of latent rheumatic heart disease in children and youth aged	167
Development of a valid, reliable tool for evaluating self-reported knowledge, confidence, and clinical practice in acute cardiorespiratory physiotherapists	168
Exploring barriers and facilitators to participation in outdoor adapted	169
Changes in gait speed in new lower limb prosthetic users within the first three months after inpatient prosthetic rehabilitation	n 170
Fatigue experienced by people with cerebral palsy: a systematic review of assessment tools and decision tree	171
Partnership-focussed Principles-driven Online co-Design (P-POD): a mixed- methods evaluation of a novel online co-design pr	
Preferences of key stakeholders regarding community-based recreational activities for preschool-aged children born preterm mixed methods study	
Oceans of opportunity – perspectives on beach-based therapy for people with disability: a survey of Australian physiotherapis occupational therapists	
Could insufficient physical activity explain gross motor function decline in young people with complex cerebral palsy? A longit intervention study	
Be creative in developing options for sports participation for young people with disabilities in the National Disability Insurance Scheme context	
Tides of change – beach accessibility barriers and facilitators for older people and people with disability: an Australian commu survey	
Delivering adapted cycling interventions for young people with disability in Australia - who's doing what?	178
Feasibility and acceptability of a falls prevention e-learning program for physiotherapists	179
Intervention Component Analysis (ICA) and Qualitative Comparative Analysis (QCA) of exercise to reduce falls in residential ag care	-
Physical activity and falls: long-term patterns and bi-directional prospective relationships in Australian women	181
Adherence to exercise programs in community-dwelling older adults following a hip fracture: a systematic review	182
Engaging people with dementia, advocacy, and learning on-the-job are components in establishing excellence in physiothera dementia care: a qualitative study	
Physiotherapy students are overwhelmed and underprepared to work with people living with dementia: a qualitative study	184
Benign paroxysmal positional vertigo is highly prevalent in patients presenting to falls clinics with and without dizziness: an observational study	185
It's a family decision: barriers and facilitators to participation in family- assisted therapy for older adults in transition care	186
What influences surgery choice in older adults presenting to a perioperative care of the older persons undergoing surgery clir	nic?187
Putting restorative care into focus: exploring the experiences of older people, physiotherapists and staff using physiotherapy telehealth in aged care	
Effects of an online yoga program (My Joint Yoga) in people with knee osteoarthritis: a randomized controlled trial	189
The worse your hearing the worse your balance: a systematic review and meta-analysis	190
Differences in vestibular function in older adults with hearing loss, with and without a history of dizziness, or vertigo	191

	onship between frailty ram		•			
	menting Benign Paroxy history					
How therapists an	l exercisers can monito	r balance exercis	e intensity - the l	Balance Intensity	Scale in practice .	
	nciples of trauma-info ractice			-		
	up-based reflective pra					•
Assessing biopsych	osocial impairments in	197chilles tendin	opathy			
The many differen	forms of patient distre	ss: An emotional	challenge for ph	ysiotherapists		
An international s	rvey of physiotherapy	practises in the cli	inical assessmen	t of lateral elbov	v tendinopathy	
ls adolescent idiop	athic scoliosis (AIS) asso	ociated with diffe	rences in bone h	ealth, lean mass	and eating disord	ers?
•	nce of patients with ba		•		• •	
•	s similar clinical outcor	•		-		
	capability framework a					
	ainHub: a one-stop onli					
What education sh	ould be provided to Ab	original and Torr	es Strait Islandei	peoples with os	teoarthritis, rheun	natoid arthritis and
	ow better, you do bette		-			
Understanding the	impact and tackling the	e burden of osteo	arthritis with Ab	original and Tori	res Strait Islander p	people
What education to	deliver and how to del	iver it for rotator	cuff-related sho	ulder pain: pract	ical guidance for c	linicians
How does exercise	work for rotator cuff-ro	elated shoulder p	ain? A scoping re	eview of random	ised clinical trials .	
	h knee osteoarthritis re					
Investigating the '	ow' of patient education	on for knee osteo	arthritis - An onli	ne randomised	controlled trial	
Recommendation	for the management o	f hip and knee os	teoarthritis: a sy	stematic review	of clinical practice	guidelines
•	ysiotherapist awarenes tive	•			•	
	n to co-create educatio					
Using SUpported N	Notivational InTerviewi sed controlled trial	ng (SUMIT) to im	prove physical ad	ctivity for people	with knee osteoar	thritis. A pilot,
	e modifications to a tra					
	ators of early referral to	•			•	
	tise amongst musculosl sorders					
Prevalence, severi	y and impact of foot pa	in during pregnai	ncy and postpart	um: the Queens	land family cohort	study

The relationship between allostatic load and pain and physical function in individuals with knee or hand pain: a cross-sectional stuc	
Targeted exercise in physiotherapy practice reduces risk of osteoporotic fracture	
Does exercise with or without manual therapy influence sensory characteristics in people with elbow tendinopathy? A single- blinded, randomised cross-over trial	26
Exercise adherence in trials of therapeutic exercise interventions for common musculoskeletal conditions: a scoping review 22	27
A qualitative investigation of patient perspectives of care pathways for people with low back pain	28
The perceptions of individuals with musculoskeletal disorders towards prognosis: an exploratory qualitative study	29
Neurodiversity affirming practice for physiotherapists	0
Physiotherapist-administered performance-based tests via telehealth in people with chronic lower limb musculoskeletal disorders test-retest reliability and agreement with in-person assessment	
A scoping review on the role of resilience on function and movement- evoked pain when experiencing a musculoskeletal injury . 23	\$4
How to clinically assess and plan a movement rehabilitation strategy for people with mild to moderate Upper Cervical Instability 23	\$5
Force-generating capacity of hip muscles (volume and fatty infiltration) in people with unilateral knee osteoarthritis and its association to function	8
Safe, competent, and strong – a simple guide for physiotherapists prescribing gym-based rehabilitation	9
Performance of key physical tests for temporomandibular disorder via telehealth: establishing validity and reliability	0
Self-reported motor and non-motor symptoms in people with functional gait disorder: A cross-sectional study	1
Barriers and enablers to implementing a specialized Functional Neurological Disorder (FND) service	2
How are patients with functional neurological disorder managed in Australian hospitals? An observational multi-site study 24	13
Controlling the Modified Tardieu Scale assessment speed to match joint angular velocities during walking impacts spasticity assessment outcomes	4
Patient assessment, selection and management of surgery for lower-limb spasticity in adult-onset neurological conditions 24	15
Hamstring hypertonicity and spasticity assessment: does the hip flexion angle impact assessment outcomes?	6
The Modified Ashworth and Modified Tardieu Scales differ in their classification of lower-limb spasticity	17
Does the distribution and severity of lower-limb hypertonicity and spasticity impact walking speed in people with neurological injuries?	18
Management of persistent post-concussion symptoms: "How to" tips for 24	9
The influence of referral time for treatment and outcomes of individuals with persistent post-concussive symptoms	60
Considerations for optimal recovery of the upper limb after stroke: in practice and in principle - a qualitative study	51
Perseverance with home-based upper limb practice after stroke: perspectives of individuals with stroke and their significant others	
Implementation of constraint-induced movement therapy in stroke rehabilitation is about 'playing the long game': a systematic review of qualitative studies	53
Physiotherapy delivery during the period of post-traumatic amnesia (PTA) after moderate to severe traumatic brain injury (TBI). 25	54
Exercise-induced symptom exacerbation in moderate-to-extremely severe traumatic brain injury	5
Cardiorespiratory fitness assessment and training in the early sub-acute phase of recovery following traumatic brain injury: a systematic review	6
Artificial Intelligence: a theoretical and practical application crash course for physiotherapists	57
Rehabilitation technology: a mixed methods study of clinicians' uptake,	8
Contributing factors to upper limb associated reactions during walking in people with acquired brain injury	;9
Inter-disciplinary rehabilitation after mild traumatic brain injury –	60
Physical activity interventions for people with moderate-to-severe traumatic brain injury: a rapid systematic review and meta- analysis	51
Physical exercise for people with mild traumatic brain injury: a systematic review of randomized controlled trials	52
MOVE-IT: a system for remote vestibular assessment and intervention following concussion	53
What's important to measure in physical activity after stroke? Opinions of	54

Can therapeutic and behaviour change interventions increase physical activity after stroke? A systematic review	265
In stroke survivors, counting and recording repetitions and using target numbers increases intensity of practice: a randomised control trial	266
Evaluating feasibility of a secondary stroke prevention program	267
How to increase self-efficacy and self-management to improve physical activity levels in stroke survivors	268
Devices used for shoulder subluxation in a stroke population: a systematic review	269
Are current self-efficacy measures reliable and valid for stroke survivors? Measuring and understanding confidence for physical activity post stroke	
High dosage training can be achieved in a post-stroke mobility booster program	271
Knowledge, attitudes and needs of stroke survivors, carers, and health professionals regarding exercise adherence	272
Portable wearable upper limb exoskeletons on activities of daily living and motor function after stroke: a systematic review and meta-analysis	273
Acceptability of a hybrid telehealth falls prevention intervention for people with stroke transitioning home	274
Telehealth for persons with multiple sclerosis – experiences and suggestions for improvement	275
Non-invasive brain stimulation enhances the effect of physiotherapy for balance and mobility impairment in people with Multipl Sclerosis	
'The EYES have it': how to achieve BPPV treatment success when the nystagmus does not make sense (a case-based exploration)	)277
Spatiotemporal gait parameters in adults with premanifest and manifest	278
Telehealth empowered people living with Parkinson's disease during	279
Perspectives of people with myasthenia gravis on physical activity and experience of advice from health professionals: a qualitat Australian study	
Does the intramuscular injection of Botulinum Neurotoxin-A induce muscular weakness in adult-onset neurological patients with focal spasticity? A systematic review	
Finding the right balance with exercise and sport for people with multiple sclerosis – a feasibility study	282
Factors impacting the uptake and adherence of mHealth technology by adult stroke survivors in community settings: a scoping review	283
Is game-based robotics training an alternative to improve upper limb function and independence after stroke?	284
Wellbeing after finalising a workers' compensation claim: a cross-sectional study	
Wellbeing outcomes after finalising a workers' compensation claim: a	286
Development and initial application of a harmonised multi-jurisdiction work injury compensation database	287
Why are we still doing 'how to lift' training in workplaces?	288
Patterns of physiotherapy attendance by compensated Australian workers with low back pain: a retrospective cohort study	289
Sex-specific differences in fit between two different types of body armour: a pilot study	290
Work-related outcomes in individuals with and without lower limb osteoarthritis: an online survey	291
How to add value and facilitate change when communicating with case managers in workers compensation setting?	292
Acute hip fracture rehabilitation delivered by allied health assistants is feasible and adheres to hip fracture 285obilization guidel	
Can a new ward environment and intensive allied health staffing model enhance therapeutic opportunities in trauma care?	294
A virtual clinic for spine fractures - a safe alternative model of care	295
The Melbourne e-scooter trial – how safe are they wheelie?	296
The knee arthroplasty physiotherapy pathways (KAPPA) trial	297
Which patient factors best predict discharge destination after primary total knee arthroplasty? The ARISE Trial	298
Discharge destination and long-term outcomes in patients with two or more non-weightbearing limbs receiving intensive allied health therapy	299
Joint replacement may be a valuable treatment for Aboriginal and Torres Strait Islander people with osteoarthritis, but uptake is low	
Shoulder pre-operative exercise and education (SPrEE) program for patients awaiting rotator cuff surgery: a randomised controll	led

trial	301
Walking self-confidence is associated with meeting recommended physical activity levels after hip fracture: a cross-sectional str	
My PreHab Program – a hospital-initiated, community-based digital prehabilitation program	
Measuring participation in sports and physical recreation for people with disabilities: a systematic review	304
Ability of early parent-reported questionnaires and clinical assessments to explain motor performance of extremely preterm in at two years	
Ultra-early parent-administered physiotherapy to improve motor outcomes in infants at high-risk of cerebral palsy or motor de (randomised controlled trial)	
PreEMPT (Preterm infant Early intervention for Movement and Participation Trial): using video coding to evaluate content fidel	
Impact of generalised joint hypermobility and musculoskeletal pain on motor function, activity levels and quality of life in childr	
Hand impairment and function in children and adolescents with heritable disorders of connective tissue who exhibit symptoma joint hypermobility	
Outcomes of a custom-made orthotic intervention for children and adolescents with symptomatic joint hypermobility	310
Exercise for managing Postural Orthostatic Tachycardia Syndrome in adolescents and young adults with symptomatic joint hypermobility: a scoping review	311
An intensive splinting intervention to prevent palmar burn scar contracture in young children and parent experiences of implementing intervention	312
The experiences of child survivors of posterior fossa brain tumours and their caregivers in a goal-directed therapeutic exercise program	313
Associations between motor development at 2 years and physical activity at 4-5-years in children born very preterm	314
Interventions to improve physical function in cerebral palsy: development of a fidelity measure for clinicians	315
A feasibility study of 'CanMOVE' to promote positive physical activity behaviours in children and adolescents undergoing acute cancer treatment	316
Telehealth-preferred outpatient physiotherapy is equivalent to in-person physiotherapy for children with cystic fibrosis: a randomised controlled non-inferiority trial	317
Are falls in pre-adolescent girls related to balance or adiposity?	318
What is the contribution of hypotonia to motor activity capacity in school- aged children?	319
Chronic musculoskeletal pain of the lower limb in children and adolescents: a scoping review of health conditions	320
Outcomes of Abduction Dorsiflexion Mechanism brace in children with congenital talipes equinovarus	321
Tendoachilles tenotomy rate and timing in infants with idiopathic congenital talipes equinovarus in a quaternary children's hea service	
Can hypotonia in children be quantified using resting shear modulus collected using ultrasound Shear Wave Elastography?	323
The Ponseti method for management of clubfoot results in poor outcomes in the NT	324
Development of a patient decision aid for children and adolescents following anterior cruciate ligament rupture: an internation mixed- methods study	
Baseline characteristics of 250 paediatric patients with anterior cruciate ligament injuries: examination of data from a multidisciplinary longitudinal prospective registry	326
Initial validation of the Ignite Challenge assessment for autistic children and youth	327
Effect of physical activity interventions on cognitive, academic and physical performance outcomes in children with Neurodevelopmental Disorders: a systematic review	328
How to identify mild developmental delay in children using a new screening tool	329
Is the Targeted Motor Control screening tool a valid neurosensory measure for 4-year-old children?	330
To identify clinical measures of postural control for children with developmental coordination disorder (DCD) and their psychometric and clinical properties	331
Physiotherapists have a key role in movement assessment in autism	332
Development of gross motor function of preterm born children according to gestational age at birth: a systematic review	333

Using participatory approaches in healthcare research – enabling the	. 334
What does sports participation look like? Identifying indicators of sport and physical recreation participation for children with disabilities: an e- Delphi	335
Feasibility and characteristics of long-term, community-based physical activity monitoring for children with cystic fibrosis using consumer grade devices	
Differential structural brain changes between responders and non- responders after physical exercise therapy for chronic nonspecific neck pain	337
Effectiveness of physiotherapist-delivered psychological treatments for neck pain: a systematic review with meta-analysis	. 338
Diagnostic information has an immediate effect on pain with loading in people with Achilles tendinopathy: a randomized clinica experiment	
The effect of pain education combined with virtual reality on pain and kinesiophobia in individuals with persistent low back pair	า 340
The effect of health coaching on physical activity participation in adults with chronic non-cancer pain: a systematic review and meta-analysis	341
Kindness, listening, and connection: patient and clinician key requirements for emotional support in chronic and complex care	. 342
Navigating patient distress in physiotherapy practice	. 343
Patient-related barriers and enablers to the implementation of high-value physiotherapy for chronic pain: a systematic review a meta-analyses	
Supporting effective implementation of a biopsychosocial approach to musculoskeletal pain care through the behavioural lens .	. 345
"It's complex" - the challenges and opportunities for physiotherapists who work with chronic pain patients	. 346
Group facilitation skills: how to run group programs for people experiencing chronic pain	. 347
Effects of exercise on pain in people with Parkinson's disease: a systematic	. 348
Heightened pain sensitivity is associated with greater shoulder disability in people with musculoskeletal shoulder symptoms: a cross-sectional study	349
Peer patient examinations are feasible, authentic, and predict clinical performance in physiotherapy students	. 350
Use of common humanity scenarios to promote understanding of compassion and empathic distress in physiotherapy students pilot study	
Aligning inter-professional learning within allied health curricula to the discipline-specific professional competency standards ar university interprofessional education accreditation requirements	
Addressing the "black boxes" phenomenon in online learning using a student partnership approach	. 353
What should all health professionals know about movement behavior change? An international Delphi-based consensus statem	
Changes in daily step count in new lower limb prosthetic users within the first three months after inpatient prosthetic rehabilita	
Levels of physical activity and sedentary behaviour during and after hospitalisation: a systematic review	. 356
Effectiveness of physical activity interventions for improving depression, anxiety and distress	. 357
Designing physical activity interventions for women aged 50+: a qualitative study of participant perspectives	. 358
Comparison of a novel hybrid and traditional clinical physiotherapy placement model	. 359
Predicting student failure in physiotherapy musculoskeletal clinical placements: a machine learning approach	. 360
An interactive clinical supervision training program may improve the effectiveness of clinical supervision of physiotherapists: a randomised controlled trial	361
Patient satisfaction associated with student-led physiotherapy health clinics	. 362
Exploring readiness to engage in telehealth among adults accessing physiotherapy outpatient services in the Greater Western Sydney region beyond COVID-19	363
How to keep your patient information secure in a rapidly changing digital world	. 364
Attendance, adherence and satisfaction with telerehabilitation delivered physiotherapy: a systematic review and meta-analysis	. 365
Studies in leading physiotherapy journals commonly make inappropriate conclusions regarding treatment effect modifiers: a systematic review.	366
Sluggish adoption of simple methods that reduce bias: a longitudinal analysis of 35,653 physiotherapy trials	. 367

How to search PEDro to answer clinical questions	. 368
Evaluation of an integrated, interactive Aboriginal health curriculum to support physiotherapy students' experience and development of cultural capabilities	. 369
Creating positive clinical placement experiences for Indigenous students completing the National Aboriginal and Torres Islander Health Academy program	
Design and delivery of cultural safety assessment in a First Nations context	. 371
'A massive part of rehab is between the ears'; barriers and facilitators of	. 372
Understanding fear after an anterior cruciate ligament injury: a qualitative thematic analysis using the common-sense model	. 373
Online information about the management of anterior cruciate ligament ruptures in Australia: a content analysis	. 374
Knee osteoarthritis 25-years post anterior cruciate ligament reconstruction: a prospective study	. 375
Factors associated with fear and distress when viewing videos depicting challenges to knee stability	. 376
Exercise induced hypoalgesia in elite badminton athletes with and without knee pain	. 377
Investigation of the nature of fear within ACL-Injured subjects when exposed to provocative videos: a concurrent qualitative and quantitative study	
Returning to elite basketball following unicompartmental knee arthroplasty in a 41yo female: a criteria-based progression	. 379
Considering patient preferences, accountability strategies and health- coaching to optimise adherence to an individualised and progressive walking program: a qualitative study	. 380
The moderating role of kinesiophobia on the association between daily pain and physical activity in people with Achilles tendinopathy	. 381
Hip dysplasia - tips for clinical assessment	. 382
Physiotherapy (cervical manual therapy, vestibular/ oculomotor therapy or exercise) improves outcomes following a concussior systematic review and meta-analysis	
Effectiveness of pharmacological and non-pharmacological treatments for acute concussion symptoms in adults: a systematic review of randomised controlled trials	. 384
The effect of physical interventions on the intrinsic foot muscles: a systematic review and meta-analysis	. 385
Pelvic floor symptom trends in women attending virtual group physiotherapy from early to late pregnancy: considerations for e- intervention	
"It can be managed quite well with physiotherapy": perceptions and experiences of Australian healthcare professionals towards pregnancy- related pelvic girdle pain	
Physical activity in Australian women during pregnancy	. 388
A consumer co-created infographic improves knowledge about physical activity and self-efficacy to exercise in women with GDN randomised trial	
Integrating physiotherapy within an existing gestational diabetes service through the design and delivery of personalized exercisint interventions for women	
Co-designing a Physiotherapy led intervention to improve the mental health of postnatal women	. 391
Comparing perceived heating effect and intensity of therapeutic ultrasound between breast tissue and calf muscle in lactating women: observational study	. 392
Supporting women and families in pregnancy, birth and beyond: a co- designed, evidence-based perinatal education program delivered via multiple formats	. 393
Quality of life instruments and their psychometric properties for use in people with neurogenic overactive bladder: a systematic review	
Australian health care professionals' beliefs and attitudes towards the	. 395
Beliefs and experiences of females with chronic pelvic pain	. 396
Screening for psychosocial factors in individuals with pelvic pain? An e- Delphi study	. 397
Does group physiotherapy improve pain scores and reduce the impact of pelvic pain for women referred with persistent pelvic pain?	. 398
Is the 3PSQ a good measure of the psychological risk profile in people with persistent pelvic pain?	. 399
Effectiveness of conservative therapies in women with endometriosis- associated pain: a systematic review	. 400

	The development and content validity of the fremantle perineal awareness questionnaire in people with persistent perineal pa	in401
	Patient perspectives on missed opportunities and barriers during the diagnostic journey: a mixed method cross-sectional study endometriosis in Australia	
	Psychosocial impact of sexual dysfunction related to prostate cancer treatment in South African men	403
	Prepare heal perform: two year outcomes from a perioperative pelvic floor muscle training protocol for the prevention/management of post- prostatectomy incontinence	404
	How to embed physiotherapy within an existing tertiary hospital menopause clinic	405
	Preliminary considerations for physiotherapy service provision within an existing medically led menopause clinic	406
	Feasibility of pelvic floor screening during the preadmission assessment within the gynae-oncology preadmission clinic at a quaternary Women's Hospital	407
	Early intervention gynaecology service	408
	Women's and men's health physiotherapy in regional, rural and remote Australia	409
	Pelvic health care for Aboriginal and Torres Strait Islander men and women: barriers and opportunities	410
	From Forceps to FAB: evaluating how to provide best follow up care after birth	411
	Effect of (vertical loading) impact activities on measures of pelvic floor function/activity in adult females: a systematic review	412
	Pelvic floor symptoms, physical activity and health-related quality-of-life after hysterectomy for gynaecological cancer	413
	An innovative strategy to reduce abdominal girth in older men – a model for positive behavioural change?	414
	Pessary management practices for pelvic organ prolapse among physiotherapists and health care practitioners in Australia: a c sectional study	
	The feasibility of pelvic floor muscle training to treat urinary incontinence in women with breast cancer: a telehealth interventi trial	
S	ECTION 5: Symposia	417
	Measuring exertional breathlessness in cardiopulmonary disease	417
	Time to move: physical activity and older Australians	420
	Do labels and language shape people's beliefs about musculoskeletal pain?	422
	Beyond generalised and peripheral joint hypermobility: management of upper cervical spine instability in adults	425
	Pain in schools: Three very different evidence-based physiotherapy perspectives	428
	New guidelines, developmental trajectories and clinical pathways for people with whiplash.	431
	Implementation and effectiveness of self-directed therapy for adults	434
	Moving evidence-based high value care from policy to practice	437
	What roles do trunk muscles and neck strength play in sports-related concussion?	440
	Hip related pain in football players: an evidence update	443
S	ection 6: E-Poster Presentations	446
	Dry needling in clinical practice: a survey of Australian physiotherapists	446
	The acute tracheostomised neurological patient: A cohort study of the hospital-acquired pneumonia incident and the impact o decannulation and discharge	
	Promoting and improving early mobilisation culture in intensive care	448
	Feasibility of VeMotion implementation in the acute setting	449
	What impact do nature-based interventions have on lower respiratory outcomes?	450
	Quality of life, fatigue and physical function are reduced in people with Long-COVID: an observational study	451
	Evaluation of a new model of care for the tracheostomy review service at a tertiary teaching hospital in Victoria, Australia	452
	The impact of chest wall binding on Exertional Dyspnea in healthy participants measured using two novel exercise tests	453
	Patient perceptions of discharge: were they ready to go home and retrospective thoughts	454
	An exploration of patient physical activity on a subacute inpatient ward impacted by changes due to the COVID-19 pandemic	455
	Exercise for improving lateral abdominal muscle impairments: a feasibility study protocol	456
	Increased usage of mobile electronic devices during the COVID-19 pandemic and associated increases in musculoskeletal symp	toms

4	57
Maximum voluntary isometric contraction and rate of torque development is altered in men with insertional Achilles tendinopathy	
Is there a relationship between vestibulo-ocular function, and concussion and musculoskeletal injuries in adolescent rugby union players?	
How much physiotherapy, chiropractic or osteopathy do compensated Australian workers with low back pain attend? A retrospective cohort study	50
Current physiotherapy practice around falls prevention in breast cancer care	61
Community-based physical activity interventions for adolescents and adults with complex ceporebral palsy: a scoping review investigating implementation and safety	52
Seas the day – beach use, preferences, and benefits for older people and people with disability: an Australian community survey 46	63
Being overweight or obese has the potential benefit to reduce mortality and improve functional recovery following stroke: an umbrella review	64
Priorities and willingness to use nerve stimulation for bladder and bowel management in people with spinal cord injury in Australia	
The effects of sport and physical recreation for adults with physical and intellectual disabilities: a systematic review with meta- analysis	56
Long Covid - physiotherapy management strategies to support outpatients with Long Covid	67
"It's important for us all to be on the same page": exploring staff 46	68
Application of inexpensive 3D printed prototype for aquatic exercise aerobic fitness testing; a case study	<del>6</del> 9
Ergonomic interventions for treating work-related complaints of the arm, neck or shoulder in adults	70
Effectiveness of aquatic therapy on disability and quality-of-life using biopsychosocial approaches in low back pain: a systematic review	71
Suicide prevention is everyone's business, including physiotherapists 47	72
Evaluating the validity of a smartphone-based 6-minute walk test for people with persistent pain	73
Insights into the experience and management of pain in people with 4	74
Prevalence of serious spinal pathology: clinical setting matters	75
An advanced practice physiotherapist-led new patient rheumatology service: the Royal Adelaide Hospital experience	76
The long head of biceps at the shoulder: a scoping review	77
Addressing and managing sexual dysfunction as part of holistic musculoskeletal pain care	78
Determining appropriate non-surgical multidisciplinary management of knee osteoarthritis in tertiary care wisely: prospective validation of a clinical prediction rule	79
The role of physiotherapists in shoulder injury related to vaccine administration (SIRVA)	80
Health professionals must acknowledge that shoulder injury related to vaccine administration (SIRVA) is real and impacts people's lives: case report	
The effect of resistance loading on pelvic floor function in adult females: a systematic review	82
Feasibility and acceptability of the Living My Life Program: a digital health intervention for rural and remote individuals with stroke	
Pilot of the Eastern Health physiotherapy triple s team - student support for stroke patients	84
The outcomes of treadmill training in adults with stroke: an umbrella review	85
Feasibility of implementing a balance group on an acute stroke and neurology ward	86
Internal derangement of the knee in physically demanding occupations: a rapid review	37
Profiling the occupational tasks of traffic and highway patrol officers	38
The physical fitness profiles of specialist policing teams	39
Impact of boots on task performance in tactical personnel: a systematic review	ЭO
Effectiveness of physical conditioning practices for female military personnel	<del>)</del> 1
Use of a load carriage assistance device for specialist police	Э2

Differences in cardiovascular demand between male and female marines during progressive loaded hikes	493
What we don't understand, we don't look for	494
What does infant participation look like according to parents and health professionals? An international Delphi study	495
Evaluating the measurement properties and feasibility of physical activity and physical function assessments for children under acute cancer treatment	
Effectiveness of school-based physiotherapy intervention for children	497
Supporting the developmental care of infants with congenital heart disease within a hospital environment	498
Do physiotherapy and occupational therapy interventions have a role in the management of pediatric functional neurological disorder? A systematic review	499
The development of Wheely Fun, a new intensive paediatric program for learning and practicing use of powered mobility	500
An online interactive learning module improves student confidence and preparedness for clinical skills examinations	501
Self-directed websites effectively improve physical activity and diet quality in people living with chronic illness. A systematic rev and meta-analysis	
The establishment of a consumer advisory group for an allied health department at an Australian university	503
Feasibility of a longitudinal cohort study to examine functional outcomes of people with oseointegrated and socket above-knee amputations	
Behaviour change traps and how to avoid them!	
Ready Student One: simulation-based education, virtual reality, and the perception of stress	506
Balanced dental occlusion has positive impacts on jump height and modified reactive strength index of vertical jump	
Health professionals' involvement in volunteering of professional skills: a	508
A systematic review of functional outcomes following inpatient versus outpatient hip or knee arthroplasty	509
Exploring the experiences of physiotherapists integrating a new objective measurement into routine clinical care	510
Application of advanced haptic and visual feedback technology in physiotherapy teaching settings: a preliminary exploration of educators and clinicians' perceptions	
Predicting curve progression in teenagers with idiopathic scoliosis: an evaluation of machine learning models from a systematic review	
Exploring the beliefs, perceptions, and experiences of individuals living with tendinopathy: a systematic review of qualitative st and meta- ethnography	
Diagnostic labels for hip pain impact beliefs about hip pain management: an online randomised controlled trial	514
Shearwave velocity identifies altered tendon but not muscle stiffness in mild hypercholesterolaemia	515
Determining the effectiveness and feasibility of a virtual hospital model of care for low back pain	516
Can language enhance physiotherapists' willingness to follow Choosing Wisely recommendations? A best-worst scaling study	517
Quantitative ultrasound texture analysis to study musculoskeletal soft tissue structures: a systematic review to identify opportunities	518
The experiences of individuals living with a musculoskeletal disorder in receiving a prognosis from a physiotherapist: a qualitati study	
Experiences of people with chronic musculoskeletal pain participating in a mindfulness-based stress reduction program	520
Early impressions of trust predict patient health outcomes and satisfaction with care for people with musculoskeletal condition	s 521
Step Up: Implementation and participation of dance groups in rehabilitation following acquired brain injury	
Feasibility of a novel hand telehealth training program for people with	523
Can we do it? Feasibility of implementing standardised outcome measures in a tertiary hospital neurological physiotherapy ser	
Feasibility of a physiotherapist supervised walking program with telephone coaching to increase physical activity following acqu brain injury	uired
The Buffalo Concussion Test in people with mild-to-moderate traumatic brain injury: an exploratory clinical audit	526
The incidence and risk factors for the development of fractures in military recruits and qualified personnel: a rapid review	527
Sex-specific differences in the impact of heavier body armour worn by law enforcement officers completing occupational tasks:	а

pilot study	. 528
Gender differences in injuries sustained during United States Marine Corps training	. 529
Profiling the physical demands of mounted police during a major event	. 530
A comparison of musculoskeletal injuries in traffic and highway patrol officers and other officers	. 531
Grade 2 buddy program: peer support for new Grade 2 physiotherapists	. 532
Impact of classroom-based MASK-ED <sup>™</sup> (KRS simulation) on physiotherapy student clinical performance: a randomized cluster tria	
Exploring the barriers and enablers to quality clinical placements in physiotherapy at a teaching hospital using an implementatio science approach	
Slacklining: a unique neurophysiological basis of action in complex balance control	. 535
Slacklining into the future – the European trend and community implications for Australian physiotherapy	. 536
Has the reporting of patient reported outcome measures improved in physiotherapy clinical trials in six major physiotherapy journals (2000- 2018)	. 537
A targeted eight week support program improves confidence in new physiotherapists when managing complex presentations in large metropolitan hospital	
Physiotherapists, engineering and technology: understanding contributions, learning needs and areas of impact in healthcare innovation, entrepreneurship and technological advancement	. 539
The impact of prior physical conditioning on initial tactical recruit training success: a systematic review	. 540
The effects attributable to interprofessional collaborative practice: a physiotherapy private practitioner perspective	. 541
Punk it up – Introducing physiotherapy students to climate change	. 542
Exploring the effects of an immersive virtual reality-based pain education activity on student engagement, satisfaction and learn	-



### SECTION 1: Plenary Keynotes, Mini Keynotes

### Thinking ahead in a fast-changing world

#### Perera G

Plenary 1, Great Hall 1 & 2, October 5, 2023, 9:30 AM - 10:30 AM

COVID-19 transformed our world – at home, at work, and in every other area of our lives. Now we still see change and disruption from many other directions – such as AI, social media, climate change and sustainability, new generations entering the workforce, more people working from home, and a focus on diversity and inclusion.

We don't know what the future will look like, but we know it will be full of change, uncertainty, chaos, and even more disruption. What can you do to be fit for the future?

You might think the future is outside your control, but that's just not true. We can't be future proof, but we can be future ready. We all have the opportunity to shape the future – for ourselves, our family and community, and our workplace.

In this engaging, inspiring, and entertaining presentation, you will explore the biggest trends shaping our future, understand the skills and mindset we most need now, and learn how to thrive in a fast-changing world.

Key Messages

- The most important short-term and long-term trends shaping our world
- Being an active learner and possibility thinker
- Tapping into the diversity of others in your team and community
- Focus on the most important thing in your professional role
- Take more control of your own future



### Physiotherapy: the hands on profession

Jull G<sup>1</sup>, Hughes P, Papinniemi A<sup>1</sup>, Seale H<sup>2</sup> <sup>1</sup>The University of Queensland, <sup>2</sup>Prince Charles Hospital

Plenary 2, Great Hall 1 & 2, October 5, 2023, 4:00 PM - 5:00 PM

A string of recent editorials and social media posts have aired commentary about the value of 'hands-on' therapy within physiotherapy and in particular manual/manipulative therapy. Many of the arguments are spurious and fail to contextualize manual therapy in an overall patient-centered approach within a biopsychosocial framework. Likewise much of the commentary fails to recognize the evidence and benefits for hands-on in the management of musculoskeletal and neurological disorders.

The support for retaining 'hands-on' does not dismiss other relevant interventions within any of the biological, psychological and social domains. Rather the evidence and essence of evidence-based practices encourages an holistic approach of multimodal patient care.

Not so long ago the logo used by the APA was a hand. Musculoskeletal Australia's magazine is called 'In Touch'.

This session will discuss the current evidence supporting the vital role of hands-on in assessment and management methods used by physiotherapists including manual therapy and other movement facilitation techniques. The physiotherapy profession cannot become a 'hands-less' profession.

Key Practice Point:

• Hands-on is an integral component in the delivery of many physiotherapy interventions



### Igniting our rebellious curiosity

#### <u>Penn Y</u>

Plenary 3, Great Hall 1 & 2, October 6, 2023, 8:45 AM - 10:00 AM

The paradigm is shifting, and we need to shift with it. The technology revolution continues to move at a pace that humans are struggling to keep up with. Within this lies an opportunity for innovation and creativity. We will need to dig deep and get curious about ourselves and the environments we find ourselves contained in. To move the dial we will need to believe that there is no box to think outside of. Yemi shares how igniting our rebellious curiosity gives us new ways of being and therefore creating.

In her keynote presentation Yemi will share:

- Why curiosity did not kill the cat and therefore will save us
- What hinders our creativity and how to find it
- How deconstructing our beliefs contributes to innovation

Take home messages

- Tools to ignite your curiosity
- A process to extract your creativity from your resilience blueprint
- How your body keeps the score and holds wisdom



# Are technology infused models of care the future of physiotherapy practice?

#### Russell T<sup>1</sup>

<sup>1</sup>University of Queensland

Plenary 5A, Great Hall 1 & 2, October 7, 2023, 9:00 AM - 10:00 AM

The last decade has seen unprecedented progress in technological innovation and advancements, some of which have fostered seismic shifts in society and the way that we live. These advancements will not only continue in this decade, but will likely accelerate, fueled by increasing compute power and the rise of artificial intelligence. As technology evolves and we become more connected, it gives us pause to think about how technology has, or should have, impacted upon our practice as physiotherapists.

Are we effectively leveraging technology to deliver better, more convenient care to clients? Which technologies might be most appropriate to use and which should we be caution of? What is the evidence for technology-based approaches and do our clients want to receive services this way? Has technology been used to innovate our service delivery models to provide the most efficient and effective care to our clients? The COVID-19 experience forced many physiotherapists to deliver care using a range of technologies. Has this experience strengthened our desire or incorporate technology into practice, or reduced it? What have we learnt from this experience?

This address will explore these questions and others and consider the future role that technology infused models of care might play in our profession.



### Why me? All physios have a role in reconciliation and Aboriginal and Torres Strait Islander health

Mohamed J<sup>1</sup>, Murray D<sup>2</sup>

<sup>1</sup>Lowitja Institute, <sup>2</sup>Indigenous Allied Health Australia

Plenary 5B, Great Hall 1 & 2, October 7, 2023, 9:00 AM - 10:00 AM

The health outcomes of Aboriginal and Torres Strait Islander peoples have been well documented and demonstrate there is more to be done to improve the health and wellbeing of our country's original custodians.

Physiotherapists have an important role to play in improving the health outcomes of Aboriginal and Torres Strait Islander peoples, both as clinicians and as respected members of the community. The role of our profession extends beyond our clinic walls and all physiotherapists, regardless of whether they work in Aboriginal and Torres Strait Islander communities, can engage in reconciliation. Whether it be through student placements, employment opportunities, procurement or engagement with the local community, there is a role for all physiotherapists in addressing the social and cultural factors of good health and wellbeing.

The plenary session will allow physiotherapists to develop a greater understanding of the factors that contribute to better health outcomes for Aboriginal and Torres Strait Islander peoples, learn about models of care which have been successful in addressing the social and cultural factors of good health and wellbeing and hear practical steps which individuals can take to contribute to improving health outcomes.



# What's the buzz? The latest updates in mobile technology for physiotherapy

#### Laranjo L<sup>1</sup>, Harvie D<sup>2</sup>, Tong H<sup>1</sup>

<sup>1</sup>University of Sydney, <sup>2</sup>University of South Australia

Mini Keynote 1, Great Hall 1 & 2, October 6, 2023, 1:10 PM - 2:10 PM

Given the rapid rate of technological improvement, it is essential that physiotherapists are up to date with the most current evidence in this emerging space. With society usage of technology increasing across various forms and devices, physiotherapists need to be aware of what technology their patients may be using and help guide them as appropriate.

In this 60-minute mini keynote session, you will hear from three experts in the field of physiotherapist and patient interaction with technology. These presentations will explore the patient uptake of different forms of wearable technology, how technology supports remote monitoring and patient-therapist connection, recent advances in technological development and what the future may hold for patients using mobile technology devices.

Key Practice Points:

After this session, participants will:

- Consider the impact that COVID-19 had on new development or modification of any current forms of technology relevant to physiotherapists and their patients.
- Understand the learnings that a rapid implementation of technology has had in physiotherapy practice.
- Identify how technology supports remote monitoring and patient-therapist connection.
- Recognise and promote the health-related reasons patients wear mobile devices (such as Fitbits, Garmins, Apple watches, pedometers etc) for.
- Review the pros and cons of various forms of technology devices patients use.
- Reflect on the future of mobile technology devices that patients may wear.



### Ignite your passion for physiotherapy

#### White E<sup>1</sup>, Lohmus J, Doyle A, Petrie D

<sup>1</sup>*The University of Melbourne* 

Mini Keynote 2, Great Hall 3, October 6, 2023, 1:10 PM - 2:10 PM

"Physiotherapy is an essential pillar of our health system" yet there are challenges facing the physiotherapy workforce, including attrition. Opportunities for system wide reform to address potential workforce challenges are outlined in the APA document Future of Physiotherapy in Australia. These policy and organisational reforms have the potential to achieve far reaching positive impacts for the profession.

At a more personal level one must wonder why some physiotherapists leave the profession. Students who undertake an entrance interview predominately cite a passion for helping people as their driver for applying for physiotherapy. This begs the question - Do people leave the profession because they have lost that passion and is it possible to re-ignite it?

In this session you will hear from physiotherapists who have ignited their passion for physiotherapy through advocacy, mentoring and forging new career opportunities.

Key messages:

- Physiotherapy is an exciting and rewarding career
- Opportunities exist to ignite your passion



## Climate change, biodiversity loss and physiotherapy: improving planetary and patient health

#### Stanhope J<sup>4</sup>, Webb G<sup>1,2</sup>, Bowen K<sup>3</sup>

<sup>1</sup>University of Tasmania, <sup>2</sup>University of Melbourne, <sup>3</sup>Australian National University, <sup>4</sup>University of Adelaide

Mini Keynote 3, Great Hall 4, October 6, 2023, 1:10 PM - 2:10 PM

Climate change and biodiversity loss threatens human health and disrupts health systems and their ability to deliver high-quality care. Health systems and health professionals contribute to this problem through the generation of greenhouse gas emissions, the failure to promote low carbon-and resource-intensive practices, and the lack of knowledge of their role in reducing harm to the planet (Tennison et al, 2021). It is vital that physiotherapists understand the risks and effects of climate change on health in order to facilitate their own behaviour change to reduce greenhouse gas emissions and that of their patients and clients. Improved awareness of the impacts of environmental changes on health outcomes will provide physiotherapists with the confidence to affect change in their own practice, the practice of the organisation they are working within, and in the community more broadly.

In this 60-minute mini keynote session, the presenters will discuss how climate change and biodiversity loss influence human health, how this knowledge might influence physiotherapy practice, and how physiotherapists can promote sustainability and behaviour change.

#### Key Practice Points:

After this session, participants will:

- understand the importance of the environment as a determinant of health, and how this knowledge may influence physiotherapy practice
- be aware that they can be drivers of and advocates for environmental change in their practice
- as educators, be aware of the importance of incorporating environment into the curricula and teaching
- be able to use nature-based therapies and green spaces as part of their practice
- have definitive tools, resources and an established network of physiotherapists to support environmental changes in their practice



### Sleep Health and Physiotherapy: what you may not know you need to know

#### Sargent, C<sup>1</sup>, Winter, S<sup>2</sup>

<sup>1</sup>Appleton Institute for Behavioural Science, CQUniversity, <sup>2</sup>The Prince Charles Hospital

Mini Keynote 4, M3, October 6, 2023, 1:10 PM - 2:10 PM

Good sleep is a core foundation of health, but it is often underappreciated in clinical work. This presentation brings together the physiology of good sleep and its role in physiotherapy practice and outcomes.

Perhaps no other behaviour has been more closely associated with good sleep than exercise. Associate Professor Charli Sargent will introduce the concept of good sleep, describe the reciprocal relationship between sleep and exercise, and identify some of the common issues related to exercise that can affect sleep in healthy adults and athletes.

Dr Sara Winter will present on treatment adherence principles, the bidirectional relationship between sleep and pain, sleep and skill acquisition and therapeutic approaches relevant to Physiotherapy practice in optimisation of outcomes through optimisation of sleep health. Attendees will have an overview of evidence-based therapeutic approaches to sleep management, including CBTi and Motivational Interviewing.

Key Practice Points:

• Participants will have a solid foundation on sleep health and its role in optimising client outcomes.



### **SECTION 2: International Keynotes**

### Red Flags: Meeting the challenge of identifying serious pathology in clinical practice

#### Finucane L<sup>1</sup>

<sup>1</sup>Sussex MSK Partnership, <sup>2</sup>St Georges University

International Keynote 1, Great Hall 1 & 2, October 5, 2023, 11:05 AM - 11:50 AM

A proportion of patients presenting to musculoskeletal services will have a serious pathology as the cause of their symptoms. Identifying serious pathology in a musculoskeletal setting can be challenging and is often identified in the late stages of the disease when prognosis is poor.

This presentation will consider how the International framework which provides an evidence informed clinical reasoning framework for serious pathology of the spine, can be used in clinical practice to support clinicians in the face of potential serious pathology. It will offer the clinician a contemporary approach which seeks to support the early identification of serious pathology.



### Pain is a whole person experience - a focus on 'pain vulnerability' and 'trauma-informed care'

#### Jones L<sup>1,2</sup>

<sup>1</sup>Singapore Institute Of Technology, <sup>2</sup>La Trobe University

International Keynote 3, Great Hall 1 & 2, October 5, 2023, 1:40 PM - 2:25 PM

This presentation will define psychologically-informed practice, pain vulnerability and trauma-informed care and explore the rationale and application of recognising pain as a whole person experience. Understanding pain as a multi-dimensional experience is increasingly accepted across health professions.

There is also a growing appreciation of the importance of the context in which pain presents, and recognition that these contexts include spatial, emotional and cognitive components related to being 'unsafe'. Over the last 30 years, physiotherapists have extended their scope of practice by applying psychological theories, constructs and techniques. In the early pain management programs, physiotherapists, working in inter-professional teams, focused on re-establishing function in people with persistent pain; rather than focus on a cure, or even pain relief.

Subsequent research into pain science has supported much of what was done by these pioneering teams. Evidence indicates pain is not a good indicator of tissue damage and biological explanations of variations in pain perception and expression – through understanding of neuro-endocrine-immune interactions – provide a palatable explanation to many physiotherapists for previously unexplained pain. Following on from this, is the apparent link from adverse life events to hormone dysregulation and pain phenotypes, in what has been described as pain vulnerability.

If pain is influenced by adverse or traumatic life events, it would be important for those working with people challenged by pain, to not only be psychologically-informed, but specifically trauma-informed. By bringing together conceptions of pain and trauma, the importance of addressing pain as a whole person experience becomes even more essential.



# Long COVID: pathobiology and pragmatic tips for treatment and care of patients

#### Putrino D<sup>1</sup>

<sup>1</sup>Icahn School Of Medicine At Mount Sinai

International Keynote 4, Great Hall 1 & 2, October 5, 2023, 2:30 PM - 3:15 PM

Long COVID is an infection-associated complex chronic illness that is affecting more than 65 million people worldwide. The symptoms of Long COVID are long-term, debilitating and affect almost every aspect of daily functioning.

Despite the overwhelming impact of Long COVID, there are no known cures. However, with a fundamental understanding of the emerging pathobiology of Long COVID, along with pragmatic learnings from other complex chronic illnesses, there are many actionable ways in which physiotherapists, occupational therapists and other clinicians can significantly reduce symptom burden in people with Long COVID.

Here we will discuss some of the most up-to-date theories of Long COVID pathobiology and strategies for managing common symptoms of Long COVID.



# Ageing well: research lessons from the New Zealand National Science Challenge

Baxter D<sup>1</sup> <sup>1</sup>University Of Otago

International Keynote 5, Great Hall 4, October 6, 2023, 10:35 AM - 11:20 AM

According to the World Health Organisation, by 2030, 1 in 6 people in the world will be aged 60 years or over, representing an increase from 1 billion in 2020 to 1.4 billion people. The number of persons aged 80 years or older is expected to triple between 2020 and 2050 to reach 426 million.

Ageing Well has thus emerged as a prominent focus of research, and of public interest and debate. This keynote will focus on our experience in the New Zealand Ageing Well National Science Challenge, Kia eke kairangi ki te taikaumātuatanga. The mission of the Challenge is to harness science to sustain health and wellbeing into the later years of life; our vision is to add life to years for all older New Zealanders.

The presentation will provide an overview of key research findings from the work funded through the Challenge, and the lessons learned from our experience of engaging with communities 'to do science differently', and to work towards becoming a Treaty-led organisation.

This keynote aims to provide insights and strategies for healthcare professionals, researchers, and policymakers to facilitate successful ageing.



### Evidence-based-practice for work disability prevention

Van Eerd D<sup>1</sup> <sup>1</sup>Institute For Work & Health

International Keynote 6, Great Hall 1 & 2, October 6, 2023, 11:25 AM - 12:10 PM

The burden of work-related injuries remains a concern for workplaces, compensation systems, and healthcare. Evidence-based practice (EBP) is a popular approach to addressing prevention of work disability. The objective of this presentation is to consider some recent evidence and reasons why it is important for Physiotherapists' practice.

A key challenge for healthcare and occupational health professionals is the ability to keep up with the scientific literature on work disability. Systematic literature reviews can be helpful for busy practitioners, but additional knowledge transfer and exchange (KTE) approaches may be needed to get the evidence into practice. This presentation will cover some recent reviews on work disability as well as describe an integrated KTE approach developed for a variety of stakeholders.

Workplaces and healthcare providers continue to struggle with musculoskeletal disorders (MSD) with compensation and insurance claims often being among the highest compared to other injuries. Risk factors for MSD include physical and psychosocial risk factors. Workplaces may struggle to identify and control these risks, which may have a negative impact on clients/patients who complete their treatment and attempt to return to work (RTW).

This presentation will describe recent research and evidence on reducing work disability and the role of rehabilitation. Findings from studies on workplace practices related to MSD, depression, PTSD, and return to work (RTW) emphasized the need to coordinate with the healthcare system to get appropriate care. The presentation will also include a discussion of the challenges and benefits of EBP in work disability prevention.



# Beyond sensitization: How changes in pelvic floor muscle excitability are implicated in vulvar pain and why it matters

#### McLean L<sup>1</sup>

<sup>1</sup>University Of Ottawa

International Keynote 7, Great Hall 1 & 2, October 6, 2023, 2:15 PM - 3:00 PM

Background: Dyspareunia, or pain experienced during sexual activities, affects upwards of one in 10 women, and can have a debilitating impact on physical, mental, sexual and reproductive health. While the evidence for effective intervention in dyspareunia remains limited, physiotherapy interventions involving pain education, manual modalities and relaxation exercises are emerging as a recommended approach. Dr. McLean will present important new findings from her research program which elucidate the link between pelvic floor muscle excitability and vulvar pain. These findings provide a foundation on which to develop more effective physiotherapy interventions.

Aims/Objectives: Dr. McLean will present her research findings on the association between pelvic floor muscle excitability and vulvar pain. In doing so, she will

- Synthesize findings from the literature on the association between high pelvic floor muscle tone and dyspareunia
- Discuss recent evidence generated through her research program that points to pelvic floor muscle excitability as a contributing factor in the persistence of vulvar pain (provoked vestibulodynia)
- Describe how to apply this new knowledge to treatment planning for those with vulvar pain

Key Practice Points: Participants will consider the strengths and limitations of different intervention approaches currently offered to those with provoked vestibulodynia. They will understand the benefits of assessing and concurrently addressing pain sensitivity and pelvic floor muscle excitability in the physiotherapy management of their patients with vulvar pain.



# Lifecourse health development of individuals with neurodevelopmental conditions: visualizing a preferred future

#### Palisano R<sup>1</sup>

<sup>1</sup>Drexel University, <sup>2</sup>CanChild Centre, McMaster University

International Keynote 8, Great Hall 1 & 2, October 6, 2023, 3:35 PM - 4:20 PM

Background: Lifecourse health development (LCHD) is a biopsychosocial model that expands the definition of health to include physical, mental, and emotional wellness and participation in desired social roles. Health development is conceptualized as a nonlinear, adaptive, lifelong process that occurs through personenvironment transactions. LCHD is applied to individuals with neurodevelopmental conditions as a framework for promoting developmental capacities for future adult roles and healthy adult living beginning in childhood. The proposition is that individuals with neurodevelopmental conditions experience healthy living and achieve personal goals through continuously adapting to activity limitations and changing environments. LCHD encourages future planning, timing of opportunities and experiences, coordination of services, and continuity of care between pediatric and adult health systems. Recommendations for service providers are provided from research involving young adults with cerebral palsy.

Objectives:

- Identify important considerations for health development of individuals with neurodevelopmental conditions.
- Apply the concept of person-environment transaction to examination, evaluation, intervention, and outcomes.
- Apply the concept of future planning to goal setting and intervention planning.
- Apply principles of motor learning to timing of opportunities for participation and experiential learning.
- Discuss roles of physical therapists in supporting goals for recreation and leisure, education, community living, and vocation across the lifecourse.

Key Practice Points:

- Lifecourse health development is an individual, ongoing, and dynamic process.
- Opportunities for participation enable individuals to develop capacities for current and future social roles.
- Modifiable aspects of the environment often restrict participation.
- Timing of services and supports is important.



# Dizziness, falls, and the clinical exam: what's new that can help advance practice?

#### Whitney S<sup>1</sup>

<sup>1</sup>University of PIttsburgh

International Keynote 9, Great Hall 1 & 2, October 7, 2023, 10:35 AM - 11:35 AM

Background: Dizziness is the number one reported symptom after the age of 70 in a primary care physician's office. There is increasing evidence that persons with vestibular disorders and benign paroxysmal positional vertigo (BPPV) fall, and that physiotherapy interventions can reduce falls and improve gait. There are recent advances in the examination and treatment of persons with both vestibular hypofunction and BPPV that are improving care for persons who are at risk for falling or who are dizzy. Randomized trials and systematic reviews will be described that support optimal evidence-based care.

Objectives:

- To provide an update about clinical and technological advancements of peripheral vestibular assessment and interventions
- To provide data about which comorbid conditions will negatively affect patient recovery in persons with peripheral vestibular disorders and BPPV
- To provide an update on BPPV and the relationship between BPPV and falls

Argument: The concept that all people with vestibular disorders should be treated the same is false. There is increased evidence of premorbid factors that can affect recovery. In addition, falls can result in BPPV and BPPV can result in falling. With greater recognition BPPV subtypes and newer interventions for BPPV, care management is enhanced.

**Key Practice Points** 

- Physiotherapy can reduce fall risk and improve quality of life in persons with vestibular disorders.
- Migraine, anxiety, and depression affect time to recovery in persons with vestibular disorders.
- Early intervention with persons with vestibular hypofunction (within the first 2 weeks) is related to optimal recovery.



### **SECTION 3: Invited Presentations**

### Acupuncture for chronic musculoskeletal pain: best evidence from international RCTs

#### Foster N<sup>1</sup>

<sup>1</sup>The University Of Queensland And Metro North Health

Acupuncture & Dry Needling 2, P 8, October 5, 2023, 11:55 AM - 12:40 PM

Over a decade ago a group of trial leads agreed to collaborate in sharing individual patient data from their randomised trials from around the world, to deliver the world's first international individual patient data (IPD) meta-analysis of acupuncture for patients with chronic musculoskeletal pain.

This presentation will summarise the key results of this initiative from the first set of questions about the effectiveness of acupuncture versus non-acupuncture controls and versus sham acupuncture, through to later questions about whether the effects of acupuncture depend on the characteristics of patients or those delivering treatment, whether acupuncture effects reduce over time and whether we can identified subgroups of patients who might be particularly good responders to acupuncture in order to better inform which patients with chronic musculoskeletal pain to preferentially select to offer acupuncture treatment. The presentation will finish by reflecting on the comparison of the evidence base from the world's randomised trials in the IPD meta-analysis versus clinical guideline recommendations about acupuncture for chronic musculoskeletal pain.

Key Practice Points:

- To better understand the principles, strengths and challenges of IPD meta-analysis using the example of acupuncture for chronic musculoskeletal pain
- To be more familiar with best evidence from this international dataset about the effectiveness of acupuncture, and the implications for both clinical practice and future research



# Needling tendons with tendinopathies, tears or calcifications: aetilogy, techniques and the evidence to date

Mccutcheon L<sup>1</sup> <sup>1</sup>Combined Health

Acupuncture & Dry Needling 3, P 5, October 5, 2023, 1:40 PM - 2:25 PM

Background: Acupuncture and Dry Needling is increasingly being used to treat various tendon pathologies in musculoskeletal care, including tears, calcifications, paratendonitis and tendonopathies. A literature review of acupuncture and dry needling treatment as a modality for treating the various pathological tendon conditions will be presented. Suitable participants are therapists who have completed the minimum training required in the area of acupuncture and dry needling, although this is not an absolute requirement.

Aims/ objectives: To review the latest literature and the implications for treatment in the various tendon pathologies. Discussion will also be presented regarding the various needling techniques, including effectiveness and clinical decision making.

Approach: A PowerPoint will be presented, coupled with practical demonstrations of different forms of needling which are used to treat the various tendon pathologies. Key Practice points: At the conclusion of the session participants should be able to identify tendon pathologies and make an evidence based decision regarding when to implement different needling techniques.



# Acupuncture in the time of COVID 19 and beyond: challenges, threats and opportunities

#### Barlas P<sup>1</sup>

<sup>1</sup>Jamieson Trauma Institute

Acupuncture & Dry Needling 6, P 5, October 6, 2023, 11:25 AM - 12:10 PM

During the time of the global COVID19 pandemic, physiotherapy and acupuncture practitioners had do significantly adapt their practice in the new reality. The physiotherapy profession has shown inventiveness with the development of telehealth and remote treatment solutions. Acupuncture practice however has faced significant challenges as a result of the pandemic.

Additional to these challenges, seems to be a persistent need for acupuncture to prove its clinical efficacy and its biological plausibility in order to continue to be regarded as a bona fide intervention suitable for inclusion to the physiotherapist's arsenal.

The presentation will focus on the key issues highlighted in the literature as barriers to acupuncture practice being accepted in modern healthcare and voiced concerns as to its legitimacy as a medical intervention in the 21st century.

It will also propose action involving changes in education and training in an attempt to address these concerns. The considerable amount of scientific and clinical evidence of acupuncture's efficacy and effectiveness needs to be emphasised and compared to popular interventions that seem to escape the same degree of scrutiny. Indeed, it will be argued that it is these aspects that can ensure needling therapies have a future within physiotherapy and modern healthcare in general.



## Managing modern complex health problems with an ancient mindfulness art-tai chi. what does the evidence tell us?

#### Lucy J<sup>1</sup>

<sup>1</sup>Jenny Lucy Physiotherapy

Acupuncture & Dry Needling 12, P 6, October 7, 2023, 2:30 PM - 3:15 PM

Managing Modern Complex Health Conditions with an ancient mindfulness exercise-Tai Chi. What does the current evidence tell us?

Tai Chi is a form of mindfulness mind-body exercise that is based on slow choreographed movements. Tai Chi has something for all ages, not just the older or frail adult.

Tai Chi is the soft end of the martial arts, being the rehabilitative form. Initially Tai Chi was a defense form.

Tai Chi relaxes the mind and body, moving freely, integrating entire body movements, not isolated muscle groups. These features flow over into everyday function.

The meditative state of mind of Tai Chi may explain many of its broad benefits, far beyond what one expects from a moderate physical activity. Meditation grows new brain cells connections and changes in the brains structure, resulting in better cognitive skills, such as learning and memory. The active meditation of Tai Chi makes it easier for the person who struggles to clear their minds to meditate, focusing on breath and movement to achieve the calm state of mind.



### Headache assessment: what is in and out of scope for physiotherapy?

<u>Niere K</u><sup>1</sup> <sup>1</sup>Brisbane Physio Specialists

Advanced Practice 7, M 3, October 6, 2023, 2:15 PM - 3:00 PM

For physiotherapists working in Advanced Practice or primary contact roles, patients may present or be referred with undifferentiated headaches as the primary or comorbid condition. The headache may be of a single or mixed cause and although rare, may be sinister in nature. As such, Physiotherapists must be experts in headache triage and differential diagnosis. The Physiotherapist needs to accurately identify and manage the patient when there is a significant cervical input to the headache that is likely to respond to physiotherapy treatment.

This presentation will focus on the interview and physical examination findings that are crucial for headache differential diagnosis. Priority will be given to the identification of red flags indicative of potential serious pathology and the findings that differentiate cervicogenic headache form other common headache types such as tension-type headache and migraine.

The presentation will help Physiotherapists identify if the headache is within or outside their scope of practice, if an urgent or non-urgent medical evaluation or further investigation is required and to advocate for the patient's best management.



# Functional Neurological Disorder – a consideration in musculoskeletal presentations and other areas of physiotherapy

### Petrie D<sup>1</sup>

<sup>1</sup>Surgical, Treatment and Rehabilitation Service (STARS)

Advanced Practice 8, M 3, October 6, 2023, 3:35 PM - 4:20 PM

Functional Neurological Disorder (FND) although not always easily recognised, is not an uncommon condition. It represents a disorder of voluntary motor or somatosensory nervous system and is diagnosed with typical clinical features and based on internal inconsistency. Historically the prognosis is poor with symptoms persisting or worsening in 50% of people at long term follow up, particularly for those who haven't received early multidisciplinary management. FND is a condition that shows no speciality bias, presenting across all areas of practice including Emergency Departments and Outpatient Physiotherapy practices. A patient may present with FND as the primary complaint, or it may be comorbid with other conditions.

This presentation will troubleshoot features to assist with the early recognition of FND and discuss appropriate management, including common pitfalls. A series of case studies will be presented to highlight and inform Physiotherapists in their respective scopes of practice with the management of these patients.



# Optimising cranial cruciate ligament (CCL) injury outcomes: What can we learn from ACL research in humans?

### Filbay S<sup>1</sup>

<sup>1</sup>Centre for Health Exercise and Sports Medicine, Department of Physiotherapy, University of Melbourne

Animal 1, P 5, October 5, 2023, 11:05 AM - 11:50 AM

There are many similarities between canine and human ACL injuries, and management of canine ACL injury (known as the cranial cruciate ligament (CCL)) is largely informed by ACL injury research in humans.

Like humans, canines with CCL injury have both surgical and non-surgical treatment options. Irrespective of treatment, chronic pain and loss of function can persist after CCL injury and most canines develop osteoarthritis after injury.

There is a scarcity of research investigating outcomes beyond 6 months of CCL surgery and few studies have investigated the efficacy of non-surgical interventions. ACL injury research in humans can provide valuable lessons to improve management of CCL injury in canines.

This presentation will provide an overview of current evidence on CCL injury management in canines, highlighting the key knowledge gaps. To inform CCL injury management, the evidence-based recommendations for managing ACL injury in humans will be presented, and the impact of treatment choices on long-term outcomes will be discussed. Importantly, current practice for managing ACL injuries in Australia does not reflect the best-available evidence and misconceptions regarding ACL treatment are common.

Considering the lack of research on canine CCL injury, these misconceptions may influence treatment choices in canines.

- The audience will gain insights into ACL injury management that may inform management of CCL injury in canines.
- The audience may feel inspired to challenge misconceptions regarding ACL injury (and CCL injury) management, that are not supported by high-quality research.



## Moving with the times - the use of novel technologies to assess pain & dysfunction in animal patients

Cruickshank S<sup>1</sup>

<sup>1</sup>Vetphysio Ltd & Veterinary Specialists Aotearoa (VSA)

Animal 6, October 6, 2023, 11:25 AM - 12:10 PM

Pain in the non-verbal patient can be challenging to assess, and adequate pain management is dependent on the ability to measure pain levels.

In recent years a number of standardised assessment scales and devices have become more integrated in veterinary practice. These include the pain face scale based on behavioural parameters, physiological parameters, the ridden horse ethogram, pressure algometers and quantitative gait analysis as a measure of pain expressed as lameness. Many of these are applicable to acute pain but perhaps less accurate with subtle and/or chronic pain, many still rely on subjective parameters and some are not applicable to outpatient practice.

We investigated the use of novel technology in real time to detect, quantify and track pain during the physiotherapy assessment and treatment process. We were able to demonstrate a correlation between behavioural signs of pain exhibited by the animal and objective measures of pain during the physiotherapy process, and a change following physiotherapy intervention.

The use of technology may have significant implications for the detection of pain & dysfunction in animals, be able to detect subclinical pain prior to catastrophic injury and contribute to the welfare of companion and performance animals.

- Overview of objective measures used in animal practice
- Understanding of novel technology to quantify pain and movement dysfunction and how it may enhance clinical practice
- Demonstrate a change in objective measures following physiotherapy intervention
- Collaboration between professionals using validated objective measures to contribute to the body of research



### Aquatic exercise training for coronary heart disease and type 2 diabetes

### **<u>Scheer A</u><sup>1</sup>**, IR de Oliveira B<sup>1</sup>, Shah A<sup>2</sup>, Green D<sup>3</sup>, Maiorana A<sup>1,2,4</sup>

<sup>1</sup>School of Allied Health, Curtin University, <sup>2</sup>Advanced Heart Failure and Cardiac Transplant Service, Fiona Stanley Hospital, <sup>3</sup>School of Human Sciences, The University of Western Australia, <sup>4</sup>Allied Health Department, Fiona Stanley Hospital

Aquatic 1, P 6, October 5, 2023, 11:05 AM - 11:50 AM

Background: Over half a million Australians have coronary heart disease (CHD), and close to 1.2 million Australians have type 2 diabetes mellitus (T2DM), with the direct health costs alone for these two conditions exceeding \$4 billion annually. Exercise is an important component of management for these conditions, yet physical activity in people with these conditions is suboptimal. Potential contributing factors include common comorbidities, such as musculoskeletal pain. New exercise strategies are needed to engage these patients in ongoing exercise. Aquatic exercise, given its reduced weight-bearing nature, may be a useful strategy.

Objectives: This session will summarise the literature on aquatic exercise for cardiometabolic disease, focusing on T2DM and CHD and will include a summary of the pathophysiology (with relevance to aquatic training), along with an overview of the barriers to exercise in these populations. A summary of our research into aquatic circuit training exercise for people with CHD (randomised, controlled trial) and people with T2DM (controlled trial) will be provided. This session will discuss practical aspects of aquatic exercise training in people with cardiometabolic disease, including safety considerations, monitoring, and exercise progressions.

- Aquatic exercise has beneficial effects and is well tolerated in people with cardiometabolic conditions, with this talk including a summary of the research in this area.
- The pathology behind cardiometabolic conditions requires some considerations for using aquatic exercise in clinical practice, which this talk will outline.
- Practical tips will be provided for integrating aquatic exercise into cardiometabolic disease management, including safety considerations and exercise programming.



### Clinical considerations for aquatic exercise and cardiac conditions

### Adsett J<sup>1</sup>

<sup>1</sup>Royal Brisbane and Women's Hospital

### Aquatic/Cardiorespiratory 2, P 11, October 5, 2023, 11:55 AM - 12:40 PM

Background: Despite convincing evidence that exercise training improves outcomes for people with heart failure and other cardiac conditions, attendance at cardiac rehabilitation programmes is poor and few patients recommended physical activity guidelines. For many patients, participation in traditional land-based programmes may be hindered by pain or other orthopaedic conditions, making aquatic exercise, a logical alternative. However, clinicians have long been concerned about the safety of aquatic exercise for these patients, particularly with relevance to cardiac preload and potential for worsening of symptoms.

Objectives: This session will summarise the existing literature related to aquatic exercise training for patients with cardiac conditions, highlighting the benefits for exercise capacity and muscle strength. A brief summary of cardiac physiology will be provided to assist clinical decision making. This session will be very clinically focused, providing case examples to assist patient selection and exercise prescription.

- A basic understanding of cardiac physiology assists appropriate patient selection
- Specific considerations exist for aquatic exercise training and people with cardiac conditions
- With appropriate screening processes in place, aquatic exercise is well tolerated and beneficial for patients with cardiac conditions



## Revisiting screening and risk management in three challenging areas of aquatic physiotherapy practice: seizures, incontinence and carer training

#### Larsen J<sup>1</sup>

<sup>1</sup>Hydrotherapy Brisbane and Hydrotherapy Consulting and Training

Aquatic 5, P 5, October 6, 2023, 10:35 AM - 11:20 AM

Background: New models of funding for complex neurological clients of all ages, greater autonomy for clients in their therapy goal-setting and choice of provider have seen an increase in the use of aquatic physiotherapy for this population. However, access to aquatic physiotherapy education and information in this area is limited.

Furthermore, recent reductions in funding for many clients has seen an increase in requests to train supportworkers to supervise/assist clients during independent aquatic sessions. Managing risk by educating referrers and funding bodies of the risks and training requirements to ensure safety is essential.

Screening procedures and risk management processes help both manage risk and ensure the well-being of the client. Specific issues requiring pre-screening, planning and risk mitigation are seizures, incontinence and carer-training.

Objective: This session considers the implications of the above on evolving aquatic physiotherapy practices from the experience of a busy private aquatic practice.

- Aquatic physiotherapy can be used safely and effectively to improve the health, mobility and wellbeing of many people with a disability who also experience seizures and/or incontinence.
- Specific screening and management strategies should be in place in all services to manage risk and client's safety.
- Services might make a considered decision to exclude certain clients/conditions but broad consensus is that neither epilepsy nor incontinence should be excluded without practical attempts to manage.
- Management of carer-training should be multi-factorial and well documented but ultimately not all carers will be appropriate to supervise in the aquatic environment.



### Cellulitis: stopping the cycle

#### <u>Webb E<sup>1</sup></u>

<sup>1</sup>University of Canberra, <sup>2</sup>Calvary Public Hospital Bruce

Cancer, Palliative Care & Lymphoedema 1, P 1, October 5, 2023, 11:05 AM - 11:50 AM

Cellulitis is the 4th most common reason for potentially preventable hospitalisations in Australia. It recurs in up to 47% of patients, often stemming from unmanaged risk factors such as lymphoedema/chronic oedema or tinea.

A cyclical relationship exists between chronic oedema and cellulitis, and consequently, many oncology and palliative patients who develop chronic oedema will also experience cellulitis.

Recent research has shown that effective management of chronic oedema using compression therapy and education can prevent recurrent cellulitis and reduce patient and health service costs. T

This presentation aims to summarise key research and provide practical information on recognising cellulitis, identifying its risk factors, and implementing non-pharmaceutical prevention strategies.

- Swift identification and management of cellulitis is essential to prevent patient symptom deterioration, long-term damage to local tissues such as lymphatic vessels, and the development of life-threatening conditions such as sepsis.
- Conditions which impair skin integrity, immune function or vasculature can increase the risk of cellulitis.
- Management of risk factors, such as chronic oedema, is important to reduce the risk of cellulitis reoccurring.
- Preventing cellulitis reduces morbidity, patient and health service expenditure, and likely the use of antibiotics, which is important in our current climate of increasing antibiotic resistance.



# Physical rehabilitation after breast cancer surgery: the role of physiotherapy

#### McGhee D<sup>1</sup>

<sup>1</sup>University Of Wollongong

Cancer, Palliative Care & Lymphoedema 4, Great Hall 3, October 5, 2023, 2:30 PM - 3:15 PM

Background: Oncology physiotherapists are aware of the difficulties many women have with their physical recovery following breast cancer surgery. Although breast cancer surgery and treatment are lifesaving, the range of adverse physical effects that women experience limit their ability to exercise and resume many physical activities associated with their daily life, work, and sport.

The deprivation of these activities and their physical, social, and mental health benefits can have an extreme effect on the quality of life of women living with breast cancer. Although physical rehabilitation can alleviate or resolve many of these issues, there are many barriers to women accessing physiotherapy after breast cancer surgery and for their needs to be met at different stages of recovery.

Objectives: To summarise the research on the adverse physical effects, physical recovery and rehabilitation of women following breast cancer surgery and discuss the barriers to access physiotherapy and strategies that oncology physiotherapists could use to improve the access to and content of physical rehabilitation following breast cancer surgery.

#### Key Practice Points:

Oncology physiotherapists will leave the presentation with strategies to:

- Improve communication between patients and surgeons regarding pre-existing physical pathologies and specific physical activities desired to resume.
- Raise awareness of potential adverse physical effects following breast cancer surgery to promote early physiotherapy referral.
- Improve consistency of assessment and prospective surveillance protocols to provide more equal opportunity for women to access early intervention.
- Improve the ability of women to self-manage their physical recovery through the development of educational resources.



### The future is here: implementing tele rehabilitation for cancer survivors

Dennett A<sup>1</sup> <sup>1</sup>Eastern Health

Cancer, Palliative Care & Lymphoedema 7, P 1, October 6, 2023, 2:15 PM - 3:00 PM

Background: Access to exercise for cancer survivors is poor despite global recognition of its benefits. Telerehabilitation may overcome barriers to exercise but is not routinely offered.

Aims: The aim of this study was to complete a process evaluation of a cancer telerehabilitation program rapidly developed in response to COVID-19

Methods: A mixed methods process evaluation using the Proctor Model was completed. Key outcomes included; acceptability, adoption, feasibility, feasibility, fidelity, cost, safety, satisfaction and quality of life. Participants were cancer survivors admitted to a telerehabilitation program between March and December 2020. Staff interviews were conducted and routinely collected hospital data including referrals, costs, adverse events, and quality of life was assessed. Participants received telerehabilitation including online health coaching and group exercise, home exercise program and information portal. Quantitative data was reported descriptively and qualitative data coded and mapped to the Proctor Model.

Results: The telerehabilitation program received 175 referrals over 8-months. Of those eligible, 123/180 (82%) commenced. There were no major adverse events. Adherence to health coaching was high (80% scheduled sessions) but participation in online group exercise classes was low (29%). Patients improved their self-reported physical activity levels (median110 minutes per week) by program completion. Patients were satisfied with telerehabilitation but clinicians reported a mixed experience telehealth. The average health service cost per participant was AUD \$1,104.

Conclusion: A comprehensive telerehabilitation model is safe, feasible and improved outcomes for cancer survivors. Learnings from this study may inform ongoing implementation of cancer telerehabilitation.



# Moving the needle on recovery outcomes for people following critical illness

#### Parry S<sup>1</sup>

<sup>1</sup>The University Of Melbourne

Cardiorespiratory 1, Great Hall 4, October 5, 2023, 11:05 AM - 11:50 AM

Overview: Every year globally more than one million people are diagnosed with Intensive Care Unit Acquired Weakness. There is currently a 50% chance of needing an intensive care unit admission in the lifetime of Australians and New Zealanders. Fortunately, most will survive (>90%) due to advances in medical technology and care. However, survivorship comes at significant cost. Many survivors have new longer-term impairments directly as a result of being critically ill - which is known as 'Post Intensive Care Syndrome'. Currently in Australia care is fragmented. There are no standardised pathways for follow-up post hospital discharge. In Australia only 2% of ICUs have dedicated follow-up services.

This presentation will include a discussion of the burden of critical illness in terms of the long-term impairments post critical illness including new data on falls and disability in Australian ICU survivors. Additionally, this presentation will discuss how we can work together within the multidisciplinary team to 'move the needle' and effect change to optimise quality of life through integration of implementation science and continuum of care pathways from ICU through to community settings for this highly vulnerable patient group.

## Modern management of cystic fibrosis: excitement, challenges and opportunities

#### Ward N<sup>1</sup>

<sup>1</sup>Central Adelaide Local Health Network

Cardiorespiratory 2A, P 1, October 5, 2023, 11:55 AM - 12:40 PM

The clinical presentation and management of cystic fibrosis (CF) has undergone a dramatic change in the last five years. The introduction of cystic fibrosis transmembrane conductance regulator (CFTR) protein modulator therapy has substantially changed the clinical presentation and prognosis for the majority of people with CF. Improvements in lung function and weight, reduction in respiratory symptoms and reduced respiratory exacerbation frequency means the traditional clinical management model is having to be reconsidered. This presentation will discuss the evolution and evidence for CFTR modulators and discuss the current and future implications for physiotherapy interventions for people with CF.



## Human error or outright negligence? Analysis of a medico-legal case occurring in an intensive care unit.

<u>**Paratz J**<sup>1</sup></u> <sup>1</sup>Griffith University

Cardiorespiratory 3, Great Hall 4, October 5, 2023, 1:40 PM - 2:25 PM

Background: While physiotherapists have been involved in cases with Professional boards and/or AHPRA due to non-professional conduct or professional misconduct, it is rare for physiotherapist to be involved in litigation. This talk analyses a case involving an entire intensive care team, including the physiotherapist, who were indicted in the NSW Supreme Court following the death of a patient.

Objectives: The evolving scenario, management and decisions by the intensive care team at various stages of the patient's stay in ICU, and the final judgement and decision will be discussed. The reasoning and law by which such decisions are reached will also be explained.

Conclusions: This case gives rise to the question of communication, professional responsibility and autonomy, covering the concept of duty of care, what can be considered negligent and challenges of legal causation. The legislative responsibility of multidisciplinary teams will also be discussed. Do these teams form a "legal shield"? How far does the duty of care by each team member extend?

- These discussions and reasoning have important implications for the ethical and legal obligations of health practitioners.
- It will result in physiotherapists, particularly in the cardiorespiratory and critical care area, reexamining their practice, communication and detailed documentation particularly in a climate that is becoming increasingly litigious.



# Incidence of complications after emergency abdominal surgery - Get Exercising (ICEAGE): a multi-centre randomised controlled trial

**Boden I**<sup>1,2,3,7</sup>, Sullivan K<sup>2,4</sup>, Hackett C<sup>3,5</sup>, Winzer B<sup>6</sup>, McKinnon M<sup>5</sup>, Robertson I<sup>1,7</sup> <sup>1</sup>University of Tasmania, <sup>2</sup>Launceston General Hospital, <sup>3</sup>University of Melbourne, <sup>4</sup>Monash University, <sup>5</sup>Princess Alexandra Hospital, <sup>6</sup>Northeast Health Wangaratta, <sup>7</sup>Clifford Craig Foundation

Cardiorespiratory 7A, M 1 & 2, October 6, 2023, 2:15 PM - 3:00 PM

Aim: We hypothesized that an enhanced physiotherapy care package of education, breathing exercises, and early rehabilitation would prevent respiratory complications and improve physical recovery after emergency laparotomy compared to standard care alone.

Design: ICEAGE was a prospective multicentre, parallel-group, double-blinded, active-placebo, randomised controlled trial powered for superiority.

Method: From 2016 to 2018, 288 consenting patients admitted for emergency laparotomy at three hospitals in Australia were randomised via concealed allocation to either "standard-care physiotherapy" (15-minutes daily ambulation and a single session of coached breathing exercises) or "enhanced-care physiotherapy" (30-minutes daily rehabilitation and twice daily coached breathing exercises). Primary outcome was a respiratory complication within 14 postoperative days.

Results: Compared to standard-care, enhanced-care physiotherapy halved respiratory complications; 27% v 13% (ARR 15% (95%CI 5 to 24%), NNT 7 (95%CI 4 to 19, p=0.002)) and referrals for sub-acute rehabilitation (20% v 8%, p=0.02). Participants receiving enhanced postoperative physiotherapy had a shorter hospital stay (13.4 days v 10.8 days, p=0.05) and reported better quality of life and physical function (WHODAS 30 (9) v 33 (10)) on hospital discharge and at 3-months post-surgery.

- ICEAGE is the world's first multicentre trial testing physiotherapy to improve outcomes following emergency laparotomy.
- Twice daily chest physiotherapy and 30-mins of daily exercise therapy delivered in the first seven postoperative days following emergency laparotomy prevented respiratory complications and improved physical function and quality of life up to three months after surgery.
- Further research is required to determine the dosage threshold for benefit and the cost-benefit of service implementation.



### Year in review: ICU rehabilitation

<u>Parry S</u><sup>1</sup> <sup>1</sup>The University Of Melbourne

Cardiorespiratory 8A, M 1 & 2, October 6, 2023, 3:35 PM - 4:20 PM

Overview: This clinical year in review will present the most recent research and advances in the field of intensive care rehabilitation. Key clinical implications will be discussed to inform current practice for Australian physiotherapists.

### Chest infection prevalence after surgery (CHESTY): an international multicentre prospective observational cohort study

### Boden I<sup>1</sup>, CHESTY Collaboration

<sup>1</sup>University of Tasmania, <sup>2</sup>Launceston General Hospital, <sup>3</sup>Clifford Craig Foundation

Cardiorespiratory 9A, P 9, October 7, 2023, 10:35 AM - 11:35 AM

Aim: To determine the incidence of postoperative pulmonary complications (PPC) after major non-orthopaedic surgery

Design: CHESTY was a large international prospective longitudinal observational cohort study of 5000 patients from 35 hospitals across five countries.

Method: Patients having major emergency or elective surgery involving a surgical incision in the abdomen, thorax, spine, or head, with a minimum two-night postoperative hospital stay were eligible for inclusion. Patients were screened daily for PPC, systemic inflammatory response syndrome, and sepsis for seven postoperative days using standardised criteria. Length of stay, unplanned ICU readmissions, reintubation rates, in-hospital mortality, and discharge destination were recorded. PPC incidence according to surgical category are reported with 95% confidence intervals. Associations between PPC and outcomes were explored using adjusted multivariate regression analyses.

Results: Pulmonary complication incidence was 18% (17% to 20%). Incidence was significantly higher following emergency/expedited procedures (emergency 28% (24% to 29%); elective 14% (13% to 15%)). For elective procedures, PPC incidence was highest after major cardiac (33% (30% to 37%)) and thoracic surgery (16% (12% to 20%)). PPCs were strongly associated with unplanned reintubations (RR 4.1 (95%CI 2.7 to 6.2), ICU readmissions (RR 3.1 (95%CI 2.3 to 4.1), in-hospital mortality (RR 3.2 (95%CI 1.7 to 6.3), acute hospital stay (MD 6.7 days (95%CI 5.6 to 7.9 days), and sub-acute rehabilitation requirements (RR 2.2 (95%CI 1.5 to 3.3).

- Pulmonary complications are common after major non-orthopaedic surgery and strongly associated with poor outcomes.
- Physiotherapists should implement evidence-based therapies proven to reduce the risk of a PPC.



# Remote monitoring and Long COVID symptom burden: making invisible illness visible

### Putrino D<sup>1</sup>

<sup>1</sup>Icahn School Of Medicine At Mount Sinai

Cardiorespiratory 8B, Great Hall 4, October 6, 2023, 3:35 PM - 4:20 PM

Long COVID is a chronic and debilitating infection-associated complex chronic illness that is estimated to affect more than 65 million people worldwide. One of the most challenging aspects of Long COVID is that the disability caused by Long COVID is dynamic: symptoms can be relapsing/remitting and extremely difficult to measure using traditional clinical approaches. With recent advances in patient-led research and consumer-available continuous physiological monitoring technologies, the ability to capture big datasets to objectively address these issues that have plagued the field of complex chronic illness for many years. Here we will discuss the methodology and results of one such initiative that has collected longitudinal data from over 30,000 people living with Long COVID, Myalgic Encephalomyelitis and other complex chronic illnesses. We will discuss insights into which physiological biomarkers align with specific symptom types and levels of symptom burden and how such insights can guide novel therapies for these illnesses.



### Cardiorespiratory physiotherapy in trauma care

#### Thomas P<sup>1</sup>

<sup>1</sup>Royal Brisbane And Women's Hospital

Cardiorespiratory 10A, P 9, October 7, 2023, 11:40 AM - 12:40 PM

Background. Major trauma admissions are associated with extended hospital length of stay, admission to intensive care, complications and functional impairment that often result in patients requiring a prolonged period of rehabilitation.

Physiotherapists are an integral part of the multi-professional team delivering care to major trauma patients. From the time of a patient's admission to an intensive care unit; general surgical or orthopaedic ward; burns or spinal injury unit - cardiorespiratory physiotherapy is often a prominent part of a patient's journey.

Cardiorespiratory physiotherapists can lead and improve trauma care through their:

- knowledge of the mechanisms, management and complications associated with major trauma
- understanding of the physiological responses to trauma
- clinical skills in respiratory care and early rehabilitation
- ability to recognise clinical deterioration
- ability to coordinate elements of trauma care across the continuum of a patient's admission
- leadership in education of multi-professional team members.

Objectives. To promote the role of cardiorespiratory physiotherapy in trauma care.

Key Practice Points.

- Cardiorespiratory physiotherapy is an essential component of major trauma patient management.
- Cardiorespiratory physiotherapists can provide leadership within hospital-based trauma services.

## Year in review: airway clearance therapy in chronic suppurative lung disease

### Ward N<sup>1</sup>

<sup>1</sup>Central Adelaide Local Health Network

Cardiorespiratory 10B, P 8, October 7, 2023, 11:40 AM - 12:40 PM

Airway clearance techniques (ACT) remain one of the key components of the management of people with chronic suppurative lung disease. The evidence for the use of ACTs continues to evolve. Recent key publications investigating the role of ACTs in chronic suppurative lung will be presented along with discussion on future research priorities.



# Time to step up: why hospital inpatients are so inactive and how physiotherapists can lead change

<u>Adsett J</u><sup>1</sup>, McRae P<sup>1</sup> <sup>1</sup>Royal Brisbane And Women's Hospital

Cardiorespiratory 11A, M 3, October 7, 2023, 1:40 PM - 2:25 PM

Background: Immobility during hospitalisation is well-recognised as an important contributor to adverse outcomes including hospital associated functional decline, injurious falls, delirium, longer hospital stays and increased need for subacute care. Whilst activity and mobility programs have been shown to prevent some of these negative outcomes, published data consistently report that hospital inpatients spend 87-100% of their hospital stay sedentary. Application of mobility interventions are often hindered by a complex array of barriers at multiple levels.

Objectives: This session will summarise existing literature related to hospital associated functional decline, the prevalence of immobility in hospitals, and the common barriers that contribute to immobility from patient, staff and organisational perspectives. The session will present patient stories and data obtained from recent studies conducted across 10 medical wards in four hospitals in south-east Queensland. The evidence for successful strategies will also be presented with an emphasis on how physiotherapists can engage consumers, clinicians, managers and organisational leaders to promote mobility and foster change in their local setting.

- Physiotherapists are uniquely placed to lead mobility improvement
- Multi-professional teamwork is important for success
- Listening to patients and colleagues will inform successful improvement strategies
- Organisational leadership is critical
- Measurement is important to support mobility improvement and culture change



### Workforce planning for physiotherapists in the acute hospital setting

#### Thomas P<sup>1</sup>

<sup>1</sup>Royal Brisbane and Women's Hospital

Cardiorespiratory 12, M 3, October 7, 2023, 2:30 PM - 3:15 PM

Background. Workforce planning within acute hospital settings is complex, with many factors influencing the composition of healthcare teams. A lack of guidelines to support the role of different professions contributes to large heterogeneity in the composition of teams observed within clinical services. In the acute hospital setting, inadequate resourcing of physiotherapy staff may impact on the quality of care provided, patient flow and increase hospital-related complications. Resource limitations may also impact on patient or staff satisfaction.

Staffing must allow health professionals to fulfil expected clinical roles for a service and also meet operational, leadership and supervision requirements. Various models for workforce planning exist and may be applied in the acute hospital setting.

Objectives. To outline strategies models for workforce planning and development in the acute hospital setting.

- Staffing guidelines are important tools to guide resource allocation.
- Workforce planning must include recommendations for staffing that allow effective delivery of clinical services and allow staff to fulfill clinical governance and leadership roles.



## Working it "Our Way". Delivering culturally responsive therapy to families living with Machado Joseph Disease.

<u>Wunungmurra J<sup>1</sup>, Grootendorst A<sup>1</sup></u>

<sup>1</sup>MJD Foundation

Disability 2, P 3 & 4, October 5, 2023, 11:55 AM - 12:40 PM

What is our cultural lenses? How does this impact our understanding of best practice, how we structure our organization and deliver physiotherapy supports in cross cultural contexts?

In many communities across Australia, Indigenous people experience a high burden of disability however are often underserved by disability services. Limited understanding and consideration of how Indigenous people conceptualise and experience disability has historically hindered the development of accessible services that are appropriately responsive to the needs and lived realities of Indigenous people living with disabilities.

Engaging appropriately with Indigenous communities, families and individuals is crucial in order to build trust and understanding of disability service models and ensure that Indigenous people receive support that is tailored to their needs and cultural realities.

In this presentation, we will share lived experience, corporate knowledge and key findings from peer reviewed literature that shape the service delivery model of the Machado Joseph Disease (MJD) Foundation. The presentation will focus on the MJD foundation "our way" of working. "Our way" is a self-determination approach driven by the world view and preferred practices of the families we work with. These include the centrality of family and kinship relationships, as well as prioritising collective decision-making and place-based responses.

We hope this presentation will challenge people to think about how accessible their practice is to people living with disabilities from a cultural safety perspective, and provide an opportunity to reflect on culturally responsive ways of providing physiotherapy supports.



# Participation of people with disabilities across the lifespan: what does this mean for physiotherapy?

Johnston L<sup>1</sup>

<sup>1</sup>University of Queensland

Disability 4, P 10, October 5, 2023, 2:30 PM - 3:15 PM

Participation is considered the ultimate health outcome under the International Classification of Functioning Disability and Health. Physiotherapists play a key role in the inter-professional team when working with clients and families to achieve meaningful participation outcomes.

This presentation will showcase new research about the client- and caregiver-reported understanding of participation from infancy to adulthood; how the role of the individual and their caregivers changes in terms of participation-focused goal setting over the lifespan; consumer-based feedback about real-world participation experiences of adults and adolescents to determine factors that contribute to positive and negative experiences; home-based assessment of functional environments that facilitate participation; caregiver roles in facilitating participation for people with severe disabilities and impacts on caregiver health; and new insights into participation-focused interventions.



### Falls in older adults: evidence and implications

<u>Sherrington C<sup>1</sup></u> <sup>1</sup>University of Sydney

Gerontology 2, Great Hall 3, October 5, 2023, 11:55 AM - 12:40 PM

Background. Falls are rapidly increasing as a global public health problem with devastating consequences for individuals and health systems. Every day 364 Australians aged 65+ are hospitalised due to a fall.

Objectives. To overview current evidence for falls prevention in community, residential aged care and hospital settings. To summarise recommendations from the 2022 World Falls Guidelines and the upcoming Australian Falls Guidelines. To discuss the implications of this evidence for physiotherapists and the physiotherapy profession.

Key Practice Points.

• Participants will receive an update of current available evidence. Participants will be asked to consider the extent to which they are applying this evidence in daily practice and what more they could do to contribute to the prevention and rehabilitation of falls in older Australians.



# Challenges, solutions and successes of physiotherapy for people with dementia and their carers

#### <u>Hill K</u><sup>1</sup>

<sup>1</sup>Rehabilitation Ageing And Independent Living (RAIL) Research Centre, Monash University

Gerontology 3, M 3, October 5, 2023, 1:40 PM - 2:25 PM

Background/Aim: Current approaches to care for people with dementia focus largely on diagnosis and supportive care. At time of diagnosis, people living with dementia (PLWD) often have low levels of physical activity and increased falls risk, both which worsen over time. The aim of this presentation is to Change the focus for PLWD and their care-partners through adopting a positive, health promotion, reablement approach in which physiotherapists play a key role.

Design/Method: The presentation will provide a brief overview of research evidence with particular emphasis on physical activity, mobility and safety. Specific examples of recent/current research by our team will focus on exercise approaches, falls prevention, mobility safety, and care-partner health and wellbeing for PLWD.

Results: Research evidence is strengthening for the multiple health benefits (physical and cognitive) associated with some exercise approaches, including reduced falls for PLWD. Gait aids have been reported as a risk factor for falls in PLWD, however recent research by our team indicates that a different, extended approach to gait aid training can achieve safe mobility for PLWD. Interventions often require support by care-partners, but this additional role for care-partners may increase their stress, so need to be considered case-by-case. Some approaches involve the care-partners/care-recipient dyad, which can benefit both. Some interventions (eg exercise) may also be targeted specifically to the care-partner to improve their own health and wellbeing.

Conclusion/Key Practice Points:

- Physiotherapist have multiple key roles in improving health and wellbeing for PLWD, and their carepartners.
- Shared decision-making is essential to optimise success.



# Translating the world guidelines for falls prevention and management for older adults into practice

Haley M<sup>1</sup>

<sup>1</sup>Eastern Health

Gerontology 5B, M 1 & 2, October 6, 2023, 10:35 AM - 11:20 AM

Background: Translation of evidence to practice remains a challenge for researchers, healthcare management and clinicians. A 2012 study found that only 57% of adult Australians received appropriate, evidence-based care during health care encounters. Strategies to embed evidence quickly into clinical practice are important for optimal patient care and to avoid unnecessary costs of ineffective care.

Falls are the second leading cause of unintentional injury deaths worldwide and a major cause of hospitalisations worldwide. In 2022 the World Guidelines for Falls Prevention and Management for older adults were published by an international team of falls prevention researchers. In that same year over 3000 falls were experienced by patients in the six hospitals or accessing one of the numerous ambulatory services that make up Eastern Health (EH), a large Melbourne metropolitan health network. The challenge was to translate the guidelines into practice across this network, and so minimise falls.

Objectives:

- Conduct a gap analysis against the guidelines for EH and create an action plan to address the gaps identified
- Translate evidence and recommendations from the guidelines into practice at EH in a timely and effective manner
- Share strategies, resources and reflections of this evidence translation project with peers to support similar translation of evidence to practice in other health services

- The World Guidelines for Falls Prevention and Management can help to guide evidence-based practice in health settings
- Physiotherapists play an important role in translating evidence to practice in relation to falls prevention and management



### Opening our eyes to elder abuse

### Patterson K<sup>1</sup>

<sup>1</sup>Australian Human Rights Commission

Gerontology 7, P 3 & 4, October 6, 2023, 2:15 PM - 3:00 PM

Elder abuse experienced by an older person presenting to a health professional may be difficult to detect.

Abuse is stereotypically depicted as unexplainable bruising, but elder abuse can be insidious and pervasive. The harm being done to your patient or client is often by someone they know and trust, frequently an adult son or daughter. Elder abuse can take many forms including neglect, financial exploitation, physical violence, sexual abuse, and psychological abuse.

So how can you recognise elder abuse? What is the role of ageism as a prevalent underlying cause and how can we be proactive in supporting older people experiencing or at risk of abuse?



## Beyond the hype: real-world lessons for clinical practice from digital health innovation and artificial intelligence implementation in frontline services

### McPhail S<sup>2</sup>

<sup>1</sup>Australian Centre for Health Services Innovation and Centre for Healthcare Transformation, Queensland University of Technology, <sup>2</sup>Digital Health and Informatics Directorate, Metro South Hospital and Health Service

Gerontology 8, P 3 & 4, October 6, 2023, 3:35 PM - 4:20 PM

Artificial intelligence (AI), including machine learning (ML), has potential to revolutionise the way that healthcare is organised and delivered. However, realisation of benefit from digital transformation, and AI technologies in particular, in clinical contexts requires careful development, adaptation, adoption and maintenance processes that are more readily suited to some settings than others.

One area with great potential, and key advances already in the pipeline, is optimising health-related behaviours and clinical care that promotes healthy aging and minimising risk of harm.

Drawing on a range of recent and ongoing studies across the fields of digital health, this talk will summarise the current state-of-the-art (using non-technical language) and provide an overview of key areas for clinicians to build capacity in order to capitalise on upcoming advances in AI and ML assistive technologies to optimise health outcomes for people as they age.

This will include research related to wearable devices, virtual care and remote monitoring, integrated electronic medical records, big healthcare data, and systems of engagement for patients and clinicians. A series of illustrative case-studies will be used to highlight both the potential benefits of AI and complex issues surrounding use of AI in clinical practice.

The session will finish with a moderated panel discussion touching on topics related to safety, clinical effectiveness, governance and regulatory requirements, liability and social license.

Key Practice Points:

• Al and ML is not magic, can be understood by clinicians, and has great potential in the context of health-related behaviours, clinical practice and injury prevention as people age.



### Inflammageing: An update on mechanisms and management

<u>Gordon E<sup>1</sup></u> <sup>1</sup>The University Of Queensland

Gerontology 11, Great Hall 4, October 7, 2023, 1:40 PM - 2:25 PM

Some people remain physically active and socially engaged as they grow older; others experience chronic comorbidities and decline in functional and cognitive abilities. Since these differences are not accurately captured by chronological age alone, gerontologists are increasingly using biological age or frailty to describe patients' health status. This presentation will explore the pathways to healthy ageing vs frailty, with a focus on the role of inflammation.

Several studies have reported a cross-sectional association between high levels of inflammatory markers and frailty in older people. Here, explanations for this association will be considered. Firstly, inflammation may be part of the driving force towards disability, a process termed "inflamm-ageing". Increased levels of proinflammatory cytokines have been linked to age-related conditions such as dementia and atherosclerosis and the association of inflammation with obesity, smoking and physical inactivity may constitute a link between life-style factors and frailty development. Alternatively, inflammation may be an epi-phenomenon, with the key causal mechanism being an entirely different process, such as oxidative stress. It has also been hypothesised that inflammation may be a compensatory response, triggered by viral antigens or other subclinical disease.

If inflammageing is a causative process, it may be a target for intervention. This presentation will provide an overview of pharmacological and non-pharmacological strategies which may reduce inflammation, including the emerging evidence that exercise programs can impact frailty pathophysiology.



### Lifestyle medicine in mental health care

### Manger S<sup>1</sup>

<sup>1</sup>James Cook University, <sup>2</sup>Australasian Society of Lifestyle Medicine

Mental Health 1, P 7, October 5, 2023, 11:05 AM - 11:50 AM

What kind of mental health care would you want for yourself and your loved ones? What will genuinely help people not only treat their mental illness, but also lead to genuine whole of person wellbeing, betterment and engagement more broadly? In this talk Dr Sam Manger will review the latest evidence and physiological mechanisms for the growing field of lifestyle medicine in mental health care, termed lifestyle psychiatry. This will include nutrition, fasting, movement, sleep, mind-body approaches, substance and screen reduction, social connection, connection with the natural world and health coaching. He will also discuss the need for new models of care in mental health that are interdisciplinary and innovative to address the growing burden of mental illness and its common physical co-morbidities.

Learning outcomes include:

- 1. Define lifestyle medicine and lifestyle psychiatry
- 2. Examine the need for whole of person approaches to mental health care
- 3. Analyse the physiological and pathological mechanisms for common chronic mental health disorders
- 4. Evaluate the evidence base for lifestyle medicine in common chronic mental health disorders
- 5. Explore emerging models of mental health care



### How meditation relaxes deeply engrained habits

Laukkonen R<sup>1</sup> <sup>1</sup>Southern Cross University

Mental Health 2, P 7, October 5, 2023, 11:55 AM - 12:40 PM

Research indicates that meditation can reduce habitual responding, diminish the intensity of pain, override deeply ingrained beliefs and expectations (e.g., self-processing), and even shut down conscious awareness. Our theoretical work on the mechanisms of meditation proposes that this flexibility is achieved through the dereification and deconstruction of abstract processing in the mind and brain. In this talk, I will review this evidence and present some of the radical changes to cognition that can be achieved by expert meditators. Ultimately, I propose that the brain is more plastic than previously thought and that meditation may be a powerful tool for 'letting go' of challenging past experiences that are reinforced by, and engrained in, the habits of both body and mind.

- The neuroscience of meditation reveals that the brain is more plastic than previously thought
- Flexibility of mind and body can be achieved by reducing abstraction
- Coming into contact with the present moment automatically reduces habits
- Through the deliberate relaxation of habits it is possible to release challenging past experiences



# Restoring brain-body equilibrium in chronic pain & mental health conditions with vestibulocortical stimulation therapy

### <u>**Ngo T**</u><sup>1</sup>, Kaplan M<sup>2</sup>

RECOVER Injury Research Centre (UQ & STARS), <sup>2</sup>Division of Rheumatology, Mount Sinai Hospital

Mental Health 7, P 9, October 6, 2023, 2:15 PM - 3:00 PM

The caloric test — via the vestibulo-ocular reflex — is a simple, inexpensive, non-invasive, mainstream neurodiagnostic technique with a long standing safety profile. Over recent decades, its vestibulocortical stimulation (VCS) qualities have also shown remarkable analgesic effects in adults with persistent pain syndromes along with multimodal improvements — across mood, attention, awareness/insight & mobility — in other neurological and psychiatric conditions (e.g., bipolar & schizophrenia spectrum disorders; minimally conscious state; Parkinson's disease).

This talk will provide an overview of VCS techniques, their therapeutic research applications & recent advances — such as changing clinical practice in fibromyalgia treatment and a paediatric precedent in preventing chronic pain. It will be further contextualised within a body of work spanning >50 years showing independent converging evidence for a fundamental brain switching model of behavioural (dys)regulation across healthy & patient populations. By capitalising on such endogenous and highly conserved restorative-function circuits, greater investment in public-private R&D partnerships (e.g., clinical trials) will help to accelerate new safe & effective technologies and preventative health benefits for society.

- This talk will demonstrate an example of interdisciplinary synthesis and challenges traditional siloed education & training approaches to help deliver more meaningful advances in understanding chronic illness.
- It cuts across the large majority of National Groups given the balance system's foundational nature and hence its other wide-ranging & direct clinical translation applications, e.g., Advanced Practice (incl. ED); Cancer, Palliative Care & Lymphoedema; Disability; Gerontology; Occupational Health; Orthopaedic; Paediatric; Sports & Exercise; Women's, Men's & Pelvic Health.



### Lateral elbow tendinopathy: understanding the challenging presentations

#### <u>Vuvan V<sup>1</sup></u>

<sup>1</sup>School of Health and Rehabilitation Sciences, The University Of Queensland

Musculoskeletal 2, M 1 & 2, October 5, 2023, 11:55 AM - 12:40 PM

Lateral elbow tendinopathy (LET) is the most common overuse condition affecting the elbow. The condition can often be challenging to manage, particularly in individuals with severe and persistent symptoms. A better understanding of the features that distinguish those with severe and persistent LET is needed to improve clinical management and facilitate more targeted treatment for this subset of individuals.

This presentation will provide a synthesis of research evidence aimed at understanding the complexities associated with LET. It will discuss the sensory, motor, psychological and comorbid pain features involved in the pathophysiology of LET, in particular those associated with pain, disability and prognosis, and will offer suggestions for translating current knowledge into clinical practice.

#### **Key Practice Points:**

At the conclusion of this session, participants will:

- Be better equipped to recognise specific features that differentiate individuals with severe and persistent LET. This understanding will aid in the accurate assessment and classification of individuals with LET.
- Gain insight into the potential mechanisms contributing to challenging LET presentations which will assist in formulating targeted treatment approaches.
- Learn how to adapt treatment plans based on individual patient characteristics and needs to optimise outcomes for individuals with LET.



# A genetic signature for chronic pain—using genome-wide association data to reveal mechanisms of chronic pain

#### Farrell S<sup>1</sup>

<sup>1</sup>The University Of Queensland

Musculoskeletal 6A, P 1, October 6, 2023, 11:25 AM - 12:10 PM

Background: Chronic pain conditions are underpinned by multifactorial and heterogenous pathophysiology, comprising biological, psychological and sociodemographic factors. Medical and psychological conditions are commonly co-morbid to chronic pain. This complexity presents a challenge in disentangling aetiology of chronic pain conditions.

Objectives: In a series of papers, our team leveraged large-scale genome-wide association study data for chronic pain conditions and >1,400 biopsychosocial traits, to explore: (i) genetic variants associated with 8 types of chronic pain (N=4,037-79,089 cases, N=239,125 controls), (ii) shared genetic bases to chronic pain conditions and >1,400 other traits, and (iii) genetic evidence for causal relationships between chronic pain and biopsychosocial traits.

Results: Key findings from our program include: (i) demonstration of a genetic signature for chronic pain, shared across pain types, (ii) overlapping genetic variants partly explain co-morbidity of chronic pain and biopsychosocial traits (N>5,900 genetic correlations), and (iii) genetic modelling implicates causal impacts of a range of traits on chronic pain conditions.

- Statistical genetics can provide physiotherapists with clinically applicable insight on mechanisms of chronic pain—far beyond simply identifying genes or variants associated with pain conditions.
- Shared genetic variants exist across chronic pain conditions, representing a 'genetic signature'. Comorbidity of chronic pain, medical (e.g., cardiovascular, respiratory) and psychological (e.g., depression, anxiety) conditions can be partly explained by shared genetics.
- Our demonstrated causal impacts of biological (e.g., systemic inflammation), psychological (e.g., depression, trauma) and socioeconomic (e.g., occupation) traits on chronic pain can be targeted in clinical management, including risk stratification and treatment.



# An update on entrapment and polyneuropathies: implications for diagnosis and management (and life)

<u>Coppieters M<sup>1</sup></u> <sup>1</sup>Griffith University

Musculoskeletal 7, Great Hall 4, October 6, 2023, 2:15 PM - 3:00 PM

Our understanding of the pathophysiology of neuropathies has become increasingly detailed, but also increasingly complex. A superficial glance of the literature suggests that few tests appear clinically useful, and even the value of well-established screening questionnaires is now being questioned. Moreover, it appears that the diagnosis of neuropathic pain "is reserved to a small elite of highly trained neurologists". Apart from the statement about complexity, none of these observations is probably accurate.

The aim of this keynote presentation is to dive into clinically relevant pathophysiology of peripheral neuropathies, and translate this to understanding diagnostic limitations and opportunities, and reappreciate clinical tests and novel treatment options for people with peripheral neuropathies. Studying systemic neuropathies (such as diabetic neuropathy) and treatment-related neuropathies (such as chemotherapy-induced neuropathy) has informed our understanding of entrapment neuropathies.

We will focus on the neuro-immune system, the complementary value of diagnostic and technical investigations, and efficacy and working mechanisms of physiotherapeutic interventions and aerobic exercises for people with entrapment neuropathies. There will be a special interest for safety and the value of proposed frameworks for cervical manual therapy and exercise.



# Responding to the global burden of musculoskeletal conditions, it's everyone's responsibility.

### Finucane L<sup>1</sup>

<sup>1</sup>Sussex MSK Partnership, <sup>2</sup>St. Georges University

Musculoskeletal 9A, Great Hall 3, October 7, 2023, 10:35 AM - 11:35 AM

Musculoskeletal conditions are one of the leading contributors to disability worldwide with an estimated 1.71 billion people affected. Low back pain is identified as the single condition responsible for the greatest disability in almost all countries. In high-income countries, MSK conditions are responsible for the greatest share of health system expenditure. Of all conditions, the need for rehabilitation globally is greatest for MSK conditions. This figure of 1.7 billion is set to rise on a backdrop of an ageing population and increasing prevalence of non-communicable diseases such as diabetes, cardiovascular disease, cancer and chronic respiratory disease (Briggs et al 2021).

This presentation will examine what needs to change if we want to impact on the global picture. It will consider the shift the profession will need to make and become a workforce that provides flexible and holistic healthcare that many nation states are now calling for from their health professionals. It will consider how individual practitioners can take a solution-oriented approach to this complex problem within clinical practice.



# Pathways towards working inclusively with LGBTQIA+ clients: where to from here?

#### Ross M<sup>1</sup>

<sup>1</sup>The University Of Queensland

Musculoskeletal 10B, Great Hall 3, October 7, 2023, 11:40 AM - 12:40 PM

Background: Individuals identifying as lesbian, gay, bisexual, transgender, queer, intersex, asexual or other related identities (LGBTQIA+) experience health disparities, including poor experiences when accessing physiotherapy.

Objectives: This session will explore how the physiotherapy profession enacts and constructs gender and sexuality from the perspectives of physiotherapists who identify as LGBTQIA+ and through analysis of qualitative data from physiotherapists currently practicing in Australia.

Results: Gender and sexuality are constructed through cultural norms that may not promote inclusion and belonging for individuals who identify as LGBTQIA+. Professionalism in physiotherapy is based on constrained ideas drawn from white, Western and hetero-/cis-normative patterns of behaviour and self-expression. Physiotherapists approach gender and sexual orientation in three distinct ways and demonstrate a range of knowledge and attitudes about working with individuals from LGBTQIA+ communities. Higher levels of knowledge and understanding of gender identity and sexual orientation are demonstrated when physiotherapists consider these concepts relevant to their practice and when a biopsychosocial, rather than a biomedical, approach is taken to physiotherapy.

- Cultural norms in physiotherapy may need to be reconceptualised to promote diversity and inclusion
- Knowledge gaps about the relevance of gender identity and sexual orientation in a physiotherapy context exist
- Approaches to consider include upskilling physiotherapists in promoting a culturally safe and reflexive practice environment



# A ruptured ACL can heal without surgery: implications for physiotherapy practice

### Filbay S<sup>1</sup>

<sup>1</sup>Centre for Health Exercise and Sports Medicine, Department of Physiotherapy, University of Melbourne

Musculoskeletal 11A, P 3 & 4, October 7, 2023, 1:40 PM - 2:25 PM

Most physiotherapists were taught that a ruptured ACL has very limited healing capacity. This assumption has shaped current practice. In Australia, 90% of people with ACL rupture undergo ACL reconstruction. Current treatments for ACL injury often result in poor long-term outcomes, including further knee injury, knee osteoarthritis, poor quality of life and activity limitations. This presentation will provide evidence that ACL ruptures can heal without ACL surgery and that healing of ACL rupture may lead to favourable patient outcomes.

Our analysis of the KANON clinical trial found that 1 in 3 people with ACL rupture managed with initial exercise-based rehabilitation achieved ACL healing as seen on MRI 2 years after injury. People with healing on 2-year MRI reported better patient-reported outcomes than those with no healing on MRI, and better outcomes than people managed with ACL reconstruction.

This presentation will introduce a novel non-surgical bracing intervention designed to facilitate ACL healing, the Cross Bracing Protocol. Our analysis of the first 80 patients managed with the Cross Bracing Protocol found that 90% had ACL healing on 3-month MRI, and those with more ACL healing on MRI reported better 12-month outcomes including knee function, quality of life and return to sport.

- When discussing ACL injury management options, physiotherapists should inform patients of the possibility of ACL healing, acknowledging the knowledge gaps.
- We will discuss how to present ACL injury management options to patients to allow them to make an informed treatment decision that aligns with their preferences and values.



# Telehealth and technology in stroke recovery, rehabilitation and secondary prevention

### English C<sup>1</sup>

<sup>1</sup>University of Newcastle

Neurology 2, Great Hall 4, October 5, 2023, 11:55 AM - 12:40 PM

Background: Telehealth and use of technology provides a number of potential advantages to the delivery of rehabilitation services. In a post-pandemic world, what is the future for telehealth and rehabilitation? What is the evidence base to support telehealth interventions? In stroke, can we provide effective and acceptable secondary prevention services using telehealth and technology?

Objectives: This talk will cover; the evidence base for telehealth-delivered rehabilitation interventions, recommendations for consistent terminology and future research. The importance of the voice of people with lived experience and consumer co-design in research will also be discussed. Specific to stroke secondary prevention, the results from a recent clinical telehealth trial of telehealth-delivered physical activity and dietary interventions will be presented. The development and early findings from the "i-REBOUND after stroke" website will also be presented.

Key Practice Points:

- We need to move beyond comparing telehealth to in-person interventions and toward carefully designed implementation trials.
- Genuine consumer partnerships and co-design is essential; Integrated Knowledge Translation is a useful framework.
- It is safe and feasible to provide supervised exercise and diet interventions to people with stroke via telehealth.
- Our co-designed "i-REBOUND" website provides evidence-based resources and has reached almost 20,000 people worldwide.



Evidence-based physiotherapy for people with spinal cord injuries: our program of generating, collating and disseminating the evidenc

<u>**Harvey L**</u><sup>1</sup> <sup>1</sup>University of Sydney

Neurology 3, Great Hall 3, October 5, 2023, 1:40 PM - 2:25 PM

This talk will summarise the work of colleagues and I directed at generating, collating and disseminating the evidence about the most effective physiotherapy treatments for people with spinal cord injuries. We generate evidence by conducting pragmatic randomised controlled trials.

Our focus is always on minimising bias to get closer to the truth. These trials are simple in design and not only provide answers to important clinical questions but also provide research training opportunities for clinicians. In more recent years we have increasingly collaborated with international sites across Europe and Asia. We collate evidence by conducting systematic reviews. These include reviews on most of the commonly applied interventions for people with SCI including treadmill gait training and interventions to decrease spasticity, pain and other impairments. We (in collaboration with many others) have recently developed Australian-NZ clinical practice guidelines. These provide a very powerful way of pooling the evidence in an easily digestible way for clinicians and students.

Alongside this work we continue to develop resources and strategies to disseminate evidence. For example, we have developed online training modules for physiotherapists and physiotherapy students (www.elearnSCl.org). These have been embedded into Massive Open Online Courses. Our 2022 MOOC attracted 25,000 participants. We also continue to develop www.physiotherapyexercises.com as a tangible and practical way of disseminating evidence about appropriate exercises and treatments for people with SCI (and other injuries and disabilities). I will briefly discuss all of this work with the aim of explaining an overall strategy for putting evidence into practice.



## Igniting future practice with a scientific approach to implementation

### Francis J<sup>2</sup>

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Neurology 5A, M 3, October 6, 2023, 10:35 AM - 11:20 AM

Background: Across clinical areas, throughout health systems and over decades, audits show that healthcare practice falls short of the standards to which staff aspire. Clinical effectiveness evidence constantly emerges and morphs, but changing practice in response to this evidence is challenging. Much excellent intervention research is wasted through lack of adoption into healthcare. Common approaches such as continuing professional education, clinical guidelines and policy directives may help but are usually insufficient on their own to change practice at the point of care. Implementation science has developed over the past 30 years and aims to match evidence-based healthcare with evidence-based implementation. But what does this evidence look like and how can it be applied to physiotherapy practice? How can we identify, and address, care gaps in this field?

Objectives: To present a rationale for implementation science in physiotherapy research and practice; describe a scientific approach to implementation and propose implications for physiotherapy practice.

Argument: This presentation focuses on what a scientific approach to implementation of evidence into practice looks like, for health systems, organisations, managers, teams and individual practitioners. It draws on 'complex intervention' methods, proposing that we need to theorize proposed mechanisms of (practice) change, conduct robust and replicable empirical research to evaluate implementation strategies, strengthen existing approaches to intervention adaptation and co-design, retain our skepticism about what works, and build a cumulative science of implementation.

**Key Practice Points:** 

• Practitioner implementation scientists are needed at all levels of healthcare systems to support innovation, reduce low-value care and address health inequities.



# Stronger together. Harnessing the power of international collaborations to drive change

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Neurology 8A, Great Hall 3, October 6, 2023, 3:35 PM - 4:20 PM

Background Research funding is scarce, particularly for complex behavioural interventions and allied health interventions. This means that research efforts to address complex issues in physiotherapy and rehabilitation practice are often fragmented, and limited to resources and time-frames available (for example PhD / graduate research programs) rather than aspirational. There is opportunities lost by working in silos, and opportunities to gain by working collaboratively.

Objectives: This talk will focus on the gains that can be made working together, using examples from a range of both formal and informal collaboration groups including the Stroke Recovery and Rehabilitation Roundtables, International Stroke Recovery and Rehabilitation Alliance, the UK INSPIRE network, the ACTIONS Collaboration and others.

Key Practice points:

- Much can be gained through research collaboration
- Successful collaborations have clear rules of engagement, clear expectations, excellent communication structures and shared vision of success.
- Ethical and integrity issues related to data sharing and privacy are complex, but not insurmountable.
- Diversity in teams produces the best outcomes



### Flexible exercise participation program for people with Multiple Sclerosis

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Neurology 8B, P 6, October 6, 2023, 3:35 PM - 4:20 PM

Multiple sclerosis (MS) hits at a point in life when many people are engaged in employment, family activities, sport and exercise. Individuals with MS wishing to have an active lifestyle seek to fit different forms of exercise into their routine, including sporting activities such as running, football or cycling. However, interventions to support and progress participation in high-level mobility activities are lacking. Many are concerned about the impact that activity or exercise will have on fatigue and have difficulty finding the right balance between too much and too little exercise.

With consumer input, a flexible exercise participation program (FEPP) was developed to enable individuals with minimal disability from MS, participate in an exercise or sport of their choice. The flexibility of the FEPP provided the ability to vary duration, frequency and intensity of exercise depending on individual energy levels. Remote health professional support, using behaviour change techniques, was provided to assist achievement of exercise goals across the 12-week intervention.

Trial feasibility was confirmed via measures of process, resources, management and scientific safety. FEPP feasibility was confirmed by the participants' ability to modify and progress exercise participation and achievement of goals. Participants valued the flexibility of the individualised program, much of which demanded a high level of mobility. Health professionals can set the bar high and enable individuals with MS to maximise their potential in exercise and sport. The FEPP as a mechanism to help provide this support is safe, feasible and highly acceptable to individuals with minimal disability from MS.



## Task-specific resistance training for mobility in acquired brain injury

### Williams G<sup>1,2</sup>

<sup>1</sup>Epworth Healthcare, <sup>2</sup>The University of Melbourne

Neurology 11B, Great Hall 1 & 2, October 7, 2023, 1:40 PM - 2:25 PM

Despite the significant improvements in leg muscle strength obtained in numerous studies conducted in people with adult-onset neurological conditions, mobility has not improved. Several large systematic reviews have found the low task-specificity of the exercises prescribed to improve mobility in RCTs may have been responsible for the poor translation to improved mobility. The American College of Sports Medicine (ACSM) outlines task-specific criteria which include factors such as the muscle's role and action, the speed and range of movement, and the intensity and volume of training. These are all important factors to consider when prescribing resistance exercises to improve function (i.e. walking), as opposed to conventional resistance training which aims to improve peak force.

A systematic review reported that task-specific resistance training is safe and feasible for people with neurological conditions, and two RCTs have recently applied task-specific resistance training; a large RCT in TBI and a pilot RCT in stroke. In TBI, training was implemented in 144 people 3 x week for 12 weeks. In comparison to usual care, the experimental group scored 3/54 points (95% CI 0 to 6) higher on the HiMAT, and the intervention produced an extra 6 points (95% CI 1 to 10) on the HiMAT for those with lower baseline mobility. In stroke, a 6-week program of task-specific resistance training (n=30) reported a significant between-group change favouring the intervention group for self-selected walking speed (mean difference=0.31m/s). Task-specific resistance training is a safe and effective intervention to improve weakness and mobility following acquired brain injury.



## Improving physical activity in people with Parkinson's disease

#### Brauer S<sup>1</sup>

<sup>1</sup>School of Health & Rehabilitation Sciences, The University Of Queensland

Neurology 12B, Great Hall 1 & 2, October 7, 2023, 2:30 PM - 3:15 PM

Background: Despite pharmacological intervention, people with Parkinson's disease show a steady decline in physical functioning due to cumulative deficits in motor and non-motor impairments. Maintaining sufficient levels of physical activity contributes to preserving body functions and minimising the impact of disease processes. Physical activity levels however are low in people with Parkinson's disease and decline over time without intervention. Exercise-based interventions can lead to short-term improvements in physical activity, and associated gait and functional performance in people with Parkinson's disease, however sustained changes are difficult to achieve as physical activity behaviour is complex and multifactorial in healthy adults, with added complications with age and Parkinson's disease.

Objectives: Latest evidence on motor and non-motor problems that impact physical activity and exercise behaviour across the disease process will be outlined, and measurement tools to best measure, monitor and motivate to modify and sustain positive exercise and physical activity behaviours will be discussed. Recent trials of new intervention approaches that address both the capacity to engage in physical activity and self-management strategies to change and maintain exercise behaviours will be discussed to address.

Key Practice points:

- Awareness of the interrelated factors impacting physical activity behaviour can aid planning assessment and management approaches
- Understanding tools to best measure physical activity will assist physiotherapists to monitor and motivate people with Parkinson's disease
- A number of recent trials have evaluated the efficacy of different approaches to improve physical activity in people with Parkinson's disease



# Contemporary legislation for psychosocial risks at work and relation to psychological and physical harm outcomes

### Popple S<sup>1</sup>

<sup>1</sup>Oir

### Occupational Health 1, P 3 & 4, October 5, 2023, 11:05 AM - 11:50 AM

Psychosocial hazards are now coming to the fore of national and international work health and safety regulator efforts, despite long standing legislation that stipulates BOTH physical and psychosocial hazards must be managed at work. Psychosocial hazards have the propensity to cause psychological and physical harm and as such, are nominated as a high priority nationally and across many WHS jurisdictions. Work health and safety obligations to ensure that psychosocial hazards at work are effectively managed require working through the same four-step risk management process, including: identify hazard/s (common psychosocial hazards), assess risks, control those risks, and review the controls in place to determine if you have managed them 'so far as is reasonably practicable.

Many organisations are doing little for their psychosocial work risks and there is much work to improve health and safety for our workers and as the growing evidence is demonstrating, increasing the effectiveness and efficiencies of Australian businesses. This talk will outline the context for heightened legislation across Australia and what Codes of Practice and Regulations highlight to all duty holders.

### The effect of heat on workers' health and productivity

#### Rothmore P<sup>1</sup>

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Occupational Health 2, P 10, October 5, 2023, 11:55 AM - 12:40 PM

Climate change has led to a significant rise in the global mean temperature, leading to more frequent and severe heatwaves. These have, and will continue, to cause adverse effects on human health. Research has consistently demonstrated that extreme heat negatively impacts outdoor workers' productivity, work capacity, health and wellbeing. Outdoor workers are particularly susceptible to these negative impacts of heat, due to workplace heat exposure, increased metabolic heat production due to performing physical work, and requirements to wear uniforms or personal protective equipment that may reduce heat convection and sweat evaporation.

Currently, very little information is available on the appropriate management of outdoor workers during heatwave conditions. While maximum daily temperatures, as forecast by the Bureau of Meteorology, have traditionally been used to provide guidance to managers, these do not always accurately reflect local environmental conditions. Importantly, heat can have negative impacts on productivity, health and wellbeing for outdoor workers performing physically demanding tasks well before temperature becomes extreme. These factors add a further layer of complexity for physiotherapists seeking to develop workplace injury prevention and management strategies for affected industries and workers. This presentation will outline the current scientific evidence on the relationship between heat and work injury and describe a methodological approach used to identify, assess and control exposure in a range of outdoor workgroups.



# Promoting the value of good work – an important role for occupational physiotherapists in a post-pandemic world.

### Straker L<sup>1</sup>

<sup>1</sup>Curtin University

Occupational Health 5, Great Hall 1 & 2, October 6, 2023, 10:35 AM - 11:20 AM

Societal trends this century such as lower birth rates, increased morbidity, and precarious work have been overlaid by 3 years of disruptions related to COVID-19. Many workers and organisations have been reassessing the value of work. For society to be sustainable it needs to maintain a productive workforce. Occupational physiotherapists have an important role in supporting good work design to sustain both young and older workers.

Physiotherapists therefore can contribute positively to the attainment of the United Nations Sustainable Development goals, especially #3 health and #8 decent work.

This presentation will provide a stimulus for practitioners, policy makers and researchers to consider key societal trends along with how the physical and psychosocial aspects of work should be matched with individual worker capacity.



## Characteristics of working from home and the impact on work and health outcomes in knowledge workers

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Occupational Health 9, P 3 & 4, October 7, 2023, 10:35 AM - 11:35 AM

Aim: To explore environmental and work conditions, health, and productivity experienced by knowledge workers when working from home.

Design: Prospective longitudinal cohort study.

Method: Knowledge workers in the US and Australia were surveyed across 2021-22. Factors explored were time spent working from home, environmental (e.g. home desk setup), organisational (e.g. schedule control), and psychological (e.g. basic psychological needs). Outcomes explored were physical (e.g. pain) and mental health (e.g. burnout), work (e.g. productivity), and health behaviours (e.g. sedentary behaviour).

Results: At baseline, n=381 (54% Australian) completed the survey. Participants conducted all (29%), some (hybrid, 56%), or none of their work from home (15%). Laptops (87%) and adjustable chairs (65%) were common at home. Compared to those who worked solely in the workplace or at home, hybrid workers had the highest levels of schedule control, the greatest satisfaction of basic psychological needs, and the lowest level of burnout (all p<0.05). Prevalence of neck/shoulder (72%) and low back pain (66%) were similar across groups. Work productivity at home was similar for workers who did some or all of their work at home. Sitting time was highest (90% of work day) in those who worked solely from home compared to hybrid workers (77%; p<0.05).

Conclusion: Hybrid work remains a preference for knowledge workers, and brings challenges and new opportunities for employers and clinicians to support wellbeing and productivity.

Key Practice Points:

- Knowledge workers are using hybrid work arrangements
- Programs that support worker health and wellbeing should be adaptable to different working environments



## Short-stay joint replacement models of care in Australia

<u>Ackerman I<sup>1</sup></u> <sup>1</sup>Monash University

Orthopaedic 3, P 3 & 4, October 5, 2023, 1:40 PM - 2:25 PM

While joint replacement surgery is an effective treatment for end-stage osteoarthritis, forecast growth in surgical rates will undoubtedly place considerable strain on the Australian health system. Given an ageing population plus the enduring impact of COVID-related restrictions on elective surgery, our capacity to meet expected joint replacement demand requires safe, efficient models of care. Short-stay joint replacement programs (also known as 'fast track' or 'rapid recovery' programs) have been introduced in many countries but are not common in Australia and implementation challenges are evident.

This presentation will provide an overview of recent research designed to address current knowledge gaps and guide future implementation initiatives, specifically:

- A systematic review of contemporary evidence for short-stay joint replacement programs, focusing on optimal patient selection, safety considerations, and barriers to implementation and sustainability
- A national stakeholder survey of the acceptability and feasibility of short-stay joint replacement programs, current practices, and barriers and enablers to implementation and sustainability
- A budget impact analysis of the cost savings and other impacts that could be achieved by implementing short stay joint replacement models of care across Australia



## Opioids and arthroplasty: past, present, future

Naylor J<sup>1</sup> <sup>1</sup>SWSLHD

Orthopaedic 4, P 3 & 4, October 5, 2023, 2:30 PM - 3:15 PM

Over-prescribing opioids for chronic non-cancer musculoskeletal pain and acute post-surgical pain helped fuel the opioid epidemic originating in the 1990s. Since 2010, observations mainly from US and retrospective studies have demonstrated associations between chronic opioid use pre-total knee or hip arthroplasty (TKA, THA) and poorer outcomes post-surgery. These associations are particularly concerning given we now know they could be avoided as chronic opioid use is difficult to justify for chronic musculoskeletal pain including for end-stage osteoarthritis. Opioids provide only small benefits for pain and function over placebo for people with chronic non-cancer pain, and potentially similar benefit to non-opioid alternatives.

Beyond avoidance of opioids altogether, opioid tapering prior to TKA or THA is recommended as a strategy to minimize the harms of chronic opioid use. In the absence of any high-level evidence concerning tapering pre-arthroplasty, our group conducted a pilot randomized trial to evaluate a pharmacy-led opioid tapering program. The success of the program has led to the development of a definitive trial, currently underway and involving 12 hospitals. Our world-first observations suggest pharmacy-led tapering may be a viable alternative to GP-led tapering or pain clinic programs, particularly in light of the well-known access issues to such programs.

Physiotherapists are well-positioned to identify potentially inappropriate opioid use and are often charged with educating patients about their analgesic options. As such, an awareness of both the harms of opioid use and of opioid minimization strategies both pre- and post-operatively for people undergoing elective surgeries are essential parts of our evidence-based care.



# 'A social activity that happens in the gym' – rethinking physical activity programs for adolescents and young adults with disability

<u>Shields N<sup>1</sup></u> <sup>1</sup>La Trobe University

Paediatric 1, M 3, October 5, 2023, 11:05 AM - 11:50 AM

Increasing participation in physical activity is important for adolescents and young adults with disability as they are less active than guidelines recommend and so are at high risk of developing secondary health conditions. Adolescence and young adulthood coincide with a sharp decline in physical activity and with reduced access to support services that facilitate community participation.

Not participating in community-based physical activities means young people with disability miss opportunities for social connection in addition to missing out on physical and mental health benefits. Young people with disability know physical activity is important and value being involved in their communities but experience environmental barriers to being active, particularly a lack of social support.

This keynote will explore taking exercise from clinical into mainstream settings. It will focus on community gym venues - a socially meaningful setting for those with disability, and the use of social supports – a known enabler of physical activity for this group.

Exemplars of physical activity programs implemented in community settings will be discussed including FitSkills, a physical activity program that matches a young person with disability with a volunteer university student mentor from a health discipline and the pair exercise together at their local gym over 12 weeks. The role of physiotherapists in facilitating the participation of young people with disability in physical activity will also be discussed, with an emphasis on how clinicians can implement the available evidence-base in practice.



### Clinical internships - a win win scenario

Hancock J<sup>1</sup> <sup>1</sup>MQ Health Kids

Paediatric 5, P 9, October 6, 2023, 10:35 AM - 11:20 AM

Clinical educators strive to provide an optimal learning environment for students, to develop clinical skills and professional behaviours as a foundation for students' future career.

Providing this environment can be challenging in a private practice setting where consumers are paying for services and their needs are paramount. Physiotherapists in private practice are also balancing competing needs including clinical caseload, supporting staff, and managing a business.

MQ Health Kids is a paediatric multidisciplinary service with a unique model. It is a private service and a clinic of MQ Health, Macquarie University. The service has obligations to children and families of the service, the expected responsibilities of a private practice, and facilitates student placements and observation sessions (physiotherapy, medical and other). Physiotherapists also teach and lecture in their area of clinical expertise. We offer 6-month clinical internships for Physiotherapy students in their final semester. The internship includes completion of a research project in conjunction with the academic team of the University.

Objectives:

- Describe how MQH Kids facilitates Clinical Internships.
- Describe the outcomes of Internships for students, consumers and MQ Health Kids.

Key Practice Points:

- Clinical internships can provide superior student learning, while maintaining high standards of clinical care and financial stability in a private setting.
- Students benefit from working with children for extended periods, developing a comprehensive understanding of paediatric clinical issues and management. They also work clinically alongside their tutors.
- MQH Kids has benefited from research opportunities, integration with the academic team, and student support to complete research projects.



# Earlier biomarkers of neurodevelopmental outcomes in very preterm born infants: the ppremo, prebo and prebo-6 cohort studies

### George J<sup>1</sup>

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Paediatric 6, Great Hall 4, October 6, 2023, 11:25 AM - 12:10 PM

Background: Infants born very preterm are at risk of adverse neurodevelopmental outcomes; 4 and 6 times more likely to experience motor delays and developmental coordination disorder respectively and 40 times more likely to be diagnosed with Cerebral Palsy compared to term born peers.

Objectives: Identify MRI and clinical biomarkers predictive of adverse outcomes in prospective cohort of infants born <31 weeks' gestation with structural and advanced diffusion brain MRI at 32 weeks postmenstrual age and term equivalent age (TEA). Concurrent clinical assessment included neurological, motor and neurobehavioural assessment and follow up at 1, 2 and 6 years of age included motor and cognitive outcomes.

Results: 269 infants [52% male, median gestation 28.7weeks (IQR 27.1-29.9), mean birthweight 1123g (306g)] underwent MRI at a median 32.1weeks (IQR 31.4-33.2) and 40.7weeks (n=234). General Movements assessment at 3-months corrected age showed strongest associations with 2-year motor outcomes. A combination of clinical and MRI findings predicted motor outcomes more strongly than either method alone. Hammersmith Neonatal Neurological Examination at TEA demonstrated strongest associations with 2-year cognitive outcome.

Conclusion/Key Practice Points:

- Early, accurate identification of infants at risk of adverse outcomes is critical to enable structured surveillance, early commencement of targeted interventions and provision of family supports.
- MRI and clinical assessment earlier than term age in very preterm infants is safe and increasingly available.
- Most children are discharged from hospital before term age.
- MRI and neurological assessment while the child is still in hospital, can provide earlier risk stratification and guide follow-up screening and intervention services.



## "Making a move" on function and participation in achondroplasia

#### Ireland P<sup>1</sup>

<sup>1</sup>Queensland Paediatric Rehabilitation Service

### Paediatric 9, P 1, October 7, 2023, 10:35 AM - 11:35 AM

Background: Achondroplasia is the most common form of skeletal dysplasia and presents with a number of medical complications and biomechanical features that impact upon the physiotherapy management and care for this group. Over the last two years, there have been significant efforts made to improve the level and consistency of multidisciplinary management for people with Achondroplasia, including the publication of International Consensus Statements on diagnososis, multidisciplinary management and care for individuals with achondroplasia (2022) and Australian Guidelines for the Management of Children with Achondroplasia (2023). The recent introduction of Vosoritide (Voxzogo) which is an analog of C-type natriuretic peptide that stimulates endochondral bone growth in children with achondroplasia, has the potential to significantly alter the natural history of achondroplasia.

Objectives: The objectives of this presentation is to discuss recent and ongoing research into the functional challenges, complications and symptoms described by people with achondroplasia and discuss key findings to be considered in physiotherapy practice. Discussion will include key information about the challenges of managing pain, fatigue and functional challenges in this population group and stimulate discussion regarding appropriate support and intervention strategies that may be useful.

Key Practice Points:

• Highlighting the challenges facing people with achondroplasia, recent research findings and opportunities facing physiotherapists working across sectors will create debate around "Making a Move" on Function and Participation in Achondroplasia.



# Consumer involvement: the why, how, when, and who of developing partnerships with consumers in research and practice

#### Wallen M<sup>1</sup>

<sup>1</sup>Australian Catholic University

Paediatric 11, P 3 & 4, October 7, 2023, 1:40 PM - 2:25 PM

Partnership is power. Partnerships enable clinicians and researchers to harness expertise we do not possess. This is power. This is power that ignites a spark in our clinical or research practice. Partnership empowers us to optimise service delivery and outcomes. Partnership enables us to carry out research that is meaningful to the community, targeted, readily translatable and impactful. But partnership requires vulnerability – a readiness to be open to others' perspectives and expertise, a willingness to divert from our discipline-centricity, a disposition to interrogate the power imbalances we construct between our professional-personae and those we call our patients, clients, participants, consumers and colleagues.

We are professionals with a commitment to excellence – we want to know how to ignite collaboration, what to do and how to do it well. Where do we start? Who are our partners? When do we engage in these partnerships? How do we establish and sustain partnerships? We will explore these questions in this presentation in the context of consumer involvement in research, specifically involvement of children, adolescents and adults with cerebral palsy as research partners. The presentation will be illuminated with real-life examples of consumer involvement spanning various options for partnership. We will navigate the concepts, considerations, challenges, costs and consequences. We will contemplate how these principles and practices can transfer to other areas of research and clinical practice, to ignite a spark in the future of your practice, to harness the power of partnership.



Machine learning for sensor-enabled activity recognition and habitual physical activity assessment in children and adolescents with neuro-impairment

### Trost S<sup>1</sup>

<sup>1</sup>The University of Queensland

Paediatric 12, P 3 & 4, October 7, 2023, 2:30 PM - 3:15 PM

Cerebral palsy (CP) is a complex life-long neurological condition causing permanent disorders to movement and posture. It is the most common cause of physical disability in childhood and is in the top 5 of the costliest conditions in Australia. Inadequate physical activity (PA) and poor fitness are major problems impacting the health and well-being of children with CP.

Children with CP frequently undergo therapeutic interventions and/or surgery to improve their mobility and increase habitual PA. The primary outcome measures used pre-post intervention are typically clinical tests of gross motor function or measures of functional capacity. None of these tests, however, measure PA performance. In short, the methodological challenges associated with measuring PA in children with CP in clinical settings have significantly hindered efforts to evaluate the short- and long-term effectiveness of such interventions.

Wearable sensors have become the method of choice for assessing habitual PA in children and youth. However, despite their widespread use among children with typical development, calibrating accelerometer output to units of energy expenditure or physical activity intensity in children with CP presents significant methodological challenges.

Artificial intelligence or "AI" methodologies, such as machine learning, provide an opportunity to substantially improve the accuracy of PA measurements in children with neuro-impairments. In this presentation I will overview our work related to developing and testing machine learning PA classification models for children with CP and discuss how these models can be incorporated into digital tools to help allied health practitioners monitor and promote healthy movement behaviours.



### New directions for psychologically informed management of low back pain

<u>Mcauley J</u><sup>2</sup> <sup>1</sup>UNSW Sydney , <sup>2</sup>NeuRA

Pain 1, Great Hall 3, October 5, 2023, 11:05 AM - 11:50 AM

Over the last 30 years there has been intensive research on the contribution of psychological factors to low back pain. It is widely accepted that psychological factors, "yellow flags", such as beliefs about pain, fear avoidance and catastrophising are major contributors to patient's pain and disability. Physiotherapists are encouraged to screen patients for the presence of the psychological factors and interventions that attempt to change these psychological factors are now used in clinical practice. Yet until recently there has been little evidence that trying to address psychological factors has lead to improved pain and disability for patients with low back pain.

This presentation will address some of the reasons why a clearer understanding of the influence of psychological factors on pain has not yet led to improved patient outcomes. Recently published randomised controlled trials for patients with chronic low back pain will be used to illustrate some of the complexities of adequately addressing psychological factors in clinical practice. The results of these trials will be used to provide a framework for identifying and targeting psychological factors most likely to lead to improved patient outcomes so that clinicians can more effectively manage low back pain.

## From "damaged machine parts" to "active bodies". Shifting the way we talk about musculoskeletal pain

### <u>Bunzli S</u><sup>1</sup>

<sup>1</sup>Griffith University, School of Health Sciences and Social Work, <sup>2</sup>Royal Brisbane and Women's Hospital

Pain 7, Great Hall 3, October 6, 2023, 2:15 PM - 3:00 PM

The way we talk about our health both shapes and reflects our health beliefs and behaviours. Aligning the way we talk with the scientific evidence-base is consistent with best practice in health communication. For example, think of the way "sun smart" messaging has overshadowed the "healthy tan".

In this talk, Dr Bunzli will present findings from her program of qualitative research studying the lived experiences of people with musculoskeletal pain, and draw on theories of health behaviour and communication to i) Describe common misconceptions about musculoskeletal pain that underlie unhelpful behavioural responses; ii) Describe the dominant impairment way of talking that perpetuates misconceptions about musculoskeletal pain and pain-related distress; iii) Present a clinically useful framework that promotes a participatory way of talking to empower people with musculoskeletal pain to improve their health and maintain "active bodies".



## Psychologically informed physiotherapy and persistent pain

**Daly A**<sup>1</sup> <sup>1</sup>The Paincare Collective

Pain 10, Great Hall 1 & 2, October 7, 2023, 11:40 AM - 12:40 PM

Is psychologically informed physiotherapy anything new? Well yes and no. In this talk Dr Anne Daly (Specialist Pain Physiotherapist) will present two recent case studies with people presenting with complex persistent pain problems. Anne will discuss techniques that she has practiced and refined under the supervision of a clinical psychologist during her specialisation studies and now utilises regularly in her clinical practice. The evidence associated with their use, as well as the actual outcomes for each example will also be discussed.

## Identifying patient characteristics influencing response to management of painful musculoskeletal disorders

### O'Leary S<sup>1,2</sup>

<sup>1</sup>University of Queensland, School of Health and Rehabilitation Sciences, <sup>2</sup>Physiotherapy Department, Royal Brisbane and Womens Hospital

Pain 12, P 1, October 7, 2023, 2:30 PM - 3:15 PM

This presentation considers clinical insights and challenges derived from studies attempting to identify patient characteristics that may influence response to non-surgical management of painful musculoskeletal conditions. Non-surgical management is usually the first line of care for these patients.

While evidence supports the benefits of non-surgical management, not all patients benefit, and treatment effects may be modest. It is therefore advantageous to be able to identify patient characteristics in the early phase of management that may indicate a probable poor response. In this scenario patients could be directed towards a more appropriate pathway of care earlier, or identified patient characteristics may guide a more tailored management approach, or at least patients may be more closely monitored.

While studies have identified patient characteristics associated with response to non-surgical management of painful musculoskeletal conditions, application of the findings of these studies to practice needs to be undertaken with caution. For example patient characteristics associated with an intervention response will be specific to the patient population, health service setting, and intervention type, of interest. Extrapolating findings to patients regarding their likely response to an intervention is potentially misleading if based on studies conducted in a different health setting (eg. primary versus tertiary), where marked variation in patient demographics, level of disability, and intervention content may exist.

This presentation will consider the insights and challenges when interpreting the meaningfulness of findings from studies of this nature which will include examples from studies undertaken in an advanced practice physiotherapist-led tertiary neurosurgical/orthopaedic public health service.



## Your career path to success: empowering careers and unlocking opportunities

### Felsher S, McLachlan A

Physiotherapy General 6, P 6, October 6, 2023, 11:25 AM - 12:10 PM

Physiotherapy is an exciting and rewarding career, but like any profession, it is not without its challenges to retain and provide opportunities for growth in an increasingly complex work landscape. It is this context in which the Australian Physiotherapy Association (APA) and Australian College of Physiotherapists (ACP) have been collaborating to develop a career pathway to empower and inspire a physiotherapist's lifelong learning journey. The Physiotherapy Career Pathway vision is simple: provide APA & ACP members with career pathways and programs that are accessible, achievable, flexible and equitable within a structured framework. The physiotherapist's goal is to work towards achieving the highest standards of clinical and professional excellence in their career pathway.

The Physiotherapy Career Pathway is designed around four (4) milestones - Foundation, Intermediate, Highly Developed (Titled Physiotherapist) and Expert (Fellow/Specialist). The pathway enables physiotherapists to map their own career journey either vertically or horizontally. Underpinning the career pathway is the Competence Framework (v7.1), which enables physiotherapists to map their career goals against a progressive development of skills and knowledge.

In this session, you will hear from physiotherapists who have used the Physiotherapy Career Pathway and Competence Framework to navigate their career journeys, along with updates on the Titling Portfolio pathway and the Specialisation Training Program. There will also be an opportunity for questions with the presenters, so get your questions ready!



# Launch of milestone 3 - credential - evidence portfolio pathway (experiential)

Newsham-West R<sup>1</sup>

<sup>1</sup>LaTrobe University

Physiotherapy General 6, P 6, October 6, 2023, 11:25 AM - 12:10 PM

Lifelong learning brings many rewards. Developing skills, knowledge and competence not only improves client outcomes and satisfaction, but it also promotes recognition amongst peers, consumers, and other healthcare professionals. As a physiotherapist continues their career journey, they may seek formal opportunities to demonstrate achievement in evidenced-based learning and practice, clinical leadership and/or research. There is now an opportunity via the new Milestone 3 - Titling Evidence Portfolio Pathway to demonstrate your highly developed competence through a portfolio of evidence.

The Evidence Portfolio Pathway enables the physiotherapist to showcase their achievements and proficiency at the level of a Titled Physiotherapist, as awarded by the Australian College of Physiotherapists. It's important to note that career pathways can vary depending on the area of clinical practice and individual goals. Some career pathways may be more linear and structured, while others may be more flexible and allow for lateral moves or career transitions. It is for this reason that the new Titling Evidence Portfolio Pathway has been implemented.

At today's session, you will learn how to apply for the Portfolio pathway, the evidence and assessment requirements and the benefits to becoming a Titled Physiotherapist.



## How can technology help in ACL rehabilitation, augmenting clinical decision-making and maximising outcomes with the right digital tools?

Rooney J<sup>1,2</sup>

<sup>1</sup>Swinburne University, <sup>2</sup>Prahran Sports Medicine Centre

Physiotherapy General 12B, P 11, October 7, 2023, 2:30 PM - 3:15 PM

Background: There is increasing evidence supporting the importance of objective criteria based outcomes with rehabilitation following an ACL injury. The use of technology to facilitate rehabilitation and measure outcomes will be discussed from a clinical perspective.

Objectives: Present an evidence informed approach to the use of a range of technology accessible to the clinician throughout the ACL rehabilitation process including return to running and return to play clearance. The different markers that provide the most clinical value will be discussed to help simplify this assessment process.

**Key Practice Points:** 

- Implementing evidence into clinical practice is becoming more accessible with affordable digital technology
- Physiotherapists, and indeed their patients can benefit from a range of measurable outcomes throughout the ACL rehabilitation process.



## How can hand held dynamometry assist clinical decision making for people with neurological conditions?

#### Williams G<sup>1,2</sup>

<sup>1</sup>Epworth Healthcare, <sup>2</sup>University of Melbourne

Physiotherapy General 12B, P 11, October 7, 2023, 2:30 PM - 3:15 PM

Background: Despite the complexities of upper motor neurone lesions, muscle paresis is the main cause of mobility limitations for people with neurological conditions. Yet the most commonly use method for measuring muscle strength in clinical practice, manual muscle testing, has poor validity and responsiveness. New modular dynamometers offer a cheap, quick and accurate way to quantify muscle paresis in clinical settings.

Objectives: To demonstrate the clinical utility of a hand-held dynamometer for measuring muscle paresis in adults with neurological conditions. Two case studies will be presented demonstrating the application of the hand held dynamometry for people with 1) paresis who are engaged in resistance training, and 2) spasticity who are receiving botulinum neurotoxin-A injections.

Results: Hand held dynamometers can accurately quantify muscle paresis and change as a result of strength training and botulinum neurotoxin-A injections. Importantly, the measurements obtained in a clinical setting are equivalent to measures usually obtained from laboratory-based testing. Recent testing indicates that it is not just muscle paresis that limits function, but that the rate of force development may be an even more important factor when predicting outcomes.

**Key Practice Points:** 

- Muscle paresis is the key physical impairment limiting function
- The most common measures used for quantifying muscle paresis are not accurate
- Modular hand-held dynamometers can be adapted for most arm and leg muscles
- It is important to quantify maximum force and the rate at which force is developed when predicting functional outcomes



# HERknee: can physiotherapists prevent the burden of knee injury for women?

### Crossley K<sup>1</sup>

<sup>1</sup>La Trobe Sport and Exercise Medicine Research Centre, La Trobe University

Sports & Exercise 2, Great Hall 1 & 2, October 5, 2023, 11:55 AM - 12:40 PM

Background: Imagine if women, at every life stage, could reap the long-term health and economic benefits of physical activity, work, and social participation with a similar risk of knee injury and its and associated burden as men. Women make up half Australia's population, yet they have more than double (2–8 times) the serious knee injury risk, worse outcomes following injury than men.

Why do we accept high burden of knee injury for women? Despite many effective interventions, women consistently report worse burden (e.g. poorer quality of life, function and participation, and greater symptoms) over the lifespan than men. Almost no studies have explored possible solutions for the sex-and/or gender-bias in women's outcomes.

Physiotherapists might be able to address these knowledge and treatment gaps by applying sex- and genderbased prevention strategies and therapies, rather than the usual 'one-size-fits all' approach.

Objectives: This presentation will highlight evidence-informed potential solutions that consider a gendered approach, which will assist physiotherapists to develop and implement personalised interventions to prevent knee injury and injury burden. The end-goal is enhanced outcomes and reduced burden of knee injury, and OA for women over the lifespan.



# Thinking beyond the joint: a contemporary understanding of osteoarthritis for the athlete

#### Stanton T<sup>1</sup>

<sup>1</sup>The University Of South Australia

Sports & Exercise 5, Great Hall 3, October 6, 2023, 10:35 AM - 11:20 AM

What do you tell the runner with knee pain whose scans look terrible? Is it safe to continue to run or do they risk making things worse? Decisions regarding suitability of exercise for people with osteoarthritis are challenging in all populations, but even more so in the athlete who aims to push their physical limits.

Osteoarthritic pain is often assumed to be driven solely by structural damage to the joint and surrounding tissues. However, pain levels hold a tenuous relationship with the degree of structural damage and people with severe osteoarthritic changes on imaging experience improvements in pain with exercise, in the absence of joint changes. Together, this suggests that we need to re-think such an assumption.

This talk will explore the contemporary understanding of osteoarthritis discussing evidence spanning pain science, systematic inflammation, and psychosocial contributors, supporting a need to reconceptualise how we think about osteoarthritis and pain. This talk will explore the multiple contributing factors to osteoarthritis progression and pain, discussing the implications of this knowledge for our treatment, including evidence for (appropriate) loading in the context of the athlete with osteoarthritis.



## New paradigms in ACL injury management - a novel bracing protocol for ACL native healing combined with exercise based rehabiltation

### Rooney J<sup>1</sup>

<sup>1</sup>Lifecare Prahran Sports Medicine Centre, <sup>2</sup>Swinburne University

Sports & Exercise 6, Great Hall 3, October 6, 2023, 11:25 AM - 12:10 PM

Anterior cruciate ligament (ACL) injury management is currently based on the assumption that the ruptured ACL has a limited capacity to heal. Current management options are surgical replacement of the ACL, "ACL reconstruction" followed by rehabilitation, or undertaking a physical rehabilitation program alone, to dynamically stabilise the "ACL deficient knee". Research evidence has shown no difference in average outcomes between operative and non-operative management with respect to knee symptoms, quality of life, physical activity levels, rates of meniscal injury and radiographic joint change.

Recent evidence has reported spontaneous healing in 56% of people undertaking physical rehabilitation alone. A spectrum of healing was observed from normal ligament length and thickness through to a thinner longer ACL with variable anatomical attachments. People with a healed ACL had better functional outcomes compared to both the non-healers or the ACL reconstructed groups.

Australia has the highest incidence of ACL injury in the world with the rates predicted to double by 2030. This coupled with our 90 % ACL operative rate and known increased risk of knee osteoarthritis following an ACL injury, presents a public health crisis. The Cross Bracing protocol is a novel technique developed to optimise native ACL healing quality by immobilising the knee in a brace soon after injury for a period of 12 weeks. MRI studies have shown 90% of participants had evidence of ACL healing at 12 weeks. This presentation will provide an overview of the Cross Bracing protocol and its use in clinical practice in Australia.



## Injury prevention and management in elite and community sport – can physiotherapy help to address Australia's billion-dollar problem?

### Toohey L<sup>1,2</sup>

<sup>1</sup>Australian Institute of Sport, <sup>2</sup>University of Canberra Research Institute for Sport and Exercise

Sports & Exercise 9A, Great Hall 4, October 7, 2023, 10:35 AM - 11:35 AM

Background: Sport and physical activity are quintessential elements of Australian society, providing substantial benefit to the economy as well as improving the health and quality of life of many Australians. However, through participation in sport and physical activity, injuries frequently occur and have a range of negative consequences. For elite athletes injuries can result in a range of negative outcomes including impaired performance, reduced career longevity and impact mental health. More broadly, in 2022 an estimated 19% of Australian adults who engaged in sport or physical activity were injured during participation, with the treatment of these related injuries estimated to cost the Australian health system \$1.4 billion per year.

Objectives: To outline the impact that sport and physical activity related injuries have in elite and community sport settings, and to explore the future opportunities to improve athlete and participant health and safety through enhanced injury prevention and management systems.

**Key Practice Points:** 

- Provide an overview of the system-based approaches in which health service providers, including physiotherapists, are engaged to deliver strategic health and performance outcomes in elite and professional sports settings.
- In addition, the current and future roles of physiotherapists within community settings will be explored, to examine how the burden of sports and physical activity related injuries could be reduced, while also importantly promoting and maximising the number of Australians exposed to the numerous health benefits associated with sustained participation in sport and physical activity.



# Performance in sport is the ultimate outcome measure. How to measure ourselves in the context of performance as a goal?

Raysmith B<sup>1</sup>

<sup>1</sup>WAIS

Sports & Exercise 9A, Great Hall 4, October 7, 2023, 10:35 AM - 11:35 AM

In High Performance Sport, programs and individual athletes are measured and funded by whether they succeed or fail at achieving performance goals. Defining those goals and what success or failure looks like is trickier than what it seems but can have impacting consequences for all concerned. When the statement, "This intervention improves performance." Is made, can we clearly define what we mean by 'performance'?

Consider this scenario when deciding if this athlete 'succeeded' or 'failed'. For athlete 'X' the performance goal to maintain funding next year is to make the Top 8 (final) at the Paris Olympics. They have received Performance Support from Physiotherapy, Biomechanics, Physiology and Psychology to support this endeavour. Athlete X is ranked 7th in the world. They fail to make the final and finish 9th, yet in doing so they break the Australian Record for their event. Did they 'succeed' or 'fail'? How would the effectiveness of the support interventions and funding be evaluated?

In evidence-based professions like ours we rely on objective outcome measures to validate our interventions. In many circumstances, when we work with athletes and have conversations about what is helpful or detrimental to 'performance' we need to define 'performance' more clearly to ensure we are measuring apples with apples.

I will discuss our recent research around 'establishing a framework to objectively measure performance as an outcome' that is flexible for the end-user at any level and can be conceptually applied across multiple settings.



## Surgical decision making in the acute ACL injured

<u>Vertullo C</u><sup>1</sup> <sup>1</sup>Griffith University

Sports & Exercise 9B, M 1 & 2, October 7, 2023, 10:35 AM - 11:35 AM

In the field of sports medicine, the management of acute anterior cruciate ligament (ACL) injuries presents a significant challenge. The decision to opt for surgical intervention or non-surgical treatment is a critical aspect of patient care. This presentation explores the intricacies of surgical decision making in the acute ACL injured using a cased based approach, and provide valuable insights into the factors that influence surgical decision making. The various clinical and radiological assessment tools employed in evaluating ACL injuries and associated lesions will be discussed as well as the importance of considering patient-specific factors, including age, activity level, and associated injuries, when making surgical decisions. Prof Vertullo will highlight the current evidence-based guidelines and discuss their implications for treatment choice.

Furthermore, the presentation will cover the different surgical techniques available for ACL reconstruction and their associated pros and cons.

Attendees will gain a comprehensive understanding of the complexities involved in surgical decision-making for acute ACL injuries. The talk aims to equip physiotherapists and other healthcare professionals with the knowledge necessary to allow patients to informed decisions and optimise outcomes in the management of ACL injuries.



# How can we provide contemporary physiotherapy for hip-related pain in women?

<u>Kemp J</u><sup>1</sup> <sup>1</sup>La Trobe University

Sports & Exercise 11A, Great Hall 3, October 7, 2023, 1:40 PM - 2:25 PM

Hip-related pain is common in physically active adults, with a disproportionally large burden in women. Women can experience hip pain across the adult lifespan, with varying and often co-existing causes, including hip dysplasia, femoroacetabular impingement syndrome (FAIS), hip osteoarthritis, and extraarticular causes such as greater trochanteric pain syndrome (GTPS). Eighty percent of people with hip dysplasia are women, 50% of those with FAIS are women, women are 30% more likely to have hip OA and require hip replacement, while 4-times as many women have GTPS. This large burden results in reduced physical activity and poor quality of life.

Hip pain is also common in sports and activities that can include movements such as pivoting, kicking and direction change. There is increasing recognition of the differences in physiology of male and female athletes, and the lack of knowledge specifically around hip pain in female athletes. Female athletes exhibit hormonal, morphological, psychosocial and musculoskeletal differences to male athletes, that might all create a different hip/groin pain profile.

This presentation will consider, in women with hip pain (i) epidemiology and risk factors; (ii) the role of hip morphology, including hip dysplasia and cam morphology; (iii) the role of hormonal influences on pain; (iv) psychological impacts and (iv) the current evidence relating to interventions tailored specifically to women with hip pain.



## Tight, toned or unknown? How are we assessing muscles for tone and why do we link tone with pain?

#### Davidson M<sup>1</sup>

<sup>1</sup>Dr Melissa Davidson Pelvic Health Training

Women's, Men's & Pelvic Health 1, M 1 & 2, October 5, 2023, 11:05 AM - 11:50 AM

Physiotherapists use palpation to determine the residual tone in a muscle (commonly referred to as stiffness, tightness, activity, or tension). This tone is typically defined as a measure to the extent to which the muscles resist deformation in response to an applied force and is used as part of a functional assessment of the skeletal system. Subsequent clinical management of the patient is then based on this subjective assessment with the belief that altering the muscle tone will reduce the patients' symptoms.

However, there are currently no validated or reliable scales to quantify this subjective assessment of tone in muscles. Physiotherapists are not trained at undergraduate or postgraduate level to assess tone using palpation. Nor is there any research supporting the assumption that 'increased tone' causes pain. Despite these glaring gaps, it is ingrained in physiotherapy clinical practice globally to use palpation to assess muscle tone.

This presentation will review clinical assessments and palpation scales used to determine muscle tone, their limitations, their bias, and the assumptions made in using them. Recent systematic reviews will be explored and research involving a novel device that assessed physiotherapist's ability to use a palpation scale for assessing tone will be presented.

As clinicians, we have a duty of care to provide evidence informed practice for our patients. The results of this presentation may surprise you, confront you, challenge you, or confirm your beliefs. At the very least, it will encourage you to reflect upon your current bias, beliefs, and clinical practice.



## Hip and groin pain in women: epidemiology, aetiology, and burden

<u>Mosler A</u><sup>1</sup> <sup>1</sup>La Trobe University

Women's, Men's & Pelvic Health 2, M 3, October 5, 2023, 11:55 AM - 12:40 PM

Background: Hip and groin pain represents a diagnostic challenge for clinicians due to the extensive potential sources of pain, co-existing causes of pain, and heterogenous terminology used in the literature. For women, hip/groin pain diagnosis and aetiology are further challenged by hormonal, body composition, pregnancy, and age-related changes which occur over a woman's lifespan. While female athletes appear to experience a lower burden of adductor-related groin pain than their male counterparts, women experience a disproportionate burden of hip pain throughout their lives. When women experience hip/groin pain, reduced physical activity and poor quality of life are common sequelae.

Objectives: This presentation will explore the epidemiology and aetiology of the various musculoskeletal causes of hip/groin pain in women. The considerable gaps in research with women as participants will be highlighted.

**Key Practice Points** 

• The potential biological, psychological, and socio-cultural reasons for hip/groin pain burden in women will be explored in this presentation.



## Optimising pain science education for women with persistent pelvic pain

#### Chalmers J<sup>1</sup>

<sup>1</sup>IIMPACT in Health, University of South Australia

Women's, Men's & Pelvic Health 6, P 11, October 6, 2023, 11:25 AM - 12:10 PM

Background: Pain science education (PSE) is being increasingly used in the conservative management of persistent pain conditions, including persistent pelvic pain (PPP). There are many aspects of PPP that distinguish it from other persistent pain conditions, such as the involvement of psychosexual factors, unique biological processes within pelvic organs, and the complexities of discussing pain in a body area that is shrouded in secrecy and taboo. The unique presentation of PPP means that generic PSE is not always specific enough to be effective.

Objectives: Our recent research has optimised the PSE learning concepts needed for women with PPP to achieve better clinical outcomes. We have undertaken systematic reviews of clinical practice guidelines and conducted studies with patients and treating healthcare professionals to determine the optimal PSE curriculum for women with PPP. In this session, we will take a deep dive into the findings of these systematic reviews and primary studies, and tease out the nuances of PSE for women with PPP. Attendees will gain an understanding of the optimal PSE curriculum, and an appreciation of the literature regarding the efficacy of PSE for women with PPP.

Key Practice Points: At the end of this session, attendees will understand:

- the literature supporting the efficacy of PSE for women with PPP
- the optimal PSE curriculum for women with PPP
- how to apply the optimal PSE curriculum for women with PPP in their clinical role to enhance patient outcomes



## New innovations in rehabilitation of men's pelvic health conditions

#### Hodges P<sup>1</sup>

<sup>1</sup>The University Of Queensland

Women's, Men's & Pelvic Health 9, M 3, October 7, 2023, 10:35 AM - 11:35 AM

Background: Innovation in measurement of pelvic floor muscle function in men is enabling new understanding of the sophisticated control of pelvic floor pelvic muscles to achieve the multiple functions for which they are essential and differences in men with pelvic health conditions. Critical functions include control of continence, support of pelvic organs, breathing and sexual functions.

Objective: To discuss new observations and understanding of pelvic floor function in men that can guide assessment and management of common conditions.

Results: New shear wave elastography methods have been validated to measure pelvic floor muscle tone. For continence, there is increasing evidence for the critical role of recovery for striated urethral sphincter control to regain continence after prostatectomy. Support of pelvic organs is critical. Radical prostatectomy interferes with the passive anterior supports for the bladder and urethra. This impacts support and dynamics of these structures in standing. For breathing, pelvic floor muscle activity modulates with breathing as the abdominal pressure cyclically changes. Recent work that has measured length change of the striated pelvic floor muscles highlights lengthening of the levator ani with inspiration to accommodate displacement of the abdominal cavity, that is more in standing and with increased respiratory demand, and variable patterns of length change of the striated urethral sphincter and bulbocavernosus muscles.

**Key Practice Points:** 

- Innovations in clinical assessment of pelvic floor function in men enhance capacity to assess and rehabilitate pelvic health conditions.
- Detailed assessment and consideration of complex interplay of multiple pelvic floor muscles is required to guide treatment.

## Lifting after vaginal delivery

**Forner L**<sup>1</sup> <sup>1</sup>The University of Queensland

Women's, Men's & Pelvic Health 11, P 9, October 7, 2023, 1:40 PM - 2:25 PM

Strength training is important for building bone density, decreasing musculoskeletal injury, improving athletic performance, improving psychological well-being and more. Unfortunately, the health of the female pelvic floor can be vulnerable at times to the extra load during strength training (specifically in women who have had vaginal deliveries), potentially leading to pelvic floor dysfunction. Advice on participation is often conflicted, with many health professionals advising against any lifting of weight or blindly restricting the amount of load, primarily as we lack research to help guide our advice. This talk is focused on the most recent research to date on pelvic floor and heavy weightlifting, including results from my PhD studies.



## Health equity in practice: the story of the Women's Business Shared Pathway

<u>Powe E</u><sup>1</sup> <sup>1</sup>Qld Health

Women's, Men's & Pelvic Health 10B, M 3, October 7, 2023, 11:40 AM - 12:40 PM

The Women's Business Shared pathway is a multidisciplinary service that provides culturally responsive allied health and specialist gynaecology care to Aboriginal and Torres Strait Islander women across the life span.

Working in partnership with the Institute of Urban Indigenous Health, Women's Business has been codesigned, co-implemented, and continues to be co-led in true partnership with the local Aboriginal and Torres Strait Islander community.

Reflecting health equity in practice, this unique model of care has seen a drastic reduction in missed appointments and is demonstrating the success that can be achieved by working in partnership with our communities.

Service Coordinator, Edwina Powe will be sharing the story of how Women's Business was created, the lessons learnt and goals for the future.



## SECTION 4: Papers, How to, 5X 5 Presentations

## Needling in the foot and ankle region, latest evidence, safety concerns and practical techniques

## McCutcheon L<sup>1,2</sup>

<sup>1</sup>Combined Health Acupuncture and Dry Needling Education, <sup>2</sup>Bond University

Acupuncture & Dry Needling 6, P 5, October 6, 2023, 11:25 AM - 12:10 PM

Background: A literature review of acupuncture and dry needling treatment as a modality for treating various conditions in the foot and ankle region will be presented. Safety relating to needling practice in the foot and ankle region will also be considered. Suitable participants are physiotherapists who have completed the minimum training required in the area of acupuncture and dry needling, although this is not an absolute requirement.

Aims/ objectives: To review the latest literature and the implications for treatment in various conditions of the foot and/or ankle. Safety and precautions relevant to needling in the foot and/or ankle region will also be considered. Discussion will also be presented regarding advanced practical techniques.

Approach: The presentation will include a PowerPoint presentation and practical demonstrations designed to address the complexities associated with needling the foot and ankle region.

**Key Practice Points:** 

• At the conclusion of the session participants should be able to assess the risk and benefits of using needling therapies to accompany a multimodal approach for treating various conditions in the foot and ankle region.



# Acupuncture treatment of lateral elbow pain: a multisite randomised controlled trial in China, Hong Kong, Australia, and Italy

#### Zaslawski C<sup>1</sup>

<sup>1</sup>University of Technology Sydney

Acupuncture & Dry Needling 12, P 6, October 7, 2023, 2:30 PM - 3:15 PM

Aim: To evaluate the clinical efficacy of acupuncture in the treatment of chronic (over three months' duration) lateral elbow pain.

Design: A multisite randomised controlled study involving four study sites, in the People's Republic of China, Hong Kong, Italy, and Australia, which recruited 24 participants at each site.

Method: A total of 96 participants were randomised to either an acupuncture group or a sham laser control group. The primary outcome measure was the Disabilities of Arm, Shoulder, and Hand questionnaire with secondary outcome measures of Pain-Free Grip Strength Test, Muscle Tension Test, and a pain visual analogue scale. The acupuncture intervention involved the manual needle technique of "wagging the dragon's tail" (Ch: qing long bai wei).

Results: Significant differences in DASH score were found between the two groups (p = .015). The median change to baseline for the treatment group was -11.7 (interval: -50.83 to 23.33), and for the control group - 7.50 (interval: -36.67 to 29.10). The estimated effect size was 0.47, indicating a medium effect. Significant differences were also found for secondary outcome measures for VAS of pain. Conclusions: Acupuncture was shown to be efficacious in improving the function of the arm associated with lateral elbow tendinosis. Both the DASH score and the pain VAS on two occasions (at rest and during motion) showed a significant change over time indicating acupuncture as a potential treatment for LEP due to tendinosis.

**Key Practice Points:** 

• Acupuncture can decrease pain and improve function associated with LEP. Vigorous needling technique is important.



# Safety and appropriateness of management of urgent neurosurgery referrals by advanced musculoskeletal physiotherapists in a tertiary hospital: a service evaluation

**Stewart M**<sup>1</sup>, Winter C<sup>2</sup>, Pearce P<sup>2</sup>, Litchfield M<sup>1</sup>, Raymer M<sup>1</sup>, Cottrell M<sup>1</sup> <sup>1</sup>Physiotherapy Department, Royal Brisbane and Women's Hospital, <sup>2</sup>Neurosurgery Department, Royal Brisbane and Women's Hospital

Advanced Practice 2, P 6, October 5, 2023, 11:55 AM - 12:40 PM

Aim: Evaluate the safety and appropriateness of management of Category 1 Urgent Neurosurgical Spinal referrals by Advanced Musculoskeletal Physiotherapists at a tertiary hospital.

Design: Retrospective evaluation.

Method: Patient and service-related metrics and outcome data for all Urgent referrals deemed suitable for Advanced Musculoskeletal Physiotherapist assessment over a 33-month period were analysed using descriptive statistics. Clinical safety/appropriateness was evaluated through an audit of a random sample of 40 cases by Neurosurgeons using agreement statistics (Prevalence-Adjusted Bias-Adjusted Kappa (PABAK) and percentage agreement), and by re-presentation rate for the same condition within a 12-month period following discharge.

Results: 222 out of 500 (44%) urgent Neurosurgery referrals were suitable for Advanced Musculoskeletal Physiotherapist assessment. The Physiotherapist requested Neurosurgeon review for 79 (35.6%) patients, including 44 requiring urgent escalation. Neurosurgeon agreement with Physiotherapists' discharge decisions (PABAK=0.95, 97.7% agreement) and need for neurosurgeon case discussion (PABAK=0.82, 90.9% agreement) was excellent. No adverse events were reported and re-presentation rate was 3%.

Conclusion: Advanced Musculoskeletal Physiotherapists provided safe and appropriate management of selected Category 1 spinal outpatients in a tertiary Neurosurgery outpatient department.

- Advanced Musculoskeletal Physiotherapists can be utilized to see selected patients with higher urgency and clinical complexity in public hospitals.
- Advanced Musculoskeletal Physiotherapists have high agreement with neurosurgeons regarding discharge decisions.
- There are low re-presentation rates for patients managed by Advanced Musculoskeletal Physiotherapists in Neurosurgical Spinal Outpatients in a tertiary hospital.



# Implementation of an evidence-based pathway and outpatient clinic for patients presenting to an emergency department with low back pain

**<u>Gan R</u><sup>1</sup>**, Da Silva A<sup>1</sup>, Farmer C<sup>1</sup> <sup>1</sup>The Royal Melbourne Hospital

Advanced Practice 2, P 6, October 5, 2023, 11:55 AM - 12:40 PM

Aim: To determine the effect of implementing a low back pain (LBP) pathway and rapid access outpatient clinic for Emergency department (ED) patients with LBP on variability of care, patient flow and safety.

Design: Pre- and post-implementation study

Method: The ED LBP pathway was formulated after reviewing literature and clinical guidelines. The outpatient clinic was led by Advanced Practice Physiotherapists. Referrals to the outpatient clinic were received from ED clinicians for complex LBP patients that were discharged home from ED or short stay. Nine-month pre- and post-implementation (August 2021-January 2023) data were collected, including short stay admissions, ED re-presentations, investigation ordering, opioid prescriptions and patient safety.

Results: Post-implementation, 1010 patients with LBP were discharged from ED and 201 patients referred to the outpatient clinic, with a median [IQR] time of seven [5.0-10.5] days to appointment. There was no statistically significant difference in short stay admissions or pathology ordering, however the post-implementation group had statistically significant less opioid prescriptions (p = 0.003) and less ED representations (p = 0.03) than the pre-implementation group. The outpatient clinic identified five patients with red flags requiring urgent management.

Conclusion: Implementing an ED LBP pathway and rapid access outpatient clinic improved the management of patients by decreasing ED re-presentations, opioid prescriptions and contributing to patient safety.

- An evidenced-based ED LBP pathway was successfully implemented into practice.
- A rapid access follow-up outpatient clinic decreases ED re-presentations and plays an important safety role for patients with LBP that are discharged from ED.



## The value of an advanced practice physiotherapist-led new patient rheumatology service: a clinical audit of the musculoskeletal assessment clinic

**Schwetlik S**<sup>1,2</sup>, Wigg A<sup>3</sup>, Tieu J<sup>1,3</sup>, Lyne S<sup>1</sup>, Whittle S<sup>1</sup>, Proudman S<sup>3,4</sup>, Hill C<sup>1,3,4</sup> <sup>1</sup>Rheumatology Unit, The Queen Elizabeth Hospital, <sup>2</sup>Spinal Assessment Clinic, Royal Adelaide Hospital, <sup>3</sup>Rheumatology Unit, Royal Adelaide Hospital, <sup>4</sup>Discipline of Medicine, University of Adelaide

Advanced Practice 2, P 6, October 5, 2023, 11:55 AM - 12:40 PM

Aim: To describe the patient cohort, visit outcomes and extent of consultant input required in the Musculoskeletal Assessment Clinic (MAC), a new outpatient Rheumatology advanced practice physiotherapist-led service at The Queen Elizabeth Hospital. The MAC aims to facilitate timely assessment and discharge of patients with low-acuity musculoskeletal complaints, and provides an expedited pathway for patients requiring rheumatologist-led clinical review.

Design: Audit of routinely-collected data from February 2022 to January 2023.

Method: The model of care was agreed following a literature review and stakeholder consultation. The audit utilised clinical and visit data, including demographics, referral date, visit outcomes, and discharge destination.

Results: Seventy patients were seen in the MAC (86% female; median age 56 [IQR 20]), with a 23% nonattendance rate. Median wait time was 140 days (IQR 237). Brief rheumatologist review was required in 33 cases (47%), with 14 (20%) requiring further investigations. Most patients were discharged to their GP (n = 49; 70%). The primary diagnosis was most frequently non-inflammatory musculoskeletal pain (n = 25; 36%) or osteoarthritis (n = 18; 26%).

Conclusion: The MAC services patients with mainly non-inflammatory diagnoses, most of whom can be discharged without formal rheumatologist-led review. Further evaluation is required to establish long-term clinical safety, re-referral rates and stakeholder perspectives.

- Most low-acuity musculoskeletal referrals to Rheumatology can be managed in a physiotherapist-led clinic with minimal consultant input.
- This model could potentially improve outpatient waitlist pressures and service efficiency, whilst ensuring comprehensive assessment and transfer to rheumatologist-led care when appropriate.



## Exploring episode of care equity between Indigenous and Non-Indigenous Australians within neurosurgical/orthopaedic physiotherapy screening clinics across Queensland Health

**McDougall A**<sup>1,2</sup>, Raymer M<sup>1,4</sup>, Window P<sup>1,4</sup>, Cottrell M<sup>1,4</sup>, Nelson C<sup>2,3</sup>, Francia C<sup>2,3</sup>, Watson E<sup>1,2</sup>, O'Leary S<sup>1,2,4</sup> <sup>1</sup>Royal Brisbane and Women's Hospital Physiotherapy Department, <sup>2</sup>School of Health and Rehabilitation Sciences, The University of Queensland, <sup>3</sup>The Poche Centre for Indigenous Health, The University of Queensland, <sup>4</sup>Neurosurgical and Orthopaedic Physiotherapy Screening Clinics and Multidisciplinary Service

Advanced Practice 2, P 6, October 5, 2023, 11:55 AM - 12:40 PM

Aim: Compare episode of care characteristics between Indigenous and non-Indigenous Australians as part of a state-wide musculoskeletal service within Queensland Health.

Design: Retrospective audit of the neurosurgical/orthopaedic physiotherapy screening clinics and multidisciplinary service database.

Method: 27879 patient records (discharged 1 July 2018 to 30 April 2022) were included. Service and patientrelated characteristics and outcomes were compared between Indigenous and non-Indigenous Australians, using analysis of variance and chi-square tests.

Results: A greater proportion of Indigenous Australians were represented within the service's clinical population (4.34%) than in the general Queensland population (3.61%). Indigenous Australians tended to have higher levels of pain and disability at initial consult and discharge from the service than non-Indigenous Australians, although similar proportions (Indigenous 63.2%, non-Indigenous 64.3%) reported clinically meaningful benefits from treatment. Compared to non-Indigenous Australians (65.6%), a greater percentage of Indigenous Australians (69.7%) were discharged without requiring medical specialist review, but also had higher rates of discharge due to non-attendance (Indigenous 20.8%, non-Indigenous 10.6%, p=<0.001).

Conclusions: Indigenous Australians compared to non-Indigenous may exhibit greater clinical severity at initial presentation and discharge from specialist services, although report similar benefits from management. While the higher proportion of Indigenous Australians discharged without requiring medical review may seem positive, this difference is potentially explained by the higher rates of discharge due to non-attendance.

Key Practice Points:

• Future service refinements will require consultation with and between Indigenous communities and service providers to better meet the needs of Indigenous Australians, identifying and addressing barriers to accessing services during their episode of care.



## Understanding episode of care characteristics for indigenous Australians in the neurosurgical/orthopaedic physiotherapy screening clinic and multidisciplinary services: healthcare providers perspectives

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Advanced Practice 2, P 6, October 5, 2023, 11:55 AM - 12:40 PM

Aim: Understand episode of care characteristics for Indigenous Australians within a regional public musculoskeletal health service.

Design: A sequential explanatory mixed-methods design involving a retrospective service audit followed by semi-structured interviews.

Method: Audit data was used to compare service and clinical characteristics and outcomes for Indigenous and Non-Indigenous Australians at the Cairns Hospital N/OPSC and MDS. Semi-structured interviews with 11 healthcare providers were then conducted to better understand audit findings including; factors influencing outcomes, potential access barriers and enablers and suggested service refinements. A framework of access to healthcare was used in deductive analysis.

Results: A high proportion of Indigenous Australians were discharged from the service due to nonattendance (35.3%) compared to non-Indigenous Australians (17.9%). Interviewed service providers indicated these findings reflected access barriers for Indigenous Australians to the service including transport, geographic location, distrust of hospitals, and cultural differences. Improvement suggestions included community outreach services and an increased Indigenous Liaison Officer involvement.

Conclusion: Some disparities in episode of care characteristics exist between Indigenous and Non-Indigenous Australians in the service under study at Cairns Hospital. Suggested strategies to combat these disparities are mostly targeted at improving access to care for Indigenous Australians.

- Service providers suggest geographic remoteness, poor transport availability, intimidating hospital environments and cultural differences potentially contribute to non-attendance of Indigenous Australians to musculoskeletal services.
- Improvement strategies such as increased Indigenous Liaison Officer involvement, community outreach and telehealth implementation were suggested and need further testing and consultation with Indigenous service users.



## Clinical frailty scale provides negligible clinical benefit in predicting emergency department re-presentations following an initial visit for a fall

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Advanced Practice 7, M 3, October 6, 2023, 2:15 PM - 3:00 PM

Aim: Assess whether clinical frailty scale (CFS) scores are related to re-presentation rate in elderly community-dwelling patients presenting to the QEII ED with a fall or fall-related injury.

Design: Retrospective, observational cohort study.

Method: Data was collected for 663 community-dwelling patients aged 75 or over who attended the QEII ED for a fall related presentation and assigned a CFS score. Fall-related re-presentations to any metro south ED were identified. A statistical model was applied to the data set to assess incidence of fall-related representation within 6 months of index fall presentation based on CFS scores.

Results: A model based on CFS scores showed moderate discrimination (C=0.59) for determining patients at risk of re-presentation. Compared to chance, utilising the model identified an additional 3 percent of patients at risk of re-presentation.

Conclusion: The clinical benefit of a CFS-based prediction model to identify at-risk fallers in this population remains questionable. Consideration should be given to the resources required to implement the model compared to the clinical benefit of identifying an additional 3 percent of at-risk patients

- CFS scores do not strongly predict re-presentation rate to ED after an index presentation for a fall
- Clinical benefit of a CFS-based prediction model to identify at-risk fallers is questionable



## Patient and service factors influence referral and multidisciplinary service usage in the state-wide neurosurgical/orthopaedic physiotherapy screening clinics and multidisciplinary services

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Advanced Practice 7, M 3, October 6, 2023, 2:15 PM - 3:00 PM

Aim: Understand factors influencing referral, uptake and engagement with multidisciplinary treatment services in the Neurosurgical/Orthopaedic Physiotherapy Screening Clinics and Multidisciplinary Service.

Design: Survey of stakeholders.

Method: Clinical leaders, multidisciplinary health professionals and consumers recently discharged from the service were surveyed.

Results: 64 consumers, 39 Clinical leaders and 61 health professionals (Physiotherapists n=34, Dietitians n=10, Psychologists, n=10, Occupational Therapists n=4, Pharmacists n=3) completed the survey. Clinical leaders and health professionals reported understanding a patients' beliefs (about their condition and/or need for surgical management), willingness to engage in treatment, priorities/preferences (around physiotherapy specifically and/or in relation to other medical/social circumstances), expectation of benefit and previous treatment experiences are helpful in guiding referral. Consumers reported an expectation of benefit determined whether they accepted a referral.

Clinical leaders and health professionals reported that addressing a patients' understanding and/or perceptions of each disciplines' role/expected benefit, initial patient experience, rapport and perceived progress influences attendance. Health professionals also reported that patient-specific factors including clinical severity, psychological distress and time burden influence attendance. Service factors (eg. Appointment availability, accessibility [including related costs]) were reported by all stakeholders as influencing attendance.

Conclusion: Many patient-related factors influence referral to health professionals. Patients' perceived expected benefit seems a key determinant to a patient accepting a referral and subsequently attending and engaging with the service.

- Factors other than direct clinical indicators should be considered when referring to multidisciplinary health professionals.
- Patient-related factors e.g. expected benefits of treatment, may be potentially modifiable with appropriate patient education.



# Dial-a-Dizzy: a new emergent vertigo hotline for rural and remote emergency departments

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Advanced Practice 8, M 3, October 6, 2023, 3:35 PM - 4:20 PM

Aim: To present a novel vertigo telehealth advisory service for Queensland's rural and remote public hospitals

Design: Retrospective chart review

Method: Five infra-red video goggles were placed in rural emergency departments. When patients presented with emergent vertigo, a referral could be generated to Dial-a-Dizzy. Dial-a-Dizzy recommendations/outcomes were communicated through a traffic light system where GREEN suggested a peripheral vestibular cause, AMBER for non-vestibular or RED for central cause. Retrospective data was collected for referrals received January 2022 to February 2023, inclusive of facility, patient location, recommendation/outcome, imaging usage and 30-day stroke re-admission rates.

Results: 66 patients were referred to Dial-a-Dizzy, with 93 telehealth consults completed. 50 consults were with Mount Isa Hospital, 11 Longreach Hospital, 11 Cooktown Hospital, 11 Weipa Hospital and 10 Goondiwindi Hospital. 38% of consults were completed when the patient was in the emergency department, 31% occurred in the acute wards and 31% in the outpatient setting. For the 66 patients referred, 25 were assigned a GREEN recommendation, 6 RED and 35 AMBER. 52% were discharged without imaging. The 30-day stroke admission rate post Dial-a-Dizzy was 0%, indicating all patients were safely discharged without stroke representation over the next 30 days.

Conclusion: Portable infra-red video goggles combined with virtual guidance can improve patient access to tertiary-level vestibular advice in some of Queensland's most remote public hospitals

- Advisory telehealth services help differentiate dangerous from non-dangerous causes of vertigo in rural and remote hospitals
- Patients can be safely treated for vertigo close to home



## Adherence to recommended guidelines for low back pain presentations to an Australian emergency department: barriers and enablers

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Advanced Practice 12, P 2, October 7, 2023, 2:30 PM - 3:15 PM

Aim: This study sought to evaluate adherence to guidelines for management of mechanical Low Back Pain within a single tertiary metropolitan Emergency Department setting. Our objectives were:

1. To identify and describe the proportion of patients presenting to a single Emergency Department with mechanical Low Back Pain who received management in line with the guidelines; and

2. To understand factors influencing clinician (non-) adherence to the guidelines.

Design: Two-stage multi-methods study design.

Methods: Stage 1 involved a retrospective chart audit of patients presenting with a diagnosis of mechanical Low Back Pain to establish clinical guideline adherence. Stage 2 explored clinicians' perspectives towards factors influencing guideline adherence via a study-specific survey and follow-up focus groups.

Results: The audit demonstrated high adherence overall, but low adherence to the following guidelines: (i) appropriate analgesia prescription (67%), (ii) targeted education and advice (58%), and (iii) attempts to mobilise (48%). Three major themes were identified as factors influencing adherence to the guidelines: (1) clinician driven influences and factors, (2) workflow processes, and (3) patient expectations and behaviours.

Conclusion: There was low adherence to some published guidelines, influenced by multiple factors. Understanding factors that influence care decisions and developing targeted strategies to address these may improve Emergency Department management of mechanical Low Back Pain.

- Targeted education for patients and clinicians may facilitate expectations and behaviours that better align with best practice guidelines.
- Physiotherapists can provide education and training to other emergency Department clinicians on management of mechanical Low Back Pain patients.



# Time to analgesia for musculoskeletal presentations in Tasmanian EDs: a case controlled observational study investigating advanced practice physiotherapists impact

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Advanced Practice 12, P 2, October 7, 2023, 2:30 PM - 3:15 PM

Aim: To assess the timeliness of analgesia provided to patients treated by advanced practice physiotherapists, medical officers and nurse practitioners presenting with musculoskeletal conditions in two Tasmanian Emergency Departments.

Design: A retrospective case-controlled comparative observational study collected patient data over a sixmonth period.

Method: Index cases were consecutive cases treated by an advanced practice physiotherapist, with a medical and nurse practitioner cohort case matched based on clinical and demographic factors. Time to analgesia administration from both initial triage and patient allocation to health professional groups were analysed using Mann Whitney U test. Further assessment comparing between group differences in access to analgesia within thirty and sixty-minute of Emergency Department triage were included.

Results: 224 patients who received analgesia while in the primary care of advanced practice physiotherapists were matched against 160 medical and 148 nurse practitioner records. Median time to analgesia for the advanced practice physiotherapy group was 40.5 minutes compared to 59 minutes in the comparison group (p=0.001). Allocation to analgesia time for the advanced practice physiotherapy group was 27 minutes, compared to 30 minutes in the comparison group (p=0.465). Access to analgesia within 30 minutes of presentation to ED is low (36.1% Vs 30.8%, p=0175)

Conclusion: For musculoskeletal presentations in two Tasmanian Emergency Departments, patients received more timely analgesia when in the care of an advanced practice physiotherapists compared to medical or nurse practitioner care.

**Key Practice Points:** 

• Further improvements in analgesia access are possible, with time from allocation to analgesia administration a potential target for intervention.



# Predictors of hospitalisation for non-specific low back pain: a systematic review

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Advanced Practice 12, P 2, October 7, 2023, 2:30 PM - 3:15 PM

Aim: To investigate the predictors of hospitalisation for non-specific low back pain (LBP).

Design: Systematic review.

Method: Search of six electronic databases was conducted and reported in line with PRISMA statement. Studies were included if they examined a predictor of hospitalisation for LBP. Data were extracted and descriptively synthesised with meta-analysis performed where possible. Risk of bias of included studies was assessed using a modified version of the Critical Appraisal Skills Program Checklist for Cohort Studies. The grade of body of evidence was described using the FORM framework.

Results: Twenty-nine studies met the inclusion criteria. The risk of hospitalisation was grouped into factors relating to personal, health and lifestyle, psychology, socioeconomic, occupational, clinical, and health systems. There was moderate level evidence that arrival to an emergency department via ambulance with LBP, and older age increase the risk of hospitalisation for LBP. There was low level evidence that high pain intensity, past history of LBP, previous opioid use, and occupation type increase the risk of hospitalisation for LBP.

Conclusion: The risks for hospitalisation for LBP are complex and multifactorial relating to patient, contextual and health system factors. The importance of community-based care and hospital avoidance strategies that mitigate risk of hospitalisation for LBP are supported by this review.

- Assessment and management of LBP encompassing a biopsychosocial framework, not limited to pain severity alone.
- Whole system approach to address hospitalisations for LBP that includes hospital and community health sectors, ambulance services, and consumers.



# How are clinically unimportant terms in lumbar spine imaging reports identified? A content analysis of x-ray, CT and MRI reports

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Advanced Practice 12, P 2, October 7, 2023, 2:30 PM - 3:15 PM

Aim: To determine how frequently common, benign lumbar spine findings in X-ray, CT or MRI as either normal for age or likely clinically unimportant. We also assessed for terms of uncertainty within reports.

Design: Content analysis of lumbar spine radiology reports

Method: We randomly obtained 200 each of X-ray, CT and MRI reports along with de-identified demographic information. Findings were extracted and coded according to clinical importance, noting description of clinically unimportant findings. Pre-determined data saturation was 50 reports minimum and no new terms within ten coded reports.

Results: We analysed 80 X-ray, 82 CT and 100 MRI reports to reach data saturation in each modality and extracted 3,598 terms total, of which 57% (n=2,062) were clinically unimportant. Most reports included at least one clinically unimportant finding (76/80 (95%) X-ray, 80/82 (98%) CT, 99/100 (99%) MRI). Identification of a benign finding as benign or clinically unimportant occurred in 35% (n=89) of x-ray findings, 16% (n=93) of CT findings and 15% (n=149) of MRI findings. The majority of reports contained terms of uncertainty (66% (n=53), 92% (n=77) and 82% (n=82) for X-ray, CT and MRI respectively).

Conclusion: Imaging reports frequently contain terms unlikely to be clinical important without providing contextual information. They also contain terms that may increase uncertainty.

- The majority of findings in lumbar spine imaging reports are benign, but are rarely described as clinically unimportant.
- Terms of uncertainty are also common.
- This may have a negative clinical impact for both clinicians and patients.



# Barriers and enablers to virtual hospital care for low back pain: a qualitative study

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Advanced Practice 12, P 2, October 7, 2023, 2:30 PM - 3:15 PM

Objective: To explore clinician perspectives on a virtual hospital model of care for back pain ('Back@Home'), and identify barriers to, and enablers of, successful implementation of this model of care.

Methods: Semi-structured interviews were conducted with 19 purposively sampled clinicians involved in delivery of acute back pain care at three metropolitan hospitals.

Results: Ten TDF domains were identified as important in understanding barriers and enablers to implementing virtual hospital care for musculoskeletal back pain. Key barriers to virtual hospital care included patient access to videoconferencing and reliable internet, language barriers, as well as difficulty building rapport. Barriers to avoiding admission included patient expectations, social isolation, comorbidities, and medicolegal concerns. Conversely, enablers of implementing a virtual hospital model of care included increased healthcare resource efficiency, clinician familiarity with Telehealth, as well as perceived reduction in over-medicalisation and infection risk.

Discussion: Purposive sampling of clinicians likely to be involved in referring to the proposed virtual hospital model of care is a strength of this study. Further investigation of barriers to, and enablers of, introducing virtual hospital back pain care in other settings, including rural and regional health centres, would help inform implementation in those areas.

Conclusion: Addressing barriers to implementation, and building on enablers, is crucial in clinician adoption of this model of care. Based on clinician input, the 'Back@Home' model of care will incorporate loan of internet-enabled devices, healthcare interpreters, and written resources translated into community languages to facilitate more equitable access to care for marginalised groups.



## Key movements to observe when assessing quality of movement in horses

## **<u>Bowen A</u><sup>1</sup>**, Randle H<sup>1</sup>, Labens R<sup>1</sup>, Tabor G<sup>2</sup>

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Animal 2, P 5, October 5, 2023, 11:55 AM - 12:40 PM

Aim: Outcome measures for movement tasks are lacking in equine physiotherapy. Creating a new outcome measure for quality of movement will improve the ability to monitor treatment efficacy, therefore enhancing evidence-based practice. This study asks, what are the most commonly observed in-hand movements during assessment of horses for performance management and rehabilitation, and how are complex functional movements currently being measured?

Design: Online survey of equine sports medicine veterinarians, physiotherapists and equine allied health professionals.

Method: A survey, distributed by professional associations, gained responses from 81 equine clinicians. Descriptive statistics, chi square analysis and ANOVA along with thematic analysis of free-text responses was performed.

Results: Twenty-four in-hand movements were identified as being used more frequently than others. The movements chosen were based on the individual case presentation. Barriers include access to facilities and the training level of the horse and handler. To measure complex functional movements 81.6% agree or strongly agree a modified Patient-Specific Functional Scale would be useful.

Conclusion: Despite challenges in the field, a key group of in-hand movements are routinely used to observe equine quality of movement. Equine clinicians do their best to record changes in movement and have a strong desire for more relevant outcome measures.

- There is a strong desire for outcome measures relevant to equine clinicians' needs.
- Challenges to assessment include facilities, handlers and horses training level.
- Equine professionals identified key in-hand movements which will be included in a new outcome measure for quality of movement.



# Effect of caudal traction on mechanical nociceptive levels in a group of horses with clinical signs of back pain

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Animal 2, P 5, October 5, 2023, 11:55 AM - 12:40 PM

Aim: To determine if caudal traction (tail pull) has an effect on mechanical nociceptive thresholds (MNTs) in a group of horses with clinical signs of back pain.

Design: A prospective study that involved three stages: pre-intervention (baseline), intervention and post intervention.

Method: 11 horses with veterinary referral for thoracolumbar back pain were included in this study. A pressure algometer measured mechanical nociceptive thresholds on five bilateral thoracolumbar locations both before and immediately following application of caudal traction. To apply the intervention, a steady manual pull of 4.5kg was applied to the tail of the horse for 20 seconds followed by a 10 second release and repeated for 3 sets. Statistical data were analysed using SPSS version 24 software.

Results: A significant difference (P .05) was identified between mean before and after caudal traction algometry measurements in all described sites. The percentage of MNT increase was highest in the thoracic region (83%) compared with the lumbar (50%) and the pelvic (52.4%) regions.

Conclusion: Results support an effect of caudal traction in increasing MNTs in the thoracolumbar and pelvic regions in horses. Further research to determine the clinical effect of this technique is warranted. A limitation to our study was, that it did not include a control group.

Key Practice Points: Caudal traction

- Provides short-term pain relief
- Allows the therapist to pursue other treatment techniques which may have been inhibited due to pain.
- Is easily applied in the clinical environment



# Rehabilitation in dogs following tibial plateau levelling surgery for cruciate disease

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Animal 2, P 5, October 5, 2023, 11:55 AM - 12:40 PM

Aim: To present recommendations for post-operative rehabilitation in dogs following tibial plateau levelling surgery (TPLO) in relation to best practice guidelines, reflecting on outcomes from a recent clinical audit into service provision for these patients at a small animal referral practice.

Design: A prospective, process design clinical audit

Method: An audit was completed using clinical records from TPLO patient physiotherapy consultations during the audit period. Details assessed were: surgical procedure, presence of concomitant stifle pathology, body condition score, referrals to physiotherapy, and provision of a home exercise program (HEP). Patients were divided into four criterion groups: Standard TPLO (ST), Overweight TPLO (OT), Athletic TPLO (AT) and Concomitant Pathology TPLO (CPT). Post-operative days to Initial Physiotherapy consultation and post-operative complications were recorded.

Results: 25% of dogs in ST, 45% of dogs in OT, and 39% of dogs in CPT group achieved compliance with the set criterion standards. Post-operative days to Initial Physiotherapy consultation varied from one – 36 days. HEP were provided to all TPLO patients who attended physiotherapy. There was a post-operative complication rate of 14%.

Conclusion: Compliance with audit Standards was below expectations in some areas compared with best practice guidelines.

- Post-operative physiotherapy is an important component of TPLO patient rehabilitation
- Audit findings can assist in setting standards for post-operative physiotherapy for TPLO patients



# Developing a scoring system and directives for equine quality of movement

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Animal 4, P 5, October 5, 2023, 2:30 PM - 3:15 PM

Aim: An outcome measure is being developed for equine quality of movement during in-hand assessment as part of performance management or rehabilitation. This study looked at selecting a suitable anchor word and scoring system for grading quality of movement in horses. Additionally, aiming to create a list of the most important features to guide scoring of each movement, to be refined into directives.

Design: Repeated, online survey of an expert panel (three round Delphi process).

Method: Expert physiotherapists were invited to be part of the Delphi process. Summary results (descriptive statistics and major themes) were presented back to the panel in subsequent survey rounds.

Results: 'Quality of movement' became evident as the preferred anchor word after two survey rounds. The chosen grading words were 'optimal, good, mild, moderate, and severe movement dysfunction.' The number of important features was reduced over three rounds, with features reaching >75% agreement used to inform the development of the directives over the subsequent rounds.

Conclusion: A 5-point word and number scoring system was chosen, however, selecting the most important features and writing directives proved challenging. Achieving specific meaningful guidance needs balancing with concise, generic language. The resulting scoring system and directives will now undergo pilot testing before reliability trials.

- Translating observational expertise of practitioners into explicit language is challenging.
- The meaning ascribed to directives depends on the task and the experience of the assessor.
- A scoring system for quality of movement is being taken forward for pilot testing.



# Aquatic physiotherapy for the geriatric evaluation management population

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Aquatic/Cardiorespiratory 2, P 11, October 5, 2023, 11:55 AM - 12:40 PM

Aim: To determine whether it is safe and feasible to imbed an aquatic program on a geriatric evaluation management (GEM) ward.

Design: A pre-post mixed methods study.

Method: Aquatic therapy sessions were offered twice weekly over 6 weeks to eligible patients on a GEM ward at a metropolitan Melbourne hospital. Eligibility and referrals were actioned by ward physiotherapists in consultation with the medical team. The Bowens Feasibility framework was used to evaluate feasibility, with domains of interest being 'Acceptability', 'Demand', 'Implementation' and 'Integration'. Safety was assessed by recording adverse events.

Results: Between two and five eligible patients were identified each week as likely to benefit more from aquatic than land-based therapy. A total of 14 sessions were completed with six patients over the trial period. 93% of patients required maximum assistance in the water. Overall, patients reported greater intensity of exercise, less pain and improved functional tasks in water compared to land-based. Therapists reported decreased manual handling risk in water compared to land-based. Implementation challenges including transport from ward to pool, and showering after aquatic therapy. Challenges were reviewed, and solutions were identified.

Conclusion: The results indicated that, despite patients having complex needs, aquatic therapy is acceptable to patients, safe for patients and staff, and feasible as an adjunct to land-based therapy.

- Aquatic physiotherapy is safe and feasible for the GEM population
- Aquatic physiotherapy for the GEM population may improve patient function, decrease pain, increase exercise intensity, and decreased staff manual handling risk



# Exercise effectiveness on cognition, motor ability and memory of children/adolescents with Attention Deficit Hyperactivity Disorder (ADHD): review and meta-analysis

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Aquatic 5, P 5, October 6, 2023, 10:35 AM - 11:20 AM

Aim: To synthesis studies regarding the effects of land and aquatic exercise interventions on cognition, motor ability and memory of children/ adolescents with ADHD.

Design: Systematic review and meta-analysis of randomized trials

Method: Systematic search of five databases (CINAHL, Medline, PubMed, Web of Science, the Cochrane library). Physiotherapy Evidence Database (PEDro) score was used to evaluate the methodological quality of the studies. Clinical trials compared land and aquatic interventions with no exercise. Standardized mean differences (SMD) and 95% confidence intervals were calculated.

Results: Nine articles comparing land and aquatic interventions performed at moderate to moderate-high intensity were included (children/ adolescents aged 7-16 years). PEDro score ranged from six to nine. Both exercise interventions showed positive effects on improving cognition compared to no exercise control group (aquatic: SMD -1.67 95% C.I. -2.39 to -0.952, land: SMD -0.36 95% C.I. -2.61to -1.90). Aquatic interventions showed a large effect in improving Rey Osterrieth Complex Figure score compared to land (SMD -0.99 95% CI -1.54 to -0.44).

Conclusion: Both land and aquatic intervention performed at moderate to moderate-high intensity showed positive effect on improving cognition, memory and motor ability of children/ adolescents with ADHD, while aquatic exercise may contribute to larger improvement in ROCF score than land exercise.

- Both land and aquatic interventions were effective in improving cognition, memory and motor ability in children/adolescents with ADHD.
- Exercise intensity of moderate to moderate-high could potentially facilitate cognitive function
- Cognitive assessment and changes should be further explored in aquatic exercise



# Empowering people to move: exploring the clinical reasoning of experienced aquatic physiotherapists managing people with knee osteoarthritis

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Aquatic/Musculoskeletal 6, P 8, October 6, 2023, 11:25 AM - 12:10 PM

Aim: To explore the experiences of aquatic physiotherapists with extended work-related practical knowledge in managing knee osteoarthritis and determine how their insights may inform clinical reasoning frameworks.

#### Design: Qualitative approach

Method: Semi-structured interviews exploring clinical experience, program planning, content, goals, value and limitations with aquatic physiotherapy were conducted with eight Australian physiotherapists (convenience sampling; ten plus years clinical experience, advanced aquatic physiotherapy training, teaching or research experience). Transcribed interview data was coded using inductive techniques, patterns between codes were identified and described as themes.

Results: Three themes were described: 1) psychosocial aspects of aquatic physiotherapy were found to empower people with knee osteoarthritis to succeed with exercise including recognising previous unsuccessful exercise experiences, creating enjoyable exercise with less pain and greater achievement and social connectedness. 2) a focus on participation, function, graded increases in load and higher intensity exercise built physical capacity. 3) maximising opportunities for learning (pain, flare management, load, exercise) to build self-efficacy.

Conclusion: Experienced aquatic physiotherapists can inform clinical reasoning frameworks with their empowering approach with people with knee osteoarthritis to build both psychosocial and physical capacity combined with a focus on embodied learning.

- Clinical reasoning in aquatic physiotherapy beyond physiology and physics should include an expanded psychosocial focus
- Successful participation in exercise and linking program content and goals to function are the first steps in building physical capacity
- Communication and educational opportunities to discuss pain, fear avoidance, loading and exercise within aquatic physiotherapy should be further explored within existing clinical reasoning frameworks.



## The effectiveness of early, unrestricted exercise programs on upper limb function following breast cancer surgery: A systematic review and metaanalysis

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Cancer, Palliative Care & Lymphoedema 1, P 1, October 5, 2023, 11:05 AM - 11:50 AM

Aim: To evaluate the effectiveness of early, unrestricted exercise compared to delayed or restricted exercises, or usual care (control) in women following breast cancer surgery.

Design: Systematic review and meta-analysis.

Method: Five databases were searched to identify randomised controlled trials that compared early, unrestricted exercise to a control in women following breast cancer surgery. Outcomes included shoulder range, wound outcomes, and lymphoedema. Where appropriate, data were pooled using a random-effects model and reported as short, medium and long-term follow-up.

Results: 703 articles were identified and 20 trials (n=2442) were eligible for inclusion. Shoulder range outcomes were not pooled due to high heterogeneity, but trends at all time-points suggested greater improvements with early, unrestricted exercise. Total drainage volume and drainage time were significantly greater with early, unrestricted exercise (WMD 114.57ml [95%CI 35.53 to 193.60] and 0.95 days [95%CI 0.38 to 1.52]). No differences were found for other wound outcomes. Lymphoedema incidence was lower with early, unrestricted exercise compared to control at medium-term follow-up (OR 0.26 [95%CI 0.10 to 0.71]). The quality of evidence assessed using GRADE was generally low to very low.

Conclusions: While timing of exercise may not influence shoulder range, there is increased wound drainage, and early, unrestricted exercise may have a positive effect on lymphoedema.

- Rehabilitation is important for women following breast cancer surgery
- Timing of exercise should be discussed between the team and patient, with consideration of treatment outcomes
- Commencing early, unrestricted exercise may reduce the incidence of lymphoedema



# Delivering supervised group exercise to patients with cancer via telehealth: an implementation study using the REAIM framework

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Cancer, Palliative Care & Lymphoedema 7, P 1, October 6, 2023, 2:15 PM - 3:00 PM

Aim: To assess the implementation of a telehealth supervised group exercise (tele-exercise) program for patients with cancer, using the RE-AIM framework (Reach, Effectiveness, Adoption, Implementation, Maintenance).

Design: Implementation trial.

Method: Cancer patients with medical clearance and access to home internet participated in twice-weekly tele-exercise sessions for 12 weeks via Microsoft Teams. Subjective (e.g. fatigue) and objective (e.g. muscle strength, cardiorespiratory fitness) measures were taken pre and post-program. Qualitative interviews were completed post-program. Staff (referrers, physiotherapists) were also interviewed.

Results: Reach: Twenty-four participants commenced the program, most of whom were female (92%), diagnosed with breast cancer (75%). Effectiveness: Participants demonstrated reduced fatigue (FACIT-F mean difference +6.8 [95%CI 3.2 to 10.4], p<0.01), increased upper body strength (+5.4 [2.3 to 8.6] kg, p<0.01) and increased Six Minute Walk distance (+55 [28 to 81] m, p<0.001). Adoption: Participants found classes easy to integrate into daily routines, avoiding negative aspects of in-person exercise. Staff felt selecting the 'right' patient was key to minimising risk. Implementation: 21 of 24 (88%) completed the program, attending a mean of 22 sessions. Maintenance: Participants requested more time for socialising and preferred morning sessions to accommodate fatigue. Physiotherapists wanted training before leading tele-exercise. Staff valued the option of referring patients to tele-exercise.

Conclusion: A tele-exercise program for people with cancer was successfully implemented, satisfying both participants and staff.

- Participants with cancer were able to exercise safely and effectively with physiotherapist supervision via telehealth
- Patient selection for tele-exercise is key to 130inimizing risk and gaining referrer confidence



# Experiences and perspectives of pelvic floor disorders and treatment in women with breast cancer: a qualitative study

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Cancer, Palliative Care & Lymphoedema 8, P 1, October 6, 2023, 3:35 PM - 4:20 PM

Aim: To explore the experiences of pelvic floor (PF) dysfunction, and the perceived barriers and enablers to the uptake of its treatment in women with breast cancer.

Study design: Qualitative study.

Method: Purposive sampling was used to recruit 30 women with breast cancer who self-identified as experiencing PF dysfunction. Semi-structured interviews were conducted over videoconferencing and data were analysed inductively to identify emerging themes, and deductively according to the capability, opportunity, motivation and behaviour (COM-B) framework.

Results: Women were aged between 31-88 years with stage I-IV breast cancer. Participants experienced urinary incontinence (n=24/30, 80%), faecal incontinence (n=6/30, 20%) and/or sexual dysfunction (n=20/30, 67%). They were either resigned to or bothered by their PF dysfunction. Participants who were resigned felt their PF dysfunction was a low priority. Bother was driven by embarrassment of experiencing PF symptoms when in public. A barrier to accessing treatment for PF dysfunction was the lack of awareness about PF dysfunction as a side-effect of breast cancer treatments, and the lack of information available about accessing treatment for PF dysfunction to resuming their normal precancer lives.

Conclusion: Women in this study who were bothered by PF dysfunction would like to receive information about PF dysfunction prior to starting cancer treatment, be screened for PF dysfunction during cancer treatment and be offered therapies for their PF dysfunction after primary cancer treatment.

**Key Practice Point:** 

• Pathways to address education, screening and treatment of PF dysfunction in women with breast cancer should be investigated.



## Do cancer survivors maintain health benefits six to twelve months after exercise-based cancer rehabilitation? A systematic review and metaanalysis

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Cancer, Palliative Care & Lymphoedema 8, P 1, October 6, 2023, 3:35 PM - 4:20 PM

Aim: To determine whether people with cancer maintained health benefits six to twelve months after completion of exercise-based rehabilitation.

Design: Systematic review with meta-analysis of randomised controlled trials.

Method: Adults with a cancer diagnosis at any stage and undergoing any type of treatment were included. Exercise-based rehabilitation had to include planned, structured, time-limited, aerobic, resistance and/or flexibility training as the main component and be delivered by a physiotherapist or other exercise professional. The outcomes of interest were patient-related physical or psychosocial health outcome measures assessed at least six months after completion of the intervention.

Results: 19 trials including 2974 participants were included. There was moderate- to high-certainty evidence of improvements in physical activity (SMD 0.30, 95% CI 0.09 to 0.51,  $I^2=0\%$ ), cardiorespiratory fitness (SMD 2.00ml/kg/min, 95% CI 0.56 to 3.45,  $I^2=0\%$ ), walking capacity (SMD 0.62, 95% CI 0.33 to 0.92,  $I^2 = 0\%$ ), quality of life (physical functioning component SMD 0.56, 95% CI 0.11 to 1.01,  $I^2=62\%$ ) and sleep (MD 0.69 points, 95% 0.46 to 0.92,  $I^2=0\%$ ) six to 12 months after participants had completed exercise-based rehabilitation. There was no data available on cancer-related mortality or recurrence.

Conclusion: Cancer survivors can maintain improvements in health outcomes six to twelve months after exercise-based cancer rehabilitation.

- Exercise-based rehabilitation provided by physiotherapists improves longer-term physical and psychosocial health outcomes of cancer survivors.
- Exercise-based rehabilitation should continue to be implemented into standard cancer care.



# How to apply an international guideline for treating / preventing cancer treatment-related oral mucositis

#### Laakso L<sup>1</sup>

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Cancer, Palliative Care & Lymphoedema 8, P 1, October 6, 2023, 3:35 PM - 4:20 PM

Background: Oral mucositis (OM) is a common complication of radiotherapy for head and neck cancer, for chemotherapy and chemo-radiotherapy in stem cell transplantation for haematological cancers, and in other conditions. OM is graded as severe in two-thirds of cases, resulting in oral erythema, ulceration, significant pain, morbidity and health care costs. OM can predispose to septicemia in patients with neutropenia. OM has previously had no effective treatment. Photobiomodulation (PBM) therapy (also known as low level laser therapy) now has a National Institute for Health and Care Excellence (NICE) UK guideline supporting its use in treating and preventing OM.

Aims/objectives: Participants will learn about:

- pathophysiology, signs, symptoms of, and costs associated with OM
- use of, and mechanism of PBM in OM
- evidence for PBM in OM (and other toxicity-associated effects of cancer and its treatment)
- how to apply PBM for treatment and prevention of OM which has applicability for other conditions such as radiodermatitis, and head and neck lymphoedema

Approach: - Participants will be encouraged to share their experiences of patients with OM

- Powerpoint presentation on up-to-date evidence of PBM and guidelines for its use in people with OM
- Demonstration of how to apply PBM to people with head and neck cancer at risk of, or experiencing OM

### Key Practice Points:

Learning outcomes will contribute to the ability of participants to:

- advocate for use of PBM in people with OM;
- directly apply knowledge to people with OM, or at its risk.



## Treatable traits in bronchiectasis- new traits and treatments

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Cardiorespiratory 2A, P 1, October 5, 2023, 11:55 AM - 12:40 PM

Aim: To determine, in adults with bronchiectasis 1. whether new treatable traits have been proposed 2. to recognise treatments that have been implemented in a community setting for new and previously established traits and 3. to document the common traits requiring treatment.

Design: A scoping review of treatable traits in bronchiectasis published up until December 2022.

Method: The study identified new traits, together with treatments that were implemented in a community setting for previously identified and new traits by a physiotherapist, nurse or other non-medical health professional.

Results: The search yielded 7562 articles, with 256 articles proceeding to full text review and 128 articles included. Sixteen new traits were identified across studies which were mainly cross sectional and observational in design. The most common new traits were fatigue (number of papers (n)=13), physical inactivity (n=13) and reduced peripheral muscle strength (n=11). The most common treatments implemented for new and existing traits were airway clearance therapy (n=108) and pulmonary rehabilitation (n=69) in studies of mainly randomized control trial design. Airflow obstruction (n=45), reduced exercise capacity (n=36), mucus hypersecretion (n=35) and dyspnoea (n=30) were the traits most frequently targeted for treatment.

Conclusion: A number of new traits have been identified, concurrent with corresponding treatment strategies for new and existing traits that can be delivered for adults with bronchiectasis in a community setting.

**Key Practice Points:** 

• Treatable traits can be targeted by physiotherapists and nurses for adults with bronchiectasis and competency in delivering airway clearance therapy and pulmonary rehabilitation will be important.



# Health professionals perceptions of dyspnoea assessment and management within the Intensive Care Unit setting – a quality improvement survey

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Cardiorespiratory 2B, P 2, October 5, 2023, 11:55 AM - 12:40 PM

Aim: To describe health professionals' perceptions of dyspnoea management of patients within intensive care units (ICU).

Design: Cross-sectional descriptive.

Methods: An electronic survey was distributed to ICU health care professionals of two tertiary hospitals within the Central Adelaide Local Health Network. Survey items included non-identifiable demographic data, statement rating for confidence in dyspnoea management (0 to 100 numeric rating scale), frequency of assessment (categorical) and choice of dyspnoea strategies for patients breathing without ventilatory support (WVS), receiving non-invasive (NIVS) or invasive ventilatory support (IVS). Data were analysed descriptively.

Results: Respondents (n=117 (17% response rate) Nursing n=74, Physiotherapy n=19, Medicine n=17, other n=7) were involved in direct care (97.4%). Confidence in overall dyspnoea management (mean 71 ± SD 21) was higher than applying non-pharmacological strategies ( $64 \pm 24$ ) or standardised assessments for dyspnoea ( $49 \pm 28$ ). Daily or hourly assessment of dyspnoea was more frequent for patients receiving NIVS (53.1%, 64.8% respectively) versus WVS (45.7%, 62.7%) or IVS (39.3%, 54.2%). Common strategies included positioning, airway clearance and adjusting ventilatory settings in IVS (87%, 82.2%, 75.5%) and NIVS (92.2%, 76.6%, 80%). Opioids and sedation were more common strategies than cool air and fans in IVS (73.3% vs 34.4%) though similar in NIVS (51.1% vs 50%).

Conclusion: Dyspnoea management varied between types of ventilatory support. Further education and training may enhance care.

- Dyspnoea is recognised as an issue in ICUs.
- Assessment frequency and management strategies differed between presence and nature of ventilatory support.
- Low resource strategies such as fans appear underused.



# Experience, impacts and influences on breathlessness amongst people receiving care in the Intensive Care Unit (ICU): a qualitative interview study

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Cardiorespiratory 2B, P 2, October 5, 2023, 11:55 AM - 12:40 PM

Aim: Explore the experience of breathlessness in people who have been cared for within a local intensive care unit, within two weeks of their transfer to a ward setting.

Design: Descriptive qualitative.

Methods: Staff screened patients at a single metropolitan adult hospital for eligibility: ready for ICU discharge, English speaking, ICU stay of >48 hours, capable of providing informed consent, and answering "yes" to "Did you ever feel breathless during your time in ICU?" Eligible patients were invited to participate in a semi-structured interview. Interviews were audio-taped, anonymised and transcribed. Data was analysed with inductive qualitative content analysis. Sociodemographic and clinical characteristics were obtained from the medical record.

Results: Ten people (female = 6) agreed to participate {age = 67.0 [11.1] years, (mean [S.D.]); APACHE II score 20.4 [7.6]}. Overarching themes: (1) people experienced intensely difficult breathlessness sensations, thoughts, feelings, and impacts on communication and movement; (2) breathlessness was worsened by cycles of pain and panic, change and uncertainty, and activities of talking and eating; (3) breathlessness eased through communicative care, calm, and practical strategies enacted by staff, family and self.

Conclusion: Critically unwell people with a range of admission diagnoses recalled significant impacts of breathlessness and identified physical, psychological, communicative, environmental factors in addition to medical treatments that eased or aggravated this symptom.

- People experienced worse breathlessness with efforts at talking and eating, as well as movement.
- Breathlessness escalated with pain, negative emotions, unpredictability and change.
- Seemingly small, non-pharmacological adjustments to care contributed meaningful relief.



## The impact of critical illness on patients' physical function and recovery: an explanatory mixed-methods analysis

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Cardiorespiratory 2B, P 2, October 5, 2023, 11:55 AM – 12:40 PM

Aim: To determine how self-perception of physical function 6-months post-ICU admission compares to objectively measured function, and to identify patients concerns during recovery from critical illness.

Design: A convergent parallel mixed methods study 137mphasize a sample from a prospective observational study.

Methods: Physical function was assessed through four performance-based outcomes during a home visit with 20 ICU survivors. Semi-structured interviews were conducted following the functional assessments.

Results: Most participants (11/20) stated they had recovered, yet objectively measured function was below predicted, and physical limitations were commonly reported. Decreased function and increased assistance on discharge was described by all, although 9/20 were reported as independent by hospital-based staff. The importance of family and social networks to facilitate transition home was 137mphasized with no specific ICU-survivor follow-up provided. Participants highlighted the detrimental effect their illness had on financial well-being, with many stating difficulties accessing financial support and none able to return to paid work.

Conclusion: Survivors of critical illness tend to perceive a better functional state than that measured, but many still report ongoing limitations 6-months after ICU admission. Family and friends play a crucial role in supporting discharge and providing financial support. Implementation of specific discharge liaison personnel may improve transition home.

- Although ICU survivors may report recovery from their illness, the majority still have physical limitations.
- Initial discharge from hospital is difficult, with social networks crucial to the transition home.
- Education, support, and targeted follow-up may improve the outcomes for survivors of critical illness.



## The role of near peer-led simulation in physiotherapy education: a mixed methods study

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Cardiorespiratory 3, Great Hall 4, October 5, 2023, 1:40 PM - 2:25 PM

Aim: To determine the student experience of near peer-led simulation in physiotherapy education from the perspectives of students and their near-peer teachers.

Design: Convergent mixed methods study.

Methods: Participants were 111 first year and 20 second year students enrolled in a three-year graduate entry Doctor of Physiotherapy course. Peer-led simulation was delivered as a finale to first year cardiorespiratory, musculoskeletal, and neurological physiotherapy curricula and as a precursor to clinical placements. Second year students acted as both patient and near peer teacher, and first year students were near peer learners. Focus groups, pre/post questionnaires and direct observation, with both groups, occurred.

Results: Five themes emerged related to near peer-led simulation: 1) it improved their confidence, and the ability to make mistakes in a supportive and safe environment was valued; 2) peer feedback was an integral part of the learning process; 3) the authenticity and realism created seriousness, promoted engagement and supported knowledge transfer; 4) there were benefits for learning for both peer learners and peer teachers; and 5) anticipation and emotional impact of experience was evident.

Conclusion: Near peer-led simulation is viewed by students as a valuable and engaging teaching and learning activity, with benefits to the peer learner and peer teacher. Students perceive a broad range of benefits on their learning especially from giving and receiving feedback and had increased confidence following simulation.

- Peer-led simulation is an authentic and valuable component of entry-to-practice physiotherapy education.
- It may be considered for incorporation into physiotherapy curricula.



# Delayed recovery following COVID19: preliminary findings from Australia's COVID19 'epi-centre'

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Cardiorespiratory 5, P 3 & 4, October 6, 2023, 10:35 AM - 11:20 AM

Aim: To describe COVID-19 patient disability at six months.

Design: Mixed methods study: 1. Quantitative, observational comparator cohort study; and 2. Qualitative inquiry, using Interpretative Phenomenological Analysis.

Method: Setting: single, major metropolitan site. Participants: acutely hospitalised people with COVID-19 (excluding intensive care) and outpatients. Outcomes: World Health Organisation Disability Assessment Scale 12-item. Data collection and analysis: 1. Quantitative telephone surveys, using unmatched sample comparison analysis, 2. Qualitative telephone recorded interviews, thematically analysed.

Results: 544 survey responses (COVID19 n=68, Control n=476), and 38 interviews completed. Preliminary quantitative findings indicated only one third of COVID19 patients (34%) report full recovery six months post-diagnosis, with the remainder perceiving incomplete, partial or limited recovery. There were significant between group differences for several variables: concentration (p=0.01), memory (p=<0.001), cognition (p=0.04), emotions (p=0.04), and bathing (p=0.03). Preliminary qualitative findings described in more detail various illness trajectories: 1. deterioration after diagnosis; 2. gradual recovery; 3. alternating relapses and remissions. Persistent features impacting recovery included cognitive impairment ("brain fog that won't lift"), and ongoing physical impairments including fatigue, dyspneea, and chest pain.

Conclusion: People with COVID19 experienced delayed recovery with ongoing disability observed in cognitive, emotional, and physical health.

- Recovery following COVID19 is delayed with various illness trajectories.
- Further research is needed to understand longer-term outcomes beyond 6 months.
- Data should be used to inform models of care and health policy to support people with persistent disability.



# 'How do I test the waters? How do I go forward?' Co-designing a supportive pathway after Intensive Care Unit admission.

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Cardiorespiratory 5, P 3 & 4, October 6, 2023, 10:35 AM - 11:20 AM

Aims: This study aimed to 1) explore recovery from the perspective of persons post critical illness, caregivers, and clinicians and 2) co-design a rehabilitation intervention to support long-term recovery.

Design: Experience-based co-design study guided by the Behaviour Change Wheel and Template for Intervention Description and replication.

Method: Conducted between August 2021 and February 2022, this study involved nine semi-structured interviews and two series of iterative workshops. Persons post critical illness (<five years post illness, ventilated >48 hours), caregivers and clinicians were recruited from two tertiary hospitals. The first workshops explored recovery and the second workshops presented a rehabilitation intervention prototype for refinement and acceptability. Data were analysed via reflective thematic analysis independently by two researchers.

Results: Forty people participated; 15 persons post critical illness (60.0% male, mean age 56.0 (SD 17.7) years, mean 2.2 (SD 1.3) years after illness), two caregivers and 23 multidisciplinary clinicians. An underserved timepoint in recovery was identified at hospital discharge with the burden of residual physical and psychological symptoms, adjustment to disabilities, isolation from hospital services and increased family reliance. Concisely, the co-designed prototype involved screening, a tailored home-based physical and psychological intervention and toolkit resources for clinicians and patients/caregivers.

Conclusion: The transition from hospital to home was identified as a crucial timepoint for intervention. The co-designed intervention will be piloted in the future.

- Unmet healthcare needs exist for persons post critical illness after hospital discharge.
- Resources and upskilling are needed within the community for clinicians, persons post critical illness and caregivers



# The effect of self-selected music listening during pulmonary rehabilitation in people with COPD: a multi-centre, randomised controlled trial

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Cardiorespiratory 5, P 3 & 4, October 6, 2023, 10:35 AM - 11:20 AM

Aim: This study aimed to determine the effects of self-selected music listening as an adjunct to the exercise component of pulmonary rehabilitation in people with COPD.

Design: Randomised controlled trial, with concealed allocation, assessor blinding and intention-to-treat analysis.

Method: Adults with COPD referred to pulmonary rehabilitation at two centres were randomly assigned to self-selected music listening (intervention group, (IG)) or usual care (control group (CG)) during a pulmonary rehabilitation program. Prior to training, the IG completed an interview with a music therapist, identifying preferred music to listen to during training. IG participants listened to an individualised playlist; CG participants listening to ambient music. Outcomes included 6-minute walk distance (6MWD) and dyspnoea (Multidimensional Dyspnoea Profile (MDP)), measured pre and post intervention.

Results: 58 participants (FEV1 52.4(25.9)% pd) were recruited. There were no between-group differences, with p>0.05 for all outcomes. Within-group differences following rehabilitation were significant for 6MWD and dyspnoea (all p<0.05) (6MWD: IG mean difference [95% CI] 27 [0, 54]; CG 44 [19, 68]; MDP Sensory: IG 2.3 [1.2, 3.3]; CG 1.5 [0.5, 2.5] points; MDP Affective: IG 3.3 [2.3, 4.3]; CG 2.2 [1.3, 3.2] points).

Conclusion: When used in pulmonary rehabilitation, self-selected music listening offered no greater benefit to exercise capacity or dyspnoea compared to ambient music listening.

- Self-selected and ambient music listening provide similar improvement in exercise capacity when applied as adjuncts to pulmonary rehabilitation.
- Both modes of music listening reduce the sensory qualities of and emotional responses to dyspnoea during exercise training in COPD.



## Feasibility, safety, and acceptability of electronic inspiratory muscle training in patients who require prolonged mechanical ventilation: a dual centre study

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Cardiorespiratory 6, P 3 & 4, October 6, 2023, 11:25 AM – 12:10 PM

Aim: To evaluate the safety, feasibility, and acceptability of using an electronic device to facilitate inspiratory muscle training (IMT) with critically ill patients requiring prolonged mechanical ventilation ( $\geq$ 5 days).

Design: Prospective observational cohort study, with convenience sampling in 2 tertiary ICUs.

Method: Daily training supervised by ICU physiotherapists was completed with the electronic IMT device. Feasibility was defined a priori as  $\geq$  80% of planned sessions completed. Patient-perceived acceptability was evaluated with a bespoke survey following the acceptability of intervention framework principles.

Results: Forty participants completed 197 electronic IMT treatment sessions. Electronic IMT was feasible with 81% of planned sessions completed. There were 19 minor adverse events in 11 participants (10% of sessions) and no major adverse events. All minor adverse events were transient without clinical consequences (e.g. rise in systolic blood pressure >20mmHg). All participants that recalled completing electronic IMT sessions reported that the training was acceptable, with over 85% reporting that electronic IMT was helpful or beneficial, and that electronic IMT assisted their recovery.

Conclusion: Electronic IMT is feasible, and acceptable with critically ill participants who require prolonged mechanical ventilation. As all minor adverse events were transient without clinical consequences, electronic IMT can be considered a relatively safe intervention in this cohort.

- Electronic IMT is feasible and acceptable in ICU patients undergoing prolonged mechanical ventilation (>5 days).
- Electronic IMT is safe in these patients, with a low rate of minor adverse events, most of which are transient and without clinical consequences.



# Using high-fidelity simulation to pilot an extubation cognitive aid for patients with acute cervical spinal cord injury

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Cardiorespiratory 6, P 3 & 4, October 6, 2023, 11:25 AM – 12:10 PM

Aim: To evaluate the usability of a purpose-built cognitive aid for clinicians with the extubation of patients with acute cervical spinal cord injury. Secondary aims were to observe clinicians' behavior during simulations, and to compare clinicians' self-ratings of confidence before and after introduction to the cognitive aid.

#### Design: Mixed-methods

Method: Twenty-six intensive care clinicians (10 physiotherapists, 10 nurses, 6 doctors) completed two highfidelity simulation scenarios. Participants were orientated to the cognitive aid between the two scenarios. Each scenario was audio-visually recorded and scored by a blinded observer using a standardized checklist. Clinicians completed pre/post questionnaires and semi-structured interviews.

Results: Mean score on the System Usability Scale was 74.4, indicating 'good' usability. After orientation to the cognitive aid participants reported higher confidence in their ability to complete a respiratory assessment pre-extubation (p = 0.04) and objective outcome measures pre/post-extubation (p = 0.005). Significantly more factors related to pneumonia (p<0.001) and extubation readiness (p<0.01) were identified during the second scenario after introduction to cognitive aid. Participants reported that the simulation scenarios were realistic and the cognitive aid was positively perceived.

Conclusion: The cognitive aid demonstrated good usability, was rated positively, and was associated with improved recognition of both pneumonia signs and extubation readiness.

- The cognitive aid may enhance clinicians' assessment, confidence and communication for acute cervical spinal cord injury patients nearing extubation
- High-fidelity simulation can be used to pilot and refine cognitive aids aimed at high-stakes/low frequency decisions such as the extubation of acute cervical spinal cord injury patients



### Exploring functional outcomes in adults three months after major upper abdominal surgery: a mixed methods study

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Cardiorespiratory 6, P 3 & 4, October 6, 2023, 11:25 AM - 12:10 PM

Aim: In patients who are three months post major upper abdominal surgery (MUAS), to 1) Explore functional outcomes and 2) Explore the lived experiences and expectations of patients who have undergone MUAS and their caregivers.

Design: A mixed methods study comprising a prospective cohort and a qualitative study.

Method: Validated questionnaires were used to measure frailty, independence, abdominal pain, postsurgical fatigue and cognition pre- and three months post-operatively. Explorative interviews were conducted with participants and their primary caregivers three months post-operatively.

Results: Thirty-five participants were recruited. The median clinical frailty scale score was 3 (IQR 3-4) preoperatively, and 4 (IQR 3-4) post-operatively (p<0.001). The median Lawton Instrumental Activities of Daily Living scale score was 8 (IQR 8-8) pre-operatively, and 8 (6.5-8) post-operatively (p=0.04). Symptoms of pain and fatigue were still experienced three months post-surgery, and higher-level physical activities were still requiring assistance. Caregivers experienced increased stress and fear regarding the uncertainty of the recovery period, and a large amount of caregiver burden was placed on working caregivers.

Conclusion: Three months post MUAS, individuals were more frail, and still experiencing mild abdominal pain and fatigue impacting their return to physically demanding activities of daily living. Caregivers experienced uncertainty regarding the trajectory of recovery following MUAS.

- Three months following MUAS, adults can expect some residual abdominal pain and fatigue and to still be reliant on assistance with high-level physical activities.
- Caregivers believe they need to be more informed regarding the expectations surrounding the recovery period following MUAS.



# Do physiotherapists provide different interventions to patients with postoperative hypoxaemia?

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Cardiorespiratory 7A, M 1 & 2, October 6, 2023, 2:15 PM - 3:00 PM

Aim: To describe and compare physiotherapy treatments provided to patients with and without postoperative hypoxaemia.

Design: Prospective international multicentre observational cohort study.

Method: The details of physiotherapy interventions provided following major surgery to 4481 adults were documented. The proportion of patients receiving each intervention on the second postoperative day was compared using Pearson's chi-square between those who did and did not develop hypoxaemia on both the first and second postoperative day. Hypoxaemia was defined as oxyhaemoglobin saturation less than 90% on room air or a ratio of arterial partial pressure of oxygen to fraction of inspired oxygen less than 300.

Results: Hypoxaemia occurred on both days in 743 (17%; 95% CI 16% to 18%) and on neither day in 3062 (68%; 95% CI 67% to 70%) adults. Patients with hypoxaemia more frequently received postoperative education, deep breathing and coughing exercises, positive pressure therapies, positioning, manual chest wall techniques and suctioning (p < 0.01). Patients without hypoxaemia more often received preoperative physiotherapy (p < 0.0001). Ambulation delivery did not differ between groups (p = 0.27).

Conclusion: Physiotherapists deliver different respiratory interventions to those with compared to those without hypoxaemia following major surgery.

- Postoperative hypoxaemia may currently be used by physiotherapists as a trigger to provide additional or alternate respiratory therapies.
- These data may externally validate clinical trial findings that preoperative physiotherapy is protective against postoperative pulmonary compromise.
- The effectiveness of physiotherapy interventions to prevent or treat postoperative hypoxaemia requires further study.



### Engagement and adherence to the mobile Pulmonary Rehabilitation (m-PR) app.

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Cardiorespiratory 7B, P 2, October 6, 2023, 2:15 PM - 3:00 PM

Aim: To investigate engagement and adherence to a mobile pulmonary rehabilitation (m-PR) app in people with chronic obstructive pulmonary disease (COPD).

Design: Preliminary analysis of a single arm of a randomised controlled trial.

Method: Participants with COPD, randomised to the intervention, were asked to complete an 8-week pulmonary rehabilitation program through the m-PR app consisting of educational videos (exercise, informational and inhaler) and individually prescribed aerobic and strength exercises. Click data on the m-PR app was tracked. Outcome measures were: i) app engagement, measured by the number of clicks on any task on the app; ii) app adherence, measured by clicks that indicated the: a) number of videos watched in full; b) number of prescribed exercise sessions completed, with the adherence levels set at >70% for both. Participants completed a technology skills questionnaire.

Results: Twelve participants have completed the study (mean age (SD): 73 (7) years, FEV1%(predicted) (SD): 58(15), 33% female, 92% rated technology skills as adequate/good/very good). 90% of participants engaged with the videos and 42% were adherent. 81% of participants engaged with the exercise program on a weekly basis, with 75% being adherent to the 8-week exercise program, 67% adherent to the aerobic component and 75% to the strength component.

Conclusion: Overall engagement with the m-PR app videos and exercise program was high. Adherence to the exercise program was relatively high and greater than for the videos.

**Key Practice Points:** 

• This mobile health app provides a new mode of delivery for pulmonary rehabilitation with good adherence to exercise.



# Synthesis of 'within workshop' feedback reflecting learning experiences of health professionals in the practical management of chronic breathlessness

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Cardiorespiratory 7B, P 2, October 6, 2023, 2:15 PM - 3:00 PM

Aim: To describe 'within workshop' feedback from clinicians participating in an intensive education program for practical management of chronic breathlessness

Design: Descriptive secondary analysis

Method: A workshop (3 days, June 2019, 55 participants) based on the Breathing, Thinking Functioning framework prospectively scheduled opportunities for 'within workshop' direct participant input (written Post It notes for: 1) Something learned/valued, Day 1 and 2; 2) questions/areas for clarification, Day 1. At end of Day 3, participants wrote a postcard to themselves outlining a personal breathlessness-related goal to be achieved within the next month. Postcards were mailed 4 weeks later. Text data were transcribed by an independent researcher. Coding framework (line by line approach) consistency was confirmed by two researchers working independently and used in data synthesis (thematic content analysis).

Results: Participants valued new learnings (n=130 statements) in biopsychosocial breathlessness concepts and clinical models of management (e.g. fan, pacing, listening, reflecting on personal bias, motivational interviewing). Areas for clarification (n=38) concerned breathlessness assessments, use of techniques in specific populations or settings, physiological mechanisms, referral pathways and buy-in from multidisciplinary health teams. Future actions described in postcards (n=43) concerned implementing change at a service (colleagues, units) or personal level (self-reflection, communication, techniques, accessing resources).

Conclusion: 'Within workshop' feedback provides opportunities for reflection on content and learning for participants and facilitators.

- Iterative 'within workshop' feedback allows immediate modification of ongoing workshop content.
- Formal assessment of momentary feedback provides insight into participant learning and opportunities to improve future iterations of the workshop.



### Feasibility of delivering personalised self-management education about physical activity and sedentary behaviour to people undergoing pulmonary rehabilitation

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Cardiorespiratory 7B, P 2, October 6, 2023, 2:15 PM - 3:00 PM

Aim: To explore the feasibility of delivering personalised education about physical activity and sedentary behaviour alongside pulmonary rehabilitation (intervention), in comparison to pulmonary rehabilitation alone (control), in individuals with chronic lung disease.

Design: Multi-centred, pilot, randomised controlled trial.

Method: All participants wore an accelerometer for 7 days before commencing pulmonary rehabilitation. The intervention group received personalised advice based on their accelerometer results to facilitate goalbased behaviour change specifically to increase movement during waking hours. The control group received usual care. Feasibility outcomes included recruitment rate, number of eligible participants, acceptability of intervention, number of adverse events and dropout rate. Time spent stepping and sitting per day were analysed from accelerometer wear at baseline, post-program and 3-months post-program.

Results: Thirty-one (50%) of 62 eligible participants were enrolled (intervention = 14 [45%], control = 17 [55%]). Twenty-one (68%) participants successfully completed the program and 16 (52%) remained at 3-month follow-up. One mild adverse event was recorded; a short-term skin irritation from the accelerometer, that resolved with dressing change. All study participants rated treatment quality and care received as "good" or "very good" and felt their views, concerns, and individual needs were met. No differences between groups were found for time spent stepping or sitting per day at any timepoint.

Conclusion: Embedding a self-management intervention is feasible, however, its impact on health behaviour requires further exploration.

- Personalised education in pulmonary rehabilitation participants is feasible.
- Pulmonary rehabilitation should be explored as a teachable moment for facilitating healthy lifestyle behaviours.



### User experience testing of the mobile pulmonary rehabilitation (m-pr) app

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Cardiorespiratory 7B, P 2, October 6, 2023, 2:15 PM - 3:00 PM

Aim: To determine the ease of use and satisfaction of a mobile pulmonary rehabilitation (m-PR) app in people with chronic obstructive pulmonary disease (COPD).

Design: Observational study

Method: Participants with COPD were recruited following an initial assessment at three pulmonary rehabilitation sites in Sydney, Australia. Participants were educated on the m-PR app which contained symptom monitoring, exercise prescription, education and exercise videos, goal setting, medication action plan, and health notifications. Participants used m-PR for 4-8 weeks. Weekly contact with a physiotherapist was provided. At follow-up, participants completed the i) System Usability Survey (SUS) and ii) a purpose-designed satisfaction survey containing four primary questions with a 5-point Likert scale (perceived enjoyment, usability, and helpfulness of the app) and one open-ended question.

Results: Fifteen participants completed the study (mean age (SD): 70 (10) years, FEV1 (% predicted): 62 (18), 53% female, 100% rated technology skills as adequate/good/very good). The mean (SD) SUS score of 71 (16) demonstrated high perceived usability of m-PR. The satisfaction survey indicated that 67% (n=10) enjoyed the m-PR app and 33% (n=5) were neutral. Participants found the app components somewhat easy or very easy to use (range 69-100%) and somewhat helpful or very helpful (range 76-100%). Open-ended question responses revealed that the education resources, therapist communication, and the recording of exercise data were viewed positively.

Conclusion: The m-PR app was easy to use, helpful and enjoyable by people managing their COPD.

Key Practice Points:

• Mobile health programs could be an acceptable alternative delivery mode of pulmonary rehabilitation.



## Investigation of variables affecting the safe application of early active mobilisation for critically ill adults: a systematic review and meta-analysis

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Cardiorespiratory 8A, M 1 & 2, October 6, 2023, 3:35 PM - 4:20 PM

Aim: To investigate the effect of early mobilisation versus standard care in an acute ICU on adverse events and mortality for specific cohorts of critically ill adults who were mechanically ventilated.

Design: Systematic review and meta-analysis.

Methods: Electronic databases and clinical trial registries were searched from inception till March 16th, 2023. Risk ratios with 95% confidence intervals were calculated in RevMan Web using random-effect modelling. Variables reviewed included dosage of mobilisation achieved, time till commencement of mobilisation, ventilation status and admission diagnosis.

Results: 78 trials (7,644 participants) were included after full-text review, with 60 contributing to metaanalysis. Of 64 analyses, only three showed a clear outcome (increased adverse events with mobilisation), however these results had very few events decreasing the certainty of the result. No clear benefit or harm were otherwise identified, however providing higher doses of mobilisation earlier in the admission while patients were still ventilated demonstrated signal for harm.

Conclusion: Performing mobilisation later in the ICU admission or when patients are extubated may cause less harm, however a large proportion of the data was unable to be analysed reducing the certainty of the conclusions. Performing an individual patient data meta-analysis should improve differentiation and identification of cohorts that may benefit more from early active mobilisation.

- Performing early mobilisation in ICU did not lead to harm
- Performing mobilisation later in the admission or when patients are extubated may cause less harm
- Reviewing individual patient data should identify cohorts that benefit more from mobilisation



### An international clinimetric evaluation of the short physical performance battery test in critically ill individuals: a retrospective observational study

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Cardiorespiratory 8A, M 1 & 2, October 6, 2023, 3:35 PM - 4:20 PM

Aim: Evaluate the validity, responsiveness, and floor and ceiling effect of the Short Physical Performance Battery (SPPB) in ICU survivors.

Design: Retrospective post-hoc analysis.

Methods: Data were pooled from eight studies, involving adults ( $\geq$ 18 years) who required an ICU admission. Outcomes included the SPPB, six-minute walk test (6MWT), Timed Up and Go (TUG), handgrip, and quadriceps strength. Assessments were completed at hospital discharge, 3-4 months, 6 months and/or 12 months post discharge.

Results: Of 488 participants, 47% were male, with median age 58.0 [49-67] years, mechanical ventilation 5.2 [3-10] days, and hospital length of stay 14.0 [8-27] days. SPPB demonstrated excellent construct validity with 6MWT (rho = 0.81), TUG (rho = -0.87), dual TUG (rho = -0.75), moderate construct validity with handgrip (rho = 0.57), and fair construct validity with quadriceps strength (rho = 0.34) at hospital discharge. Individuals discharged home had higher SPPB median scores than those discharged to rehabilitation (7 [3-10] and 3 [0-6] respectively). Moderate to large responsiveness was observed (-0.71 to -0.82). Floor and ceiling effects ranged from 0-19% and 6-31% respectively, with highest floor effect at hospital discharge and ceiling effect at 6-12 months.

Conclusion: SPPB is a valid and responsive outcome in ICU survivors and may be used to identify support needs post hospital discharge.

- SPPB is a valid, responsive tool which may help direct rehabilitation supports at hospital discharge for ICU survivors
- Substantial ceiling effect at 6-12 months post hospital discharge may limit utility in longer term follow-up



### Post-operative mobilisation management following lower limb free flap and split skin grafting: an Australian perspective

<u>Sgro G</u><sup>1</sup>, Hawkins S<sup>1,2</sup>, Da Silva A<sup>1</sup>, Shaw L<sup>1</sup> <sup>1</sup>The Royal Melbourne Hospital, <sup>2</sup>St Vincent's Hospital

Cardiorespiratory 8A, M 1 & 2, October 6, 2023, 3:35 PM - 4:20 PM

Aim: To investigate national practice of post-operative management for lower limb free flap and split skin grafting including mobility restrictions from the perspective of Australian physiotherapists.

Design: Survey of Australian plastic surgery physiotherapists.

Method: A 38-item electronic survey regarding post-operative management of lower limb free flaps or split skin grafts was disseminated to plastics physiotherapists via email from a database of Australian public hospitals with major plastics/reconstructive services. Usual practice was evaluated according to immobilisation periods, weightbearing restrictions, dangling protocols, compression protocols and outpatient physiotherapy follow-up.

Results: Of the thirty-three responding hospitals (response rate 62%), the majority conducted both lower limb free flap and split skin grafting procedures (93.9%). A period of immobilisation post-operatively was reported at 96.8% of hospitals for lower limb free flaps and 72.7% of hospitals for lower limb split skin grafting. The most common bed rest period was five days. Range of motion and weightbearing depended on flap location and surgeon preference. Dangling and compression protocols were followed in 57.6% and 46.7% of hospitals respectively, with variable prescription of time, frequency and progression. Majority of hospitals did not organise routine outpatient physiotherapy follow up.

Conclusion: There is considerable variability in post-operative management patients with lower limb free flaps or split skin grafts, and despite current evidence, an overall trend towards immobilisation and restricted mobility.

- Post-operative mobility restrictions are dependent on surgeon preference, flap location and integrity.
- Further investigation into surgeon perceived barriers may be useful in facilitating transition to early 152obilization.



## Validity of the 40-step test and one minute sit-to-stand test for hospitalised patients with COVID-19: an observational study.

<u>Merrett M</u><sup>1</sup>, Shaw L<sup>1</sup>, da Silva A<sup>1</sup>, D'Souza A<sup>1</sup>, Levy C<sup>1</sup>, Medland J<sup>1</sup>, Granger C<sup>1</sup> <sup>1</sup>The Royal Melbourne Hospital

Cardiorespiratory 8B, Great Hall 4, October 6, 2023, 3:35 PM - 4:20 PM

Aim: To determine the construct validity of the 40-step test against the one-minute sit-to-stand test to identify exertional oxygen desaturation in patients hospitalized with COVID-19 to assist in decision making around readiness for acute discharge.

Design: Prospective, single site, observational study

Method: Patients hospitalised with COVID-19 with an active physiotherapy referral for assessment of exertional desaturation were included. Both tests were completed at each physiotherapy contact over hospital admission until discharge. Identification of desaturation was the primary outcome of each test. Changes in oxygen saturation, heart rate and modified Borg dyspnoea rating were recorded.

Results: Between May and August 2021, 23 patients were included (60% male, mean age 73.3  $\pm$  15.6 years, median admission length 8 days IQR [4.0-14.0], 83% discharged home, 41% immunocompromised, 49% requiring supplemental oxygen). The yielded sample was lower than anticipated likely due to the introduction of vaccinations during study period. Both tests successfully identified exertional desaturation, and change in heart rate and Borg scores (all pre-post p<0.05). Moderate correlation existed between change in oxygen saturation during the 40-step test and one-minute sit-to-stand test (r=0.602, p<0.001).

Conclusion: The 40 step-test and one-minute sit-to-stand tests provided similar outcomes for identification of exertional desaturation and therefore could be used interchangeably in hospitalised patients with COVID-19.

- The 40-step test and one-minute sit-to-stand both successfully identified exertional desaturation in patients with COVID-19 in a similar manner.
- Clinicians can make informed decisions on the need for oxygen therapy and readiness for discharge using either test.



### Physio at night: treatments delivered by physiotherapists during afterhour oncall and evening shifts.

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Cardiorespiratory 9A, P 9, October 7, 2023, 10:35 AM - 11:35 AM

Aim: To describe and compare physiotherapy treatments delivered during oncall and evening shifts.

Design: Multi-centre prospective audit.

Method: Physiotherapy treatments provided during oncall and evening shifts were documented over six months. Oncall services were provided to 478 patients across 11 hospitals and evening services to 681 patients at two hospitals. Physiotherapy treatments were delivered over 949 oncall and 1235 evening shifts. The proportion of patients receiving each treatment was compared across service models using Pearson's chi-square.

Results: During oncall shifts, physiotherapists more frequently provided education to staff, positioning upright or side lie, nebulisation, manual hyperinflation, positive pressure ventilation, percussion and vibrations, assisted coughing, and suctioning via a guedel, nasal or natural airway (p < 0.001). During evening shifts, physiotherapists more frequently provided education to patients, incentive spirometry and ambulation (p < 0.001). The most common treatment provided was percussion and vibrations (76%) for oncall, and education to patients (58%) for evening shifts. Breathing exercises were delivered to 44% of patients under both service models (p = 0.813).

Conclusion: Physiotherapy treatments delivered during oncall and evening service models varied.

- Physiotherapists delivering after-hour services must be competent to deliver a variety of treatments.
- Skills and knowledge required by after-hours physiotherapists may vary depending on the goal and model of the service.
- More dependent treatments (for example percussion, assisted cough, suctioning) delivered oncall may indicate that a common trait for oncall cohorts is an impaired ability to perform treatments independently. Further study is required.



### Is telehealth a feasible model to deliver pre-operative physiotherapy education to patients undergoing elective upper abdominal surgery? A prospective study

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Cardiorespiratory 9A, P 9, October 7, 2023, 10:35 AM - 11:35 AM

Aim: To explore the demand and practicality of a new telehealth delivered pre-operative education service for patients undergoing elective upper abdominal surgery.

Design: Prospective feasibility study.

Method: Patients planned for open upper abdominal surgery were referred to the new service. Patients were able to opt-in to attend a single telehealth education session. Sessions were run by physiotherapists twice per week over the pilot. This was expected to run for six-months, with review of feasibility at monthly increments.

Results: The new service commenced in October 2022 and ran for two months. During this time, 19 patients were referred, however only four (21%) attended a session (uptake average 2 patients per month). Over the two-month pilot, a total of 875 minutes was spent by physiotherapists preparing the sessions; tasks included screening, sending invitations and conducting sessions (average time of 109 minutes per week). The service was ceased early due to low uptake and disproportionate physiotherapy resources required.

Conclusion: Use of an opt-in telehealth model to deliver pre-operative physiotherapy education to patients undergoing elective upper abdominal surgery at our metropolitan tertiary hospital was not feasible. Further investigation into the barriers to referral and uptake is required.

- Delivery of a pre-operative telehealth physiotherapy education session for patients undergoing open abdominal surgery was resource intensive, and referrals and uptake of the service at our hospital was poor.
- Alternate processes may streamline the referrals for telehealth pre-operative education and improve administrative efficiency.



## Digital resources providing real-time respiratory equipment support to the on-call physiotherapist at the bedside

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Cardiorespiratory 9A, P 9, October 7, 2023, 10:35 AM - 11:35 AM

Aims: With a variety of respiratory equipment now available, there is a need to provide quick, easy to access information to the on-call physiotherapist, so they are able to safely delivery care.

Design: Online tool available via mobile devices that hosts a suite of quick reference guides (QRGs).

Method: The digital team in physiotherapy department worked with the respiratory experts to produce a series of interactive resources that provided practical support for the bedside clinician. The information included indicators for use, precautions, equipment set up, titration and evaluation. Additional photos and videos were embedded throughout to provide easy step-by-step guidance. QRGs were built in Microsoft Sway and the online 'library' available to be added to all mobile home screens.

Results: Eight QRGs were developed and shared with all staff who work weekends and on-call, these included non-invasive ventilators, cough assist devices and intrapulmonary percussive ventilators. Feedback from staff was undertaken to evaluate if the information was appropriate, easy to access and clinically useful. This feedback was overwhelming positive and subsequently QRGs for other areas are under development. The team have also modified the tools for nursing staff and carers who use the equipment when it has been set up and prescribed by the physiotherapist. These tools are now held on Team Leader mobile phones across the hospital.

Conclusion: Providing mobile resources to clinicians supports timely use of respiratory equipment, as well as promoting safe and effective interventions.

Key Practice Points:

• Digital solutions can support point of care treatment.



# Pulmonary rehabilitation for people following Covid-19 illness: an observational study

#### King M<sup>1</sup>, Wootton S<sup>1</sup>, Chan A<sup>2</sup>

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Cardiorespiratory 9B, P 8, October 7, 2023, 10:35 AM - 11:35 AM

Aim: To evaluate the feasibility and outcomes of pulmonary rehabilitation (PR) in people following Covid-19 illness.

Design: Prospective, observational, single arm study

Methods: Participants were included after referral to PR in Northern Sydney. Participants were offered a comprehensive PR assessment and provided a choice of exercise training modality for up to 12 weeks. Outcomes included uptake (% attending PR assessment), completion rate, symptoms reported, exercise training modality chosen, adverse events and changes in exercise capacity (six-minute walk test [6MWT], 1 minute sit-to-stand test [1minSTS]).

Results: Twenty-five participants (mean age 58 [range 25-85] years) were included in the analysis. Twelve participants were referred following screening phone calls six-12 weeks after hospital admission, six participants were referred directly from hospital with a further seven referred from outpatient specialists. All participants (100%) attended for assessment and 20 (75%) completed PR. Symptoms reported included breathlessness (88%), fatigue (92%) and mental distress (68%). Chosen rehabilitation modalities were supervised gym programs (68%), supervised tele-rehabilitation (20%) and individual exercise programs (12%). Significant improvements were seen in (mean [95% confidence interval]) change in: 6MWT (48 [13-81] m) and 1minSTS 6([1-8] repetitions). No adverse events were recorded.

Conclusion: A PR model for people recovering from Covid-19 was feasible and demonstrated improvements in exercise capacity.

- PR is a suitable setting to provide rehabilitation for some people recovering from COVID-19 illness.
- Randomised controlled trials are required to determine effectiveness of PR in people recovering from COVID-19 illness.



### Feasibility of group-based telerehabilitation for Long-COVID

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Cardiorespiratory 9B, P 8, October 7, 2023, 10:35 AM - 11:35 AM

Aim: To assess the feasibility of group-based telerehabilitation exercise intervention for Long-COVID.

Design: Pilot randomised control feasibility study

Method: This study recruited individuals with Long-COVID symptoms, which were defined as persistent dyspnoea, fatigue or chest pain, at least 110 days post COVID-19 diagnosis and who had not undertaken exercise training in the preceding three months. Participants were randomly assigned to receive either a twice-weekly supervised group telerehabilitation program for ten weeks or to continue with usual care. Feasibility outcomes, including recruitment rate, completion rate, adherence, adverse events and technological issues were evaluated. Additionally, exploratory clinical outcomes (exercise capacity, fatigue and health-related quality of life) were assessed.

Results: The study recruited 21 participants with mean age  $53 \pm 14$  yrs, who had been diagnosed with COVID-19 365  $\pm$  67 days earlier. The recruitment rate was 39% of the possible participants, with 82% of the intervention group completing the ten-week telerehabilitation program. The intervention group demonstrated high adherence, completing 18  $\pm$  2 sessions, with no reported adverse events and two technological problems. The five sit to stand test showed a between group difference (mean[95% confidence interval]) of -1.4[-0.2, -2.6]secs, favouring the intervention group. However, there was no significant differences in any of the other exploratory outcomes.

Conclusion Supervised group telerehabilitation appears to be feasible and safe for some people with Long-COVID.

- Telerehabilitation may be appropriate for some individuals with Long-COVID
- A future study is required to examine the efficacy and generalizability of group-based telerehabilitation in this complex population



# Student-delivered pulmonary rehabilitation is feasible in people with chronic respiratory disease: a retrospective pre-post cohort study.

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Cardiorespiratory 9B, P 8, October 7, 2023, 10:35 AM - 11:35 AM

Aim: To determine if community-based student-delivered pulmonary rehabilitation is feasible in terms of program participation and improving clinical outcomes.

Design: Retrospective pre-post cohort study.

Method: Data from 52 people with chronic respiratory disease undertaking student-delivered pulmonary rehabilitation at Australian Catholic University were retrieved. Participants were referred from a hospital waitlist. Program participation, exercise capacity and health-related quality of life were examined. Participation outcomes included number of people referred to, commenced, and completed the program. Exercise capacity (six-minute walk test, five-times sit-to-stand test, one-minute sit-to-stand test) and health-related quality of life outcomes (St. George's Respiratory Questionnaire, Hospital Anxiety and Depression Scale) were measured.

Results: Of the 52 people referred, 35 people (69%) completed the program. Six-minute walk distance increased (mean difference 38.5 metres, 95% CI 19.4 to 57.6), five-times sit-to-stand test improved (mean difference 3.4 seconds, 95% CI 2.4 to 4.5), and number of sit-to-stands performed in one-minute increased (mean difference 5.0, 95% CI 3.0 to 6.9) following program completion. St. George's Respiratory Questionnaire scores decreased (mean difference 8.7, 95% CI 4.2 to 13.2), and Hospital Anxiety and Depression Scale scores decreased (mean difference 2.9, 95% CI 0.9 to 4.9) post-program.

Conclusion: Student-delivered pulmonary rehabilitation appears feasible in producing strong program participation and clinical outcomes in people with chronic respiratory disease.

- Student-delivered pulmonary rehabilitation appears feasible in community settings
- Attending student-delivered pulmonary rehabilitation offers alternative access for hospital waitlists
- Participants achieved significant clinical improvement in exercise capacity and health-related quality of life following student-delivered pulmonary rehabilitation



### The lived experiences of participating in lung cancer exercise programs: a qualitative evidence synthesis

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Cardiorespiratory 9B, P 8, October 7, 2023, 10:35 AM – 11:35 AM

Aim: To systematically synthesise the existing qualitative literature regarding the lived experiences of people with lung cancer, caregivers and/or clinicians regarding formal exercise programs.

Design: A qualitative evidence synthesis designed using the Cochrane Qualitative and Implementation Methods Group guidelines.

Method: Published and grey qualitative literature were searched. Two independent reviewers screened the retrieved citations for inclusion and assessed the methodological quality of included papers using the Critical Appraisal Skills Program checklist. Data were extracted and cross-checked by a second reviewer. Qualitative data were thematically 160ospitalize.

Results: Twenty-two studies from seven countries were included. There was variation in exercise program timing (pre (32%), during (36%), and post-treatment (73%) programs); supervision (50% supervised); delivery mode (e.g., home-based including telehealth (55%) and centre-based (45%) programs); and patient factors such as cancer treatment and intent. Most programs (68%) incorporated aerobic and/or resistance exercise. Common themes included: 1600spitalized160t exercise is viewed as beneficial and enjoyable but challenging; barriers and facilitators exist for participating in exercise; group exercise forges a sense of community; and intervention 1600spitalized160tion is important.

Conclusion: Patients at various disease stages, caregivers, and health professionals perceive exercise programs as important components of preparing for and recovering from lung cancer treatment.

- Patients perceive a variety of benefits from exercising, including improvements to physical and mental health.
- Patients value interventions that address their individual needs, goals, and barriers to exercise.
- Patients cite a variety of barriers to exercising, including cancer and co-morbidity symptoms, treatment side-effects, motivation, and weather.



## Enablers and barriers to participation in physical activity programs while hospitalized after burn injury: the patient perspective

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Cardiorespiratory 10A, P 9, October 7, 2023, 11:40 AM - 12:40 PM

Aim: To identify enablers and barriers to participation in physical activity whilst hospitalised after burn injury from the patient perspective.

Design: Qualitative descriptive study design.

Method: Purposive sampling was used to recruit adults with burn injuries admitted to the Professor Stuart Pegg Adult Burn Centre between February and July 2022. Semi-structured interviews were then conducted by a research assistant separated from clinical care, audio-recorded and transcribed verbatim. All deidentified transcripts were analysed using thematic and inductive analytic approaches and were organised into major themes and subthemes.

Results: Twenty participants (18 males) were included with a mean age of 47 years and mean burn size of 13.8% total body surface area. Factors which influenced patients' ability to participate in physical activity were summarised into five major themes: 1) patient factors; 2) burn injury factors; 3) staff support; 4) family support; and 5) peer support. Pain, anxiety about causing further pain or harm, and beliefs regarding the need for rest to achieve wound healing were identified as significant barriers to physical activity performance. Family support and compassionate, supportive care from staff were highly valued enablers.

Conclusion: This is the first study to describe the patient experience of physical activity participation after burn injury. Recognising and understanding the patient perspective is integral to developing appropriate solutions to promote increased activity.

- Results suggest that participation in physical activity after burn injury is multi-factorial.
- Solutions need to be multi-dimensional, individualised and patient-centred to enhance physical activity participation during hospital admission.



# A six-week physiotherapy exercise program delivered via home-based telerehabilitation is comparable to in-person programs for patients with burn injuries

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Cardiorespiratory 10A, P 9, October 7, 2023, 11:40 AM - 12:40 PM

Aim: Are exercise programs delivered via home-based telerehabilitation as effective as in-person programs with respect to clinical outcomes and satisfaction levels?

Design: Randomized, controlled, non-inferiority clinical pilot trial with blinded assessment.

Method: Forty-five adults with burn size ≤25% were randomized to receive a six-week exercise program delivered either by home-based telerehabilitation (n=23) or in-person (n=22). Non-inferiority analysis was conducted with the primary outcome (Burn Specific Health Scale–Brief) and two secondary outcomes (generic quality of life, pain). Generalized linear model repeated measure ANOVAs (muscle strength), Chi-square tests of independence (ROM) and Mann-Whitney U tests (satisfaction scores) were used to evaluate between-group differences.

Results: Non-inferiority was inconclusive for all measures. There were no significant between-group differences for any outcome measure except ROM. A significantly higher proportion of participants in the in-person group achieved full ROM at study completion (100% vs 70%, p = 0.005). Both groups demonstrated high participant satisfaction (median 9.8/10, p = 0.624 NS).

Conclusion: This is the first study to investigate home-based telerehabilitation for the delivery of exercise programs after burn injuries. It is a safe, effective option for patients with burns ≤25%, with comparable clinical outcomes and satisfaction to in-person programs. Ongoing research is required to establish non-inferiority and investigate effectiveness for larger burns.

- Equitable access to rehabilitation services for patients who live rurally, at a distance from metropolitan burn centres, has long been required even before the COVID-19 pandemic.
- Home-based telerehabilitation could now be considered an effective option to deliver these programs.



# How to use Intrapulmonary Percussive Ventilation (IPV) in the clinical setting

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Cardiorespiratory 10B, P 8, October 7, 2023, 11:40 AM - 12:40 PM

Background: Intrapulmonary Percussive Ventilation(IPV) provides high frequency positive pressure ventilation resulting in improved ventilation, lung recruitment and mobilisation of secretions from the peripheral airways. Although first utilised 50 years ago, it has not been widely used in Australia until the recent availability of the Pegaso-a-Cough<sup>®</sup> device. With applications in peripheral airway clearance for a range of patients including neurodisability, bronchiectasis, acute and chronic hypersecretion, the device requires training to ensure appropriate patient selection and effective titration of settings.

Aim/Objectives: To improve participants' knowledge, clinical reasoning and skill in the clinical application of IPV for airway clearance. Participants will gain an understanding of the indications for use of IPV and its clinical application across a spectrum of age and respiratory illness. Participants will be able to trial the device and understand how to assess efficacy of treatment based on key outcome measures.

Approach: The presenters will provide a lecture style overview (10 mins) followed by a practical demonstration of the application of IPV with discussion around titration of settings and an opportunity to trial the device (10 minutes). Participants will then engage in case discussion of select patient applications (10 minutes). Learning materials provided include a quick reference guide on indications, set up and suggested starting parameters.

Key Practice Points: Participants will:

- be able to determine appropriate indicators for IPV while understanding theory and appropriate application,
- more confidently utilise IPV for airway clearance in their clinical setting while understanding the benefits and limitations of use,
- be provided digital resources for implementation.



### Improving Rehabilitation EngAgement in Chronic Heart failure with PhysioTherapy (the REACH-PT study)

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Cardiorespiratory 10B, P 8, October 7, 2023, 11:40 AM - 12:40 PM

Background: Engagement in Chronic Heart Failure (CHF) rehabilitation is vital to improve quality of life and physical function and reduce hospital re-admission rates. Despite strong evidence for the safety and efficacy of such programs, referral and engagement rates remain as low as 10%. The aim of this study was to identify whether tailored education delivered to acute physiotherapists improves engagement rates in community-based CHF rehabilitation programs following an acute admission.

Method: A quasi-experimental study was designed. Twenty-eight acute cardiorespiratory physiotherapists took part. A tailored education session was delivered virtually, with learning outcomes focused on clinical guidelines around CHF management and rehabilitation. Outcome measures were based on Kirkpatrick's Model of Evaluation (Levels 2-4) including a valid and reliable tool to assess participant learning (Level 2), and audits evaluating clinical behaviour change (Level 3) and rehabilitation attendance (Level 4).

Results: Participants' self-reported knowledge, confidence and clinical practice significantly improved at ten weeks post education delivery. The biggest improvement was seen in confidence levels (Median difference 46.00%, p<0.001). Descriptive analysis showed improvements in the clinical record audit, with increased discussion and offer of referral, and rehabilitation attendance but neither outcome achieved statistical significance.

Conclusion: Tailored education interventions in a functioning healthcare service can improve self-reported knowledge, confidence, and clinical practice. The findings suggest acute physiotherapists can play an important role in CHF rehabilitation referral and engagement. Such interventions should be included in regular acute cardiorespiratory physiotherapy professional development, particularly within rotational workforces.



# Evolution of latent rheumatic heart disease in children and youth aged <25-years: a systematic review and meta-analysis of global data

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Cardiorespiratory 10B, P 8, October 7, 2023, 11:40 AM - 12:40 PM

Aim: To estimate progression, regression and persistence rates for borderline and mild-definite latent RHD in children and youth diagnosed at age <25 years.

Design: Systematic review and meta-analysis of proportions.

Method: A review was conducted in accordance with Preferred Reporting Items for Systematic reviews and Meta-Analysis guidelines. Electronic databases were searched for latent RHD echocardiography follow-up studies which used World Heart Federation diagnostic criteria. A meta-analysis of outcomes was conducted for borderline and mild-definite disease subcategories.

Results: Data for 1618 individuals were included. For borderline cases, 48.51% regressed(95%CI 45.10-51.93), 13.99% progressed(95%CI 9.72-18.25), and 38.61% had persistent (unchanged) disease at follow-up(95%CI 29.68-47.54). For mild-definite cases, 34.01% regressed(95%CI 28.88-39.15), 8.06% progressed (95%CI 3.65-16.90), and 60.23% had persistent disease(95%CI 55.08-67.38).

Conclusions: Borderline and mild-definite latent RHD show variable evolution following initial diagnosis. While 8% of mild-definite and 14% borderline cases had signs of disease progression at follow-up, a third of mild-definite and half of borderline cases had disease regression. Future research should use RHD registry data to study natural history and stratify risk of progression.

- Targeted screening for latent RHD is a strategy for disease elimination in Australia.
- Global data shows latent RHD natural history is variable between endemic regions.
- An understanding of 'local' disease natural history will help inform implementation of latent RHD screening programs.



### Development of a valid, reliable tool for evaluating self-reported knowledge, confidence, and clinical practice in acute cardiorespiratory physiotherapists

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Cardiorespiratory 11A, M 3, October 7, 2023, 1:40 PM - 2:25 PM

Purpose: While evidence-based practice is a widely accepted concept within physiotherapy, the ability to evaluate education to improve its application is limited. In particular, tools to evaluate Level 2 of Kirkpatrick's Model of Evaluation, participant learning, are lacking. The aim of this study was to develop a valid and reliable tool to measure physiotherapists' self-reported levels of knowledge, confidence, and current referral practices in acute cardiorespiratory settings.

Method: An initial evaluation tool was developed for chronic heart failure clinical practices and guidelines. A content validity index (CVI) analysis was completed on this tool by seven expert participants, to determine validity, clarity, and robustness of both the full tool and individual items. Testing was completed with twenty-eight acute physiotherapists to determine both internal item and whole tool reliability before the item was finalised.

Results: Overall tool CVI was 0.91. All individual item CVI's met the minimum threshold (0.78) for acceptable relevance and clarity with minor revision. Overall reliability was 0.86. Differences were seen in reliability between junior and senior physiotherapists in sub-group analysis. The tool was finalised including instructions for data interpretation.

Conclusion: This study developed a valid, reliable tool for measuring acute physiotherapists' self-reported knowledge, confidence, and referral practices. This tool can be used to measure the impact of interventions to improve evidence-based practice, such as education. While the instrument was developed for use in the heart failure population, it has the potential to be adapted for use in other populations and clinical spaces.



# Exploring barriers and facilitators to participation in outdoor adapted cycling for young people with disability: providers' perspectives

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Disability 4, P 10, October 5, 2023, 2:30 PM - 3:15 PM

Aim: To explore how providers perceive barriers and facilitators to outdoor adapted cycling participation among young people with disability.

Design: A cross-sectional online survey with open-ended responses.

Method: Therapists, teachers and personnel in the sport and recreation sector were invited to share their perspectives on supporting young people (aged 2-30 years) with disability to use an adapted bicycle. Three survey questions were used to elicit fully open-ended responses on cycling success stories, reasons for stopping and barriers to inclusion. Textual responses were analysed using an inductive qualitative content analysis.

Results: 95 participants (89% of the total sample) provided over 860 responses which were subsequently coded and categorised as either boosting (facilitate) or braking (barrier/challenge) cycling participation. Five main categories of barriers/facilitators that aligned to a socioecological model were identified. These were; i) rider abilities and attributes; ii) 'support peloton' involvement; iii) cycle-intervention options; iv) local environment and v) funding resources.

Conclusion: Providers perceived many diverse factors to impact on progress towards cycling goals. Physiotherapists form a key part of the wider 'support peloton' and are well-placed to promote participation in adapted cycling.

- Understanding cycling barriers and facilitators can help target participation-focused interventions.
- Fun, informal and social cycling opportunities with adequate rider support and resource-sharing formed the key facilitators.
- Late adolescence forms a key period for physiotherapists to address cycling barriers. Brakes to participation at this life-stage include; reduced access to customised cycling options, functional decline and a shift in rider/family priorities.



## Changes in gait speed in new lower limb prosthetic users within the first three months after inpatient prosthetic rehabilitation

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Disability 5, P 5, October 6, 2023, 10:35 AM - 11:20 AM

Aim: To measure changes in self-selected and fast gait speed in new lower limb prosthetic users at discharge from inpatient rehabilitation and in the 12 weeks post-discharge.

Design: Prospective longitudinal cohort study.

Method: Participants were adults with their first major (transtibial or higher) unilateral lower limb amputation, prescribed their first prosthesis during inpatient rehabilitation. Participants completed a comfortable (self-selected) and fast 10-metre-walk test the day prior to discharge home (T0). Participants returned at 2 (T1), 6 (T2), and 12 weeks (T3) post discharge for re-assessment. Repeated measures ANOVA was performed for data analysis.

Results: Twelve participants (92% male, 75% trans-tibial amputation) completed the study. Mean self-selected gait speed significantly increased from 0.76 m/s (95% CI 0.55 to 0.96) at T0, to 0.79 m/s (95% CI 0.58 to 1.00) at T1, to 0.87 m/s (95% CI 0.64 to 1.1) at T2, with fastest self-selected gait speed of 0.91 m/s (95% CI 0.72 to 1.1) observed at T3 (p=0.03). Mean fast gait speed did not significantly change across the study (p=0.26).

Conclusion: Participants in this study made improvements in self-selected gait speeds after discharge from inpatient prosthetic rehabilitation but remained slower than healthy populations.

- New prosthetic users may expect improvements in gait speed after discharge from inpatient rehabilitation.
- Improving gait speed in new prosthetic users after discharge may be a useful therapy goal for community therapists.
- Rate of improvement in gait speed diminishes by three months post discharge from inpatient rehabilitation.



### Fatigue experienced by people with cerebral palsy: a systematic review of assessment tools and decision tree

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Disability 5, P 5, October 6, 2023, 10:35 AM - 11:20 AM

Aim: To systematically review subjective measures of physical and cognitive fatigue for people with cerebral palsy (CP), and develop a fatigue assessment decision tree for clinicians and researchers.

Design: Systematic review.

Method: Five electronic databases (MEDLINE, PsycInfo, CINAHL, Web of Science, Cochrane) were searched to identify studies measuring subjective physical or cognitive fatigue for people with CP of any age. Two reviewers extracted measure characteristics and evaluated clinical utility and psychometric properties. A fatigue assessment decision tree for people with CP was constructed.

Results: Searches yielded 759 papers, with 10 assessment tools identified from 39 included studies. Three tools were valid and reliable for assessing physical fatigue severity and impact (PedsQL Cerebral Palsy Module, Fatigue Impact and Severity Self-Assessment and the Global Physical Health Scale). No tools met criteria for cognitive fatigue and no tools had responsiveness data for people with CP. A fatigue assessment decision tree was constructed with a four-level clinical question structure.

Conclusion: Valid and reliable physical fatigue measures are available for people with CP, however research is needed to determine responsiveness to change or intervention. Cognitive fatigue is understudied, and further work is required to develop measures for this symptom.

- Fatigue assessment tools for people with CP are appropriate for screening physical fatigue but are not appropriate for evaluative purposes, and do not assess cognitive fatigue.
- Since these tools do not offer a complete clinical picture, they should be used with clinical judgement in practice to optimise care for people with CP.



### Partnership-focussed Principles-driven Online co-Design (P-POD): a mixedmethods evaluation of a novel online co-design process

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Disability 5, P 5, October 6, 2023, 10:35 AM - 11:20 AM

Aim: This study aims to: (1) describe and evaluate Partnership-focussed Principles-driven Online co-Design (P-POD) as an authentic approach to translating co-design into an online environment, and (2) describe the application of P-POD to co-designing a physical activity intervention for preschool-aged children born preterm.

Design: A community-based participatory research approach scaffolded the co-design process and the convergent mixed-methods evaluation.

Method: P-POD involved 10 stakeholders (parents, paediatric clinicians, coaches, and researchers) in eight 90-minute workshops to co-design a circus-based intervention to improve participation for preschool-aged children born preterm (premmies). P-POD was evaluated via surveys and semi-structured interviews. Data were analysed using descriptive statistics and reflexive thematic analysis.

Results: Evaluation of P-POD indicated adherence to the guiding principles of stakeholder involvement and co-design. Themes developed from interview data describe participants' experiences of the supportive online culture, room for healthy debate, power-sharing, and multiple definitions of success. The resulting co-designed intervention is titled "CirqAll: preschool circus for premmies".

Conclusion: P-POD appears to provide an authentic translation of co-design to an online environment. P-POD was successfully used with stakeholders to produce a paediatric intervention, and benefits from the online approach align with, and extend on, those reported in the literature on in-person co-design approaches.

- The co-design of interventions should include professional and lived expertise from key stakeholders (such as families and physiotherapists).
- Online co-design processes should provide benefit to those involved, and result in quality intervention designs.
- P-POD is a structured and inclusive approach to involving stakeholders in an authentic online codesign process.



# Preferences of key stakeholders regarding community-based recreational activities for preschool-aged children born preterm: a mixed methods study

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Disability 5, P 5, October 6, 2023, 10:35 AM - 11:20 AM

Aim: Preschool-aged children born preterm participate in less physical activity (PA) than term-born children. This study investigated stakeholder preferences for participation, and explored strategies to enhance participation in circus-based PA for this cohort.

Design: Sequential mixed-method design.

Method: Participants were families of preschool-aged children born extremely preterm, paediatric clinicians, and circus coaches experienced in the preschool age group. Data were collected via surveys (n=217) and semi-structured interviews (n=43). Qualitative data (Framework Method) and quantitative data (descriptive statistics) were mixed during preliminary and final analyses. Findings were member checked during a parent focus group (n=6).

Results: Five themes were developed from the mixed data: (1) The crucial role of the coach: expanding understanding and expertise through specific training, (2) Beyond the physical: recreational PA should promote holistic outcomes, (3) Clear communication and considered class planning are key strategies for engagement, (4) Is it worth it? Low-cost recreational PA needs to fit into busy lives, and (5) The guiding role of the clinician: design, support but not deliver.

Conclusion: Preferences and strategies were identified which may be used to modify or co-design circusbased interventions to enhance inclusion and participation, and consequently improve rates of physical activity for preschool-aged children born preterm.

- Unique insights from stakeholders have the potential to shape more effective and inclusive community-based recreational activities.
- Paediatric clinicians (e.g. physiotherapists), end users (parents) and sports personnel (coaches) should be involved in informing design of community-based physical activities to meet the participation needs of children born preterm.



# Oceans of opportunity – perspectives on beach-based therapy for people with disability: a survey of Australian physiotherapists and occupational therapists

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Disability 5, P 5, October 6, 2023, 10:35 AM - 11:20 AM

Aim: To determine physiotherapy and occupational therapy practices, barriers, and facilitators of implementing beach-based therapy for people with disability.

Design: Anonymous online cross-sectional survey.

Method: A 30-item survey (categorical, ordinal, and open response data) was developed to explore beach accessibility awareness and current practices, barriers, and facilitators of beach-based therapy. Descriptive statistics were used to report findings.

Results: 171 therapists completed the survey (63% physiotherapists; practice experience range 0-46 years (mean=16). The principal work setting was private practice (46%), with most (81%) respondents managing clients with disability three to five days/week. 93% of respondents were familiar with beach accessibility, though only 40% had used the beach for therapy. The most frequently reported barriers to beach-based therapy were limited general beach accessibility (95%) and specialised mobility equipment (98%), and additional costs (91%). Most (92%) respondents were willing to support future accessible beach initiatives. The most frequently reported facilitators of beach-based therapy included clinical guidelines (89%) and evidence to support the implementation of accessible beach initiatives (90%). Therapists do/would use the beach for prescribing self-directed interventions (84%) and conducting individual (70%) and group (39%) interventions for physical (89%), mental (92%), and social (90%) health goals.

Conclusion: Use of the beach as a therapeutic setting is widely accepted though currently limited primarily due to inadequate beach accessibility and increased costs.

- Therapists recognise the health value of the beach but are not currently equipped to provide beachbased therapy.
- High quality evidence is needed to support beach-based therapy implementation.



# Could insufficient physical activity explain gross motor function decline in young people with complex cerebral palsy? A longitudinal intervention study

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Disability 5, P 5, October 6, 2023, 10:35 AM - 11:20 AM

Aim: Non-ambulatory adolescents with cerebral palsy (CP) experience clinically significant declines in gross motor functioning. The causes are poorly understood; however, decline may be associated with long-term physical inactivity. This study aimed to evaluate the effect of a 4-year Para swimming program on gross motor functioning in untrained, non-ambulatory adolescents with CP who are at risk decline.

Design: Concurrent multiple-baseline design study (MBD) with 3-year longitudinal intervention study.

Method: Participants were two males (aged 15 and 16 years) and one female (aged 16 years) with quadriplegic, complex CP, all non-ambulant. Repeated measures of gross motor function (GMFM-66) and swim performance were conducted during a baseline phase, and four alternating intervention and withdrawal phases. Data were analysed using interrupted time-series simulation analysis and a generalised additive model compared longitudinal motor function against predicted decline.

Results: Initial improvements in GMFM-66 scores in response to training were significant (p=<0.001), and training withdrawal resulted in significant declines on two occasions (p=0.005; p=0.01). Longitudinal data demonstrate that improvements were maintained for 4 years with continued training, in contrast to the projected trajectory of motor decline.

Conclusion: Sports participation may have the capacity to prevent clinically significant gross motor declines in non-ambulatory adolescents with complex CP.

- Facilitating participation in long-term, high intensity training for people with complex CP may be important for preventing functional decline throughout the transition from adolescence to adulthood.
- Evidence indicates that participation in physical activity may no longer be 'nice-to-have', but a critical component of care for this population.



### Be creative in developing options for sports participation for young people with disabilities in the National Disability Insurance Scheme context

Daniels L<sup>1</sup> <sup>1</sup>Kids+ Foundation

Disability 7, P 5, October 6, 2023, 2:15 PM - 3:00 PM

Background: The benefits of sports participation for all are well understood including improvements in physical and psychological wellbeing. However, sports participation for young people with a disability is lower compared to their peers. Over the past decade understanding of the range of factors effecting participation including funding through NDIS has increased. Physiotherapists are well placed to develop and implement programs to increase the sports participation of this client group.

Aims: Our aim is to increase understanding and knowledge of developing and implementing sport orientated, goal directed therapy programs for young people with disabilities. To achieve this aim, we will share our learnings and successes of a range of sports programs developed and implemented at a community-based allied health service including bike / trike riding, surfing and frame running.

Approach: We will present the programs we have developed and a framework which other therapists can apply to their own practice to develop their own sports programs for young people with disabilities. Case studies and videos will be used to facilitate engagement and knowledge translation. Our presentation will conclude with question time focusing on practical aspects like funding and community opportunities.

Key Practice Points: Participants will develop an understanding of

- Sports participation and how it can look for young people with a disability
- A framework for developing sports participation programs for this client group
- The value of developing partnerships with community organisations in supporting participation in sport.
- Considerations in using clients NDIA funding for sports related therapy activities



### Tides of change – beach accessibility barriers and facilitators for older people and people with disability: an Australian community survey

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Disability 7, P 5, October 6, 2023, 2:15 PM - 3:00 PM

Aim: To determine barriers and facilitators of beach access for older people and people with disability.

Design: Anonymous online cross-sectional survey.

Method: A 39-item online survey (categorical, ordinal, and open response data) was developed to explore perspectives of older people (>65 years) and people with disability or mobility limitation (temporary/permanent) regarding beach access barriers and facilitators. Frequency statistics were used to summarise barriers and facilitators according to environmental and personal factors.

Results: 350 people completed the survey (69% female; age range 2-90 years (mean=52)). Disability/mobility limitation was reported by 88% of respondents, with 77% requiring a community mobility aid. Two thirds (68%) of respondents were unable to visit the beach as often as wanted, with 45% unable to visit at all. The most frequently reported environmental barriers were inaccessible leadup pathways (81%) and limited beach mobility equipment (75%). The most frequently reported personal barrier was difficulty moving on soft sand (87%). If beach access were improved, respondents reported they would visit the beach more often (85%), for longer (83%), and would have an improved experience (91%). The most frequently reported facilitators of beach access included accessible sand walkways (89%) and parking (87%).

Conclusion: Older people and people with disability have limited beach access, primarily due to environmental factors, excluding them from a wide range of health benefits associated with the beach.

- Barrier and facilitator diversity highlights the importance of person-centred and co-designed beach access.
- Equipment prescription and services will be key to improve beach access.



### Delivering adapted cycling interventions for young people with disability in Australia - who's doing what?

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Disability 7, P 5, October 6, 2023, 2:15 PM – 3:00 PM

Aim: To describe approaches to practice and training parameters of outdoor adapted cycling interventions for young people with disability in Australia.

Design: A cross-sectional online survey.

Method: Adapted cycling providers were asked to describe their practice context (e.g. setting, approach) and the training parameters (e.g. frequency, intensity, duration) they use. Data were analysed using descriptive statistics and quantitative content analysis. Training parameters were mapped to the template for intervention description and replication (TIDieR) checklist.

Results: There were 107 responses (completion rate: 84%). Providers came from 12 different job roles. Physiotherapists comprised of 57% of the study's sample. Providers supported young people (2-30+ years old) with different health conditions and disabilities to use an adapted cycle. Upright tricycles were the most frequently used cycle frame.

Respondents were either unsure (23%) or did not (43%) have a specific approach to training adapted cycling skills. Those who reported a practice approach, highlighted a mixture of theoretical and practice frameworks. Common approaches incorporated transdisciplinary models (e.g. strengths based approach), motor-learning principles, goals, ecological and task-specific practice.

Training parameters varied significantly. Most providers focused on cycle skill development (74%). Providers envisioned riders cycling as an active leisure pursuit. Sports and active travel participation were perceived as rarer intervention outcomes.

Conclusion: Adapted cycling interventions are highly individualized to the riders' needs, goals and environment.

- Physiotherapists are common providers of adapted cycling interventions.
- Adapted cycling interventions are complex and consist of several interacting parts.
- Providers use an individualized approach to practice.



# Feasibility and acceptability of a falls prevention e-learning program for physiotherapists

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Gerontology 1, P 2, October 5, 2023, 11:05 AM - 11:50 AM

Aim: To determine the feasibility and acceptability of a falls prevention e-learning program for physiotherapists working with people with osteoarthritis.

Design: Pilot feasibility study.

Method: An e-learning program on falls prevention specific to the osteoarthritis population was developed using a constructive alignment approach where learning outcomes and activities were categorised into four modules: (1) balance systems; (2) balance testing; (3) balance exercises and (4) adherence strategies. The e-learning program was made available to physiotherapists who provide osteoarthritis care and near-graduate physiotherapy students. Feasibility and acceptability data were obtained from recruitment records, Moodle activity logs, multiple choice quizzes and customised pre- and post-training surveys.

Results: Of the 65 physiotherapists and near-graduate physiotherapy students who met the study eligibility criteria, 50 (77%) completed the e-learning program. Participants considered the program to be acceptable—the program met their expectations (n=45; 90%) and was highly relevant to their work (median 8-10; IQR 2; range 0 [not at all relevant] to 10 [extremely relevant]). An overall improvement in knowledge was also observed (mean difference 2.4; 95% CI -3.5, -1.3).

Conclusion: An e-learning program on falls prevention can be feasibly delivered to physiotherapists working with people with osteoarthritis.

- There is a recognised need amongst physiotherapists to access flexible online learning opportunities to maintain and improve their knowledge and skills.
- Given the challenges in offering face-to-face learning following the COVID-19 pandemic, online learning platforms are an effective and acceptable medium to provide continuing professional development for physiotherapists.



## Intervention Component Analysis (ICA) and Qualitative Comparative Analysis (QCA) of exercise to reduce falls in residential aged care

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Gerontology 1, P 2, October 5, 2023, 11:05 AM - 11:50 AM

Aim: The Cochrane review on exercise interventions to prevent falls in older adults in care facilities is inconclusive. Further research is required.

Design: Intervention Component Analysis (ICA) and Qualitative Comparative Analysis (QCA)

Methods: The 2018 Cochrane systematic review was updated to December 2021. ICA utilised inductive thematic analysis of the authors commentary to develop a theory for effective fall prevention. This theory was tested for statistical consistency using the QCA package in R Project. The theory was further refined to identify the combination of conditions statistically associated with falls reduction.

Results: ICA found that authors perceptions of effective fall prevention exercise included 'right exercise' involving tailored strength and balance exercise delivered at a moderate intensity; successful implementation requires 'exercise engagement supports' such as exercise funding, socialisation and educational opportunities.

In QCA, the "right exercise' theory explained 67% of trials (high inclusion and reduction in inconsistency scores of 0.859). Further analysis suggested three configurations associated with success: providing (i) tailored non-high intensity exercise to ambulant residents, (ii) group exercise to ambulant residents or (iii) tailored non-high intensity group exercise to all residents.

Conclusion: QCA indicated that tailored exercise conducted at moderate intensity reduced falls but was not able to identify what type of exercise was most successful. Group exercise reduced falls.

- Tailored exercise delivered at moderate intensity can reduce falls
- Group exercise classes show promising results and are key to effective fall prevention
- Future trials are required to identify the most effective type of exercise



## Physical activity and falls: long-term patterns and bi-directional prospective relationships in Australian women

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Gerontology 1, P 2, October 5, 2023, 11:05 AM - 11:50 AM

Aim: To explore long-term physical activity (PA) participation patterns and bi-directional prospective relationships between PA and falls in Australian women.

Design: Analysis of data from the Australian Longitudinal Study on Women's Health.

Methods: Women born 1946-51 self-reported PA and falls every 3 years between 1998 (mean (SD) age, 51 (1) years) and 2019 (71(1) years) (n=11,780). Latent class analysis established profiles of PA participation. Bidirectional prospective associations between PA and falls were examined using generalised estimating equation models adjusted for directed-acyclic graph-informed potential confounders (i.e., body mass index, health conditions, education, ability to manage income and Accessibility Remoteness Index of Australia)

Results: Five profiles of PA participation pattern were identified. Compared to profile "consistently highlyactive", "consistently low-level of PA" (adjusted odds ratio (OR) 1.40, 95%CI 1.11-1.77) and "decreasing PA" (1.38, 1.09-1.75) were associated with higher non-injurious and injurious falls risk. Compared to no PA, participation in the recommended amounts of PA (150-300 minutes/week) were associated with a lower risk of injurious falls (OR150-300min 0.89, 95%CI 0.82-0.97; OR≥300min 0.89, 0.82-0.96). Compared to women without falls, women who had injurious falls were less likely to participate in PA; 18% less (10%-26%) for 150-300 minutes, 17% less (10%-24%) for ≥300 minutes.

Conclusion: PA was prospectively associated with a lower risk of non-injurious and injurious falls. Both non-injurious and injurious falls decreased the likelihood of subsequent PA.

Key Practice Points:

• Bi-directional prospective associations were found between PA and falls. PA promotion and fall prevention programs could stop the "vicious cycle" of falls and inactivity.



## Adherence to exercise programs in community-dwelling older adults following a hip fracture: a systematic review

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Gerontology 1, P 2, October 5, 2023, 11:05 AM - 11:50 AM

Aim: To determine whether older adults adhere to exercise programs following hip fracture and how adherence rates relate to program characteristics and intervention efficacy.

Design: Systematic review with meta-analysis of randomised trials.

Method: Following a search of nine electronic databases two independent reviewers determined study inclusion, assessed risk of bias and extracted data. Studies were included if they were randomised trials of exercise interventions in adults over 60 years with a surgically managed hip fracture and reported a measure of adherence. Pooled adherence rates were calculated using meta-analysis and meta-regression was used to examine the association between program characteristics and adherence.

Results: 17 trials with 1,850 participants (mean age 79 years) were identified and included in the metaanalysis. The pooled estimate of adherence to exercise programs after hip fracture was 88% (95% CI 78%, 95%). Programs that were more than 6 months in duration were associated with reduced adherence (OR 0.29; 95% CI 0.11, 0.77). Increased adherence was not associated with improvements in functional outcomes. Program characteristics (e.g. duration or frequency) were also not associated with improvements in functional outcomes.

Conclusion: Adherence to post-discharge exercise programs in older adults following a hip fracture is high and may be related to the duration of the program.

- Multiple short bursts or episodic exercise programs that are more than 6 months in duration may be more beneficial for older adults following a hip fracture.
- Other factors apart from adherence to exercise (e.g. age, self-efficacy) may influence functional outcomes.



### Engaging people with dementia, advocacy, and learning on-the-job are components in establishing excellence in physiotherapy dementia care: a qualitative study

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Gerontology 4, M 3, October 5, 2023, 2:30 PM - 3:15 PM

Aim: To determine 1) what is excellence in physiotherapy dementia care; and 2) how can excellence be achieved.

Design: A qualitative study.

Method: Participants were 16 physiotherapists from around Australia considered to be experienced in the field of dementia care. Snowball sampling was used from the group of physiotherapists recognised by the National Gerontology Committee of the Australian Physiotherapy Association. Physiotherapists participated in semi-structured interviews. Thematic analysis was undertaken, with themes/subthemes derived and a qualitative thematic framework generated.

Results: The four themes (and subthemes) were: 1) engaging the person with dementia (knowing the person, using knowledge to adapt the approach to successfully deliver physiotherapy interventions, optimising the physical environment), 2) collaborative care (working with care partners, working as an interdisciplinary team), 3) development of clinical skills and expertise on the job and 4) advocating for the physiotherapy role in dementia care.

Conclusion: Physiotherapists believe that excellence in dementia care involves being able to effectively engage the person with dementia in therapy, training and supporting care partners, and providing interdisciplinary team care. Excellence was achieved mainly through on-the-job learning from both physiotherapy and other health professional peers, and advocating for the role of physiotherapy.

- To provide excellence in dementia care physiotherapists require the skills to engage people with dementia, as well as the ability to work closely with carers and other health professionals.
- Until there is greater understanding of the role of physiotherapy in dementia care, physiotherapists will need to advocate for their role.



#### Physiotherapy students are overwhelmed and underprepared to work with people living with dementia: a qualitative study

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Gerontology 4, M 3, October 5, 2023, 2:30 PM - 3:15 PM

Aim: To explore 1) physiotherapy students' experiences and preparedness to work with people who have dementia; and 2) areas where students require further education regarding dementia, and how this could be provided.

Design: a qualitative study.

Method: Physiotherapy students from three Victorian entry-to-professional practice education programs (n=17; mean age 23.7 years, 65% female), who had completed at least 15 weeks of clinical placements, participated in the study. Semi-structured interviews were conducted via web conferencing software. Thematic analysis was undertaken, with themes/subthemes derived and a qualitative framework generated.

Results: The overarching theme was that students' experience of providing care for people with dementia was overwhelming. The three sub-themes were: 1) students experience significant challenges when working with people with dementia; 2) students experience a range of emotions when working with people with dementia; and 3) the quality of dementia learning experiences during entry-to-professional practice training is mostly inadequate. Students described the importance of the supervisor during clinical placements, and suggested incorporating 'real-life' scenario training in the classroom to assist them learn to manage the symptoms of dementia.

Conclusion: Physiotherapy students believe that entry-to-practice dementia education is not sufficient. These findings have important implications for the future planning and delivery of physiotherapy dementia education.

- Physiotherapy students require more dementia education at university, particularly 'real-life' dementia scenarios to practice strategies that address changes in behavior and cognitive impairments.
- Experienced clinical supervisors are needed to support students learn about how to care for people with dementia on clinical placement.



# Benign paroxysmal positional vertigo is highly prevalent in patients presenting to falls clinics with and without dizziness: an observational study

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Gerontology 5A, P 6, October 6, 2023, 10:35 AM - 11:20 AM

Aim: To determine the prevalence of benign paroxysmal positional vertigo in dizzy and non-dizzy patients in a falls clinic.

Design: Cross-sectional observational study.

Method: 618 falls clinic patients were assessed by a physiotherapist for benign paroxysmal positional vertigo, whether dizzy or non-dizzy, with the Hall-Dix, side-lying and supine roll tests over a period of 6 years. Data were collected from patient medical records regarding demographics, canal location of positive tests and comorbidities.

Results: We found 239 (39%) patients tested positive for benign paroxysmal positional vertigo of whom 62 (26% of benign paroxysmal positional vertigo, 10% of total) were not dizzy. Patients reporting dizziness were 5.2 times (95%Cl 3.6 to 7.6) more likely to test positive than patients who were not dizzy. Thirty-nine of 104 (38%) single canal patients were not dizzy. Twenty-four of 134 (18%) multiple canal patients were not dizzy. Comorbidities were common in the falls clinic but did not differentiate on response to testing. Common comorbidities were postural hypotension (41%), osteoporosis (48%) and peripheral neuropathy (38%).

Conclusion: Benign paroxysmal positional vertigo is common in patients attending falls clinics. Dizziness is the best predictor of benign paroxysmal positional vertigo but many positive patients were not dizzy.

- Benign paroxysmal positional vertigo is a common and treatable falls risk factor and will only be detected with assessment of all falls patients
- Dizziness is the best predictive factor for presence of benign paroxysmal positional vertigo but many who do not complain of dizziness will test positive



### It's a family decision: barriers and facilitators to participation in familyassisted therapy for older adults in transition care

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Gerontology 5A, P 6, October 6, 2023, 10:35 AM – 11:20 AM

Aim: To understand what may influence the decisions of patients in transition care to engage in familyassisted therapy.

Design: A qualitative study underpinned by interpretive description.

Method: This study was conducted at two Victorian transition care programs. Participants were interviewed about their decision to accept or reject an invitation to take part in a family-assisted therapy program (training families to assist with rehabilitation). Interviews were semi-structured, audio-recorded, and transcribed verbatim. Analysis commenced with a thematic approach and was shaped by the question: 'What does this mean for clinical practice?'

Results: Interviews were conducted with 17 patients and 27 family members (n=44). 'Let families decide about participation in family assisted therapy' was a theme unifying three subthemes. Geography, work, and carer commitments were described by the first subtheme: 'What is possible for the family now?' Preferences and priorities of families, including the importance of accessing more therapy versus providing emotional or other practical support, illustrated the second subtheme: 'What is important to the family now?' Finally, the complexities and nuances of family relationships and history were captured in the third subtheme: 'How the family functions.'

Conclusion: It is challenging for physiotherapists to pinpoint who is most likely to wish to participate in family-assisted therapy. We should let families decide.

- Family-assisted therapy is empowering for some, and impossible, impractical or a source of conflict, for others.
- Physiotherapists can ask key questions when considering whether to offer family-assisted therapy to older people in transition care.



## What influences surgery choice in older adults presenting to a perioperative care of the older persons undergoing surgery clinic?

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Gerontology 5A, P 6, October 6, 2023, 10:35 AM - 11:20 AM

Aim: To determine factors associated with non-surgical decisions for clients attending the Perioperative care of Older Persons undergoing Surgery clinic.

Design: Observational cohort study of Perioperative care of Older Persons undergoing Surgery clinic clients at a tertiary hospital. A nested group of clients was chosen (1/3/22 to 1/9/22) to sufficiently include their follow-up dataset.

Method: A Geriatrician, Perioperative Anaesthetist and Physiotherapist completed a preoperative multidisciplinary Comprehensive Geriatric Assessment for all clients, which included demographic, clinical, physiotherapy and surgical data. Statistical analysis was completed via Mann-Whitney U and Chi square tests.

Results: Eighty clients attended the clinic in this time-frame, of whom 33 (42.3%) did not proceed with surgery. Non-surgical decision was associated with older age (p=0.001), formal services usage (p=0.04) and lower cognition for clients who completed the Rowland Universal Dementia Assessment Scale (p=0.003). Conversely, Clinical Frailty Scale (p=0.28), gait speed (p=0.24) and residence (p=0.77) were not associated with surgical decisions. Common reasons for non-surgical management included greater awareness of conservative interventions and understanding of individualised risks versus benefits of surgery, including poor postoperative recovery threatening independence.

Conclusion: Preoperative Comprehensive Geriatric Assessment in this clinic evaluated the multidimensional functions of older adults considering surgery. Older age, formal services and decreased cognition (scored on the Rowland Universal Dementia Assessment Scale) was associated with non-surgical choice.

**Key Practice Points** 

• The clinic enabled multidimensional assessment of older clients in consideration for surgery, and subsequently a proportion of clients did not proceed for surgery.



# Putting restorative care into focus: exploring the experiences of older people, physiotherapists and staff using physiotherapy telehealth in aged care

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Gerontology 6A, P 6, October 6, 2023, 11:25 AM - 12:10 PM

Aim: Telehealth is safe and effective in primary care. However, little is known about how telehealth can be optimised in aged care. The TOP UP Study is a 6-month telehealth physiotherapy intervention that aims to improve mobility, quality of life and reduce falls. This hybrid type 1 effectiveness and implementation trial will help us to understand how and why TOP UP worked (or not) and what strategies could best improve the intervention and its implementation.

#### Design: Qualitative analysis

Methods: We conducted a theory-informed evaluation guided by behavioural theories to explore stakeholder perspectives about the acceptability, feasibility and function of the TOP UP intervention. Data sources included purposively sampled interviews with older people who received the telehealth intervention (n=18), aged care workers who acted as exercise coaches (n= 9), physiotherapists who delivered the intervention (n=7) and aged care managers (n = 8).

#### Results:

Our analysis uncovered 6 themes:

- 1. Telehealth physio at home expands opportunity
- 2. Engaging, senior friendly resources builds capability
- 3. Physio care with local support enhances motivation
- 4. A flexible reablement approach fosters autonomy
- 5. Organisational commitment is required to embed telehealth
- 6. Telehealth physio can be safe and effective

Conclusion: Our findings show that with support and education many older people can safely adapt to telehealth to access physiotherapy-led exercise programs.

- Telehealth physiotherapy is safe and feasible
- Physiotherapists can develop senior friendly online exercise resources to improve exercise adherence and motivation
- Telehealth opens the door to restorative physiotherapy in remote communities



## Effects of an online yoga program (My Joint Yoga) in people with knee osteoarthritis: a randomized controlled trial

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Gerontology 6A, P 6, October 6, 2023, 11:25 AM – 12:10 PM

Aim: To determine the effectiveness of a self-directed 12-week online yoga program for people with knee osteoarthritis (OA).

Design: Two-group superiority randomized controlled trial.

Methods: We recruited 212 adults aged ≥45 with knee OA. Both groups received online OA information (control). The yoga group additionally received an online yoga program (www.myjointyoga.com.au) over 12-weeks (one video/week, undertaken three times/week), with optional continuation thereafter. Primary outcomes were: i) knee pain during walking (0-10 numeric rating scale) and ii) physical function (0-68 WOMAC) at 12- (primary time-point) and 24-weeks. Secondary outcomes were overall knee pain, knee stiffness, depression, anxiety, stress, arthritis self-efficacy, global change, quality-of-life, fear of movement and balance confidence.

Results: Primary outcomes at 12- and 24-weeks were provided by 195 (92%) and 189 (89%) participants, respectively. Compared to control at 12-weeks, yoga improved function (between-group mean difference in change; -4.0 [95% CI, -6.8 to -1.3]), but not knee pain during walking (-0.6 [CI -1.2 to 0.1]). Knee stiffness, quality-of-life and arthritis self-efficacy improved more with yoga than control at 12-weeks. Benefits were not maintained at 24-weeks. Adverse events were minor.

Conclusion: An online yoga program improved physical function, but not knee pain, compared to control for people with knee OA. Benefits were not sustained 12-weeks following program completion when adherence waned.

- An online yoga program can be beneficial and safe for knee OA.
- The yoga program is a freely available, accessible exercise option that physiotherapists can recommend.
- Continuation of exercise is needed to maintain benefits.



### The worse your hearing the worse your balance: a systematic review and meta-analysis

**Foster J**<sup>1,2,3</sup>, Brauer S<sup>1</sup>, Timmer B<sup>1</sup>, Williams K<sup>1</sup> <sup>1</sup>University Of Queensland, <sup>2</sup>Queensland Health, Vestibular Physiotherapist, <sup>3</sup>Advanced Vestibular Clinics

Gerontology 10, M 1 & 2, October 7, 2023, 11:40 AM - 12:40 PM

Aim: To evaluate current literature for an association between hearing impairment(HI) and postural instability in older adults.

Design: A systematic review and meta-analysis of literature published until March 23, 2022.

Method: A PRISMA-compliant systematic review was completed. Electronic searches were performed through multiple databases. Included studies focused on adults aged ≥60 years with no neurological or peripheral vestibular diagnoses and report on an objective measure of postural control. Quality was assessed using a modified Newcastle-Ottawa Scale(NOS) for cross-sectional studies. Meta-analysis was restricted to studies where HI was audiometrically defined.

Results: Twenty-five studies (n=27,847) were included in the qualitative synthesis, with NOS quality ratings ranging from unsatisfactory to very good. The meta-analysis showed individuals with moderate-to-profound HI had significantly slower 5x sit-to-stand time (mean difference=0.50s, p=0.03), slower gait speed (mean difference=-0.11s, p<0.001) and lower total Short Physical Performance Battery(SPPB) scores (mean difference=-0.79, p<0.001) than those with normal hearing. Those with mild HI walked significantly slower than those with normal hearing, and while they had poorer scores on the other two outcomes, these differences were not statistically significant. When comparing the two severities of HI, those with moderate-to-profound HI had significantly slower gait speed and lower total SPPB scores than those with mild HI.

Conclusion: There is evidence to support a significant negative association between increasing severity of HI and poorer postural stability.

- Older adults with moderate-to-profound HI have poorer postural stability than those with normal hearing.
- HI is important to screen when assessing older adults with postural instability.



### Differences in vestibular function in older adults with hearing loss, with and without a history of dizziness, or vertigo

**Foster J**<sup>1,2,3</sup>, Brauer S<sup>1</sup>, Timmer B<sup>1</sup>, Williams K<sup>1</sup> <sup>1</sup>University Of Queensland, <sup>2</sup>Queensland Health, Logan Hospital, <sup>3</sup>Advanced Vestibular Clinics

Gerontology 10, M 1 & 2, October 7, 2023, 11:40 AM - 12:40 PM

Aim: To determine differences in vestibular and balance function between older adults with mild to profound hearing loss and a history of dizziness, or vertigo, compared to those with hearing loss in isolation.

Design: A cross-sectional observational study.

Method: 60 community-dwelling older adults with mild-to-profound hearing impairment were recruited, 30 with a history of dizziness-vertigo (HI+D group) and 30 without (HI group).

Participants completed several vestibular tests; (Videonystagmography (VNG), Rotary Chair, Video Head Impulse & Vestibular Evoked Myogenic Potentials (VEMPS)). Functional measures (Timed Up and Go, GAITrite, Timed-10m-walk), and questionnaires including self-reported balance confidence (Activity Balance Confidence Scale), and dizziness (Dizziness Handicap Inventory) were completed. Differences between groups were explored.

Results: There were no significant differences between the two groups for any peripheral vestibular function, however those in the HI+D group had significantly more indications of central vestibular abnormalities, (VNG markers; p=0.027), and selected cervical-VEMP P1 and N1 latencies (p=0.016 & 0.003). Those in the HI+D group had significantly poorer balance across all functional measures, lower balance confidence and higher dizziness handicap.

Conclusion: Central vestibular dysfunction, rather than peripheral vestibular dysfunction are more commonly noted in persons with mild-to-profound hearing loss who report dizziness with this group also having worse balance outcomes.

- Older adults with hearing loss and dizziness or vertigo have higher incidence of central vestibular dysfunction.
- A comprehensive vestibular assessment including both central and peripheral components is necessary when assessing older adults with hearing loss and symptoms of dizziness or vertigo.



### Targeted Acute Rehabilitation Program (TARP) increases discharges directly home and improves functional mobility in acute hospitalised inpatients

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Gerontology 10, M 1 & 2, October 7, 2023, 11:40 AM - 12:40 PM

Aim: To assess the impact of a roving multidisciplinary allied health team (physiotherapist, occupational therapist, social worker and allied health assistant) providing targeted and intensive rehabilitation to acute inpatients on discharge destination, functional mobility, bed-day savings and patient and staff satisfaction.

Design: A pragmatic pre-post implementation design.

Method: A retrospective propensity-matched audit process was undertaken. A control cohort consisted of past patients that were retrospectively deemed eligible for participation in TARP based on their age, need for multi-disciplinary involvement, estimated discharge destination and functional mobility as measured by the Modified Iowa Level of Assistance Scale (mILOA). The odds of being discharged directly home, and demonstrating a clinically significant improvement in mILOA score, were compared with a logistic regression.

Results: Compared to the matched control group, male TARP participants were 9.71 times more likely to be discharged directly home from the acute setting (CI 5.05 to 19.34, p<.001). Female TARP participants were 3.64 times more likely to discharge directly home (CI 2.05 to 6.58, p<.001). Overall, TARP participants were 3.77 times more likely to experience a clinically significant improvement in mILOA score during their acute stay (CI 2.51 to 5.73, p<.001). Positive outcomes regarding bed-day savings were observed.

Conclusion: TARP effectively increased discharges directly home, resulting in significant bed-day savings and network cost-benefit. Patient mobility levels also improved as a result of TARP.

- Targeting a cohort of acute inpatients with greater intensity of therapy positively impacts patient outcomes.
- TARP is a cost-effective program for the health service.



### Many older adults in sub-acute rehabilitation have vestibular dysfunction on clinical assessment but few report dizziness when moving

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Gerontology 10, M 1 & 2, October 7, 2023, 11:40 AM - 12:40 PM

Aim: To determine the prevalence of vestibular dysfunction on clinical assessment in older adults admitted to a sub-acute rehabilitation facility

Design: Cohort study

Method: Clinical vestibular assessments were undertaken over a twelve-month period in patients over the age of sixty years who had been admitted following a fall, who were deconditioned after an extended acute admission or those who reported dizziness on moving. The Vestibular Screening tool (VST) was used to record subjective dizziness and a clinical oculomotor and vestibular assessment was completed. Clinical findings were collated, and individuals classified into one of twelve clinical diagnostic categories.

Results: Sixty patients (80.0yrs ± 8.7yrs) were screened. More than 70% of screened patients had a VST score <4/8, indicating little self-reported dizziness on movement. Only one patient had a VST score of 0/8 and a normal clinical oculomotor and vestibular screen. The three most common diagnostic categories were: age-related deconditioning (30 patients, 50%); Central oculomotor / vestibular dysfunction (8 patients, 13%) and mixed central and peripheral vestibular dysfunction (8 patients, 13%). Individualised vestibular rehabilitation strategies were then incorporated into each patient's physiotherapy program.

Conclusion: Vestibular dysfunction is common in older adults in sub-acute rehabilitation but is underrecognised because few report dizziness when moving.

- Routine screening of older adults in sub-acute rehabilitation to identify vestibular and oculomotor dysfunction should become usual clinical practice, especially for those admitted after a fall
- Targeted vestibular rehabilitation can then be provided in preparation for discharge home



# Exploring the relationship between frailty and physical function recovery for people in hospital who received a physiotherapy early rehabilitation program

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Gerontology 11, Great Hall 4, October 7, 2023, 1:40 PM - 2:25 PM

Aim: Explore the association between frailty and physical function recovery of people admitted to hospital treated by the physiotherapy Early Rehabilitation service at Austin Health, Victoria.

Design: Observational cohort study.

Method: People treated by the Early Rehabilitation service with a Clinical Frailty Scale (CFS) score recorded in the Electronic Medical Record between 1 January 2019 and 31 December 2020 were eligible. Physical function was assessed at admission and discharge with the modified Iowa Level of Assessment Scale (mILOA).

Results: There were 459 patients with CFS, admission and discharge mILOA scores. The relationship was not linear between CFS and discharge mILOA (p=0.0123), where there was a steep increase in physical disability from people who were moderately frail (CFS=6) to severely frail (CFS=7) despite adjustment for age, sex and admission mILOA. This trend was observed in the unadjusted analyses where mean improvement in mILOA score from admission to discharge exceeded the minimal clinically important difference of 5.8 points for patients with a CFS score from one (very fit) to six (moderately frail) but not seven (severely frail).

Conclusion: Our preliminary results indicate people with a CFS score from one (very fit) to six (moderately frail) experience important clinical improvement in physical function following a physiotherapy Early Rehabilitation program. Further research to validate these findings in another cohort is needed before changing clinical practice.

**Key Practice Points:** 

• Physical function improved for people admitted to hospital with physiotherapy amenable goals who received a dedicated physiotherapy Early Rehabilitation service.



# Feasibility of implementing Benign Paroxysmal Positional Vertigo (BPPV) assessment and intervention for subacute inpatient older adults with a falls history

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Gerontology 12, Great Hall 4, October 7, 2023, 2:30 PM - 3:15 PM

Aim: Establish the feasibility of implementing BPPV assessment for older adults with a falls history admitted to inpatient subacute services.

Design: Observational feasibility study.

Method: Feasibility of implementing BPPV assessment represented by proportion successfully assessed and reasons for variance; subsequent physiotherapist responses to bespoke evaluation survey and validated measure (AIM, FIM, IAM). Adults over the age of 50 admitted to geriatric, rehabilitation and at-home subacute inpatient services reporting a fall within 6 months were assessed for posterior and horizontal semicircular-canal BPPV and treated if positive. Pre-study training was provided to physiotherapists. This work is part of a larger study ascertaining prevalence and characteristics of BPPV.

Results: Data collection has been completed for 62% of patients deemed eligible thus far. Reasons for not completing BPPV assessment include: impaired cognition (57, 47%), patient physical restrictions (21, 17%), early discharge (13, 10.5%), patient declining (7, 5.5%), aphasia (5, 4%), staff error or limitation (5, 4%), behaviours of concern (4, 3.5%), palliative care (4, 3.5%), manual handling risk (3, 2.5%), or medically unwell (3, 2.5%). Physiotherapist self-rating of "good or excellent" confidence in completing BPPV assessment and intervention has increased from 39% to 75%. An "excellent or good" level of clinical support improved from 65-100% during the study.

Conclusion: In the absence of significant cognitive impairment, assessment for BPPV in older subacute inpatients with a falls history appears feasible.

Key Practice Points:

• Although cognition can be a barrier for all subacute inpatient services, environmental set-up does not limit BPPV assessment in at-home services.



## How therapists and exercisers can monitor balance exercise intensity - the Balance Intensity Scale in practice

#### <u>Farlie M</u><sup>1</sup>, Lawler K<sup>2</sup>

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Gerontology 12, Great Hall 4, October 7, 2023, 2:30 PM - 3:15 PM

Introduction/Background: Challenging balance exercise training is an important component of exercise programs to support healthy aging and prevent falls in older adults. Educating exercisers (and/or carers) in self-monitoring of exercise is a key component of safe and effective client-centred care. The Balance Intensity Scale is a recently validated clinical measure of balance exercise intensity that can be used by health professionals and exercisers to monitor exercise performance and guide program progression.

Aims/Objectives: 1) identify clinical markers of balance exercise intensity, 2) describe the measurement properties of the Balance Intensity Scale, 3) apply movement analysis skills to the objective measurement of balance exercise performances, 4) explore opportunities to enhance communication and engagement with patient/clients about balance exercise programs.

Approach: A brief overview of the clinical measurement of balance exercise performance and an orientation to the Balance Exercise Scale for therapists (BIS-T) and exercisers (BIS-E) [10 mins] will be provided. Participants will then apply the BIS to the rating of (video-taped) balance exercises of varied intensity, followed by rating review and discussion [20 mins].

Key Practice Points:

• By the end of this session participants will be able to apply an objective intensity measurement to the analysis of balance exercises, and instruct exercisers (and/or carers) in self-monitoring of balance exercise performance.



### Considering the principles of trauma-informed care to increase psychological safety, trust, choice, collaboration, and empowerment in physiotherapy practice

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Mental Health 2, P 7, October 5, 2023, 11:55 AM - 12:40 PM

Aim: Trauma-informed care includes the domains of safety, trust, choice, collaboration and empowerment. Trauma-informed services to not treat trauma but aim to be sensitive and use a strengths-based approach. This study aimed to identify opportunities for training and change in physiotherapy practice using traumainformed principles.

#### Design: Qualitative study

Method: Five dialogue group discussions with physiotherapists were conducted (as part of a larger qualitative study) reflecting on the principles of trauma-informed care, areas of interest and gaps for training. Discussions were transcribed and analysed inductively, informed by trauma-informed domains. Results: Eighteen physiotherapists (metropolitan public hospital) participated in the group discussions and indicated interest in the principles of trauma-informed care and further training. The opportunities for impact in healthcare for training to increase expertise identified: recognising signs of distress, attending to psychological safety including managing comments related to self-harm; recognizing and supporting psychological strengths; time management to allow a focus on active listening; communication strategies including shared decision making processes/tools, goal setting and collaboration; understanding the power imbalance and understanding who is the expert in interactions. Debriefing with other colleagues and supporting clinician safety was also considered important.

Conclusion: Domains of trauma-informed care are relevant to physiotherapy and clinicians found a number of options for training to change practice to lead to a more empowering interaction.

- Trauma-informed care is relevant to create empowering interactions
- Physiotherapists are interested in further training in psychological safety and communication strategies
- Trauma-informed services need to ensure clinicians feel safe and supported



# Using a virtual group-based reflective practice framework to explore psychologically challenging aspects of care in a tertiary teaching hospital

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Mental Health 3, P 7, October 5, 2023, 1:40 PM - 2:25 PM

Aim: To evaluate the implementation of a reflective practice framework delivered in a virtual, group-based setting.

Design: Post-session electronic survey evaluation completed by physiotherapists at a major metropolitan tertiary hospital in Australia

Method: Reflective practice sessions occurred biannually, ran for 60-75 minutes via videoconference, were based on a clinicians' scenario guided by a bespoke framework, facilitated by a wellbeing consultant, and delivered to physiotherapists regardless of level of experience or clinical practice area. To determine if the sessions were safe and effective, physiotherapists were invited to complete a 17-item electronic evaluation survey at the end of each session.

Results: Complete responses were received from 65% (n=196/300) of participants spanning five reflective practice sessions from October 2020 to October 2022. Responses were received from all clinical areas and levels. The majority (72%) of these responses came from grade two (43%) and grade one (29%) physiotherapists. Sessions which facilitated insight into emotionally and psychologically challenging issues in the workplace were evaluated as well structured (97%) and a safe space to learn and contribute (98%). Preference was for quarterly session (57%); time allocated was considered sufficient (73%).

Conclusion: Implementing a virtual reflective practice framework provided a safe and effective space for participants to gain insight into emotionally and psychologically challenging issues faced in large and complex healthcare systems.

**Key Practice Points:** 

• A virtual reflective practice framework facilitated a safe learning environment for physiotherapists across the experience and discipline continuum



#### Assessing biopsychosocial impairments in 197chilles tendinopathy

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Mental Health 3, P 7, October 5, 2023, 1:40 PM - 2:25 PM

Background: Achilles tendinopathy is very common among people involved in running and running sports but can impact people who are less active (6% of the general population are affected). Considering biopsychosocial factors in assessment, guided by current evidence, helps to identify impairments and potential contributors and guides patient-centred management. In the tendinopathy literature, physical (eg, strength and biomechanics) impairments have been extensively investigated, with greater attention more recently on psychological factors and the lived experience. Biopsychosocial assessment is critical in Achilles tendinopathy as it enables patient-centred and individualised care.

Aim and objectives: The main aim of this 'how to' session is to outline evidence-based components of a biopsychosocial assessment for Achilles tendinopathy. This will be achieved by addressing the following objectives:

1. Outline assessment of key impacts and outcome domains (based on international consensus and lived experience) of Achilles tendinopathy (including disability, participation, and kinesiophobia)

2. Discuss how open questions can be used to further explore coping, kinesiophobia, self-efficacy, outcome expectations.

3. Integrate these self-reported outcomes and lived experience with objective physical function assessments

Approach: The rationale and evidence-base for various biopsychosocial assessment will be reviewed. This will be followed by practical examples highlighting application of these assessments and variation of findings across different Achilles tendinopathy presentations. Practical guidance will be provided on how to individualise biopsychosocial assessment and how findings inform management approach.

Key Practice Points:

• Clinicians will develop a comprehensive understanding of biopsychosocial impairments in Achilles tendinopathy, how they can be assessed, and how they inform management.



# The many different forms of patient distress: An emotional challenge for physiotherapists

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Mental Health 7, P 9, October 6, 2023, 2:15 PM - 3:00 PM

Aim: To explore physiotherapists' perceptions of, and experiences with patients experiencing psychological distress.

Design: Interpretivist qualitative paradigm.

Method: Twenty-three Australian physiotherapists each participated in an in-depth interview. Eleven different areas of practice were reflected in the sample. Data were analysed using Iterative Thematic Inquiry.

Results: Two overarching themes were co-constructed. The first theme, Encounters with patients in distress are common and varied, captured participants' perceptions of patients experiencing psychological distress. Participants perceived patient distress to be multifaceted and multifactorial. Salient forms of patient distress reported by participants included anticipatory anxiety, grief, and profound hopelessness. Participants felt that for those patients experiencing more severe distress, there was often an associated element of trauma. The second overarching theme, The emotional toll of practice, revealed the emotional impact participants experienced as a result of encountering patients in distress. Participants reflected that connecting with patients on an emotional level could invoke distress in themselves and that repeated empathetic distress could have serious personal and professional consequences.

Conclusion: The nature of the forms in which patient distress may manifest is varied. Patient distress has the potential to invoke transient, and in some instances more persistent, empathetic distress in physiotherapists and poses a significant clinical and personal challenge for physiotherapists.

- Patient distress is common and presents in many forms.
- Physiotherapists experience empathic distress in response to patient distress.
- Physiotherapists may benefit from self-care to manage the emotional toll.



# An international survey of physiotherapy practises in the clinical assessment of lateral elbow tendinopathy

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Musculoskeletal 2, M 1 & 2, October 5, 2023, 11:55 AM - 12:40 PM

Aim: To examine current international physiotherapy practises in the assessment of lateral elbow tendinopathy.

Design: Online international survey.

Method: Physiotherapists from eleven countries rated how frequently they use the patient history, diagnostic tests, grip and upper limb strength, cervical spine assessments, neurological assessment, and medical imaging for the clinical assessment of LET. Frequency was rated using a 5-point Likert scale as 'never', 'rarely', 'sometimes', 'often', and 'always'. Data were analysed using frequency statistics (%).

Results: 299 respondents completed the survey. Patient-reported lateral elbow pain (62%) and patient-reported weakness/pain during gripping (59%) were often or always used. Pain on palpation (56%), Cozen's test (54%), Maudsley's test (55%), and maximal grip strength (57%) were often or always used. Respondents often or always assessed maximal grip strength (53%), wrist extension (62%) and elbow flexion/extension (58%). Cervical range of motion (46%) and palpation (46%) were often or always used, and 51% often, always, or as indicated used neural provocation tests. Diagnostic ultrasound was always used by 9% of respondents.

Conclusion: Most respondents used the patient history, diagnostic tests, and upper limb strength assessments for the assessment of LET. While use of the patient history and diagnostic tests appear within the literature, there is limited evidence regarding their diagnostic accuracy.

- Given the frequency of use, further research is required on the diagnostic accuracy of the patient history and diagnostic tests in the assessment of LET.
- The reliance on diagnostic ultrasound in LET appears relatively low, in line with empirical evidence.



# Is adolescent idiopathic scoliosis (AIS) associated with differences in bone health, lean mass and eating disorders?

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Musculoskeletal 3A, M 1 & 2, October 5, 2023, 1:40 PM - 2:25 PM

Aim: To compare nutrition-related factors between people with and without AIS.

Design: Longitudinal cohort study

Method: The Raine study in Western Australia included measures at ages 17 and 20 years for body weight, an eating disorder questionnaire, and DEXA scans for bone density and lean mass at age 20. Results for people with AIS (n=26) and without scoliosis (n=1139) were compared using Mann–Whitney U test and multiple logistic regression.

Results: Those with AIS demonstrated a lower body weight at age 17 (median: 60.9 vs 65.2 kg, P = 0.05) and 20 (median: 65.3 vs 70 kg, P = 0.04), lower lean mass (median: 38.8 vs 46.0 kg, I = 0.04) a lower total body bone mineral density (median: 1.0 g/cm2 vs 1.1 g/cm2, P = 0.03) compared to those without scoliosis. At age 20, logistic regression showed that odds of AIS were 3.23 x higher for those with an eating disorder than without (95% CI: 1.02, 8.63, P = 0.03).

Conclusion: Results from this unbiased population sample indicate a need for increased vigilance about weight, bone density and eating disorders in people with AIS. Research is needed to determine the causes of these differences and whether they relate to development or progression of AIS.

- Lower body weight, lean mass and bone density were observed in people with AIS.
- Odds of having AIS were higher in people with an eating disorder.



# Qualitative experience of patients with back pain at high-risk of delayed recovery: early access to specialist physiotherapy care (PACE-MSK trial)

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Musculoskeletal 3A, M 1 & 2, October 5, 2023, 1:40 PM - 2:25 PM

Aim: We implemented a novel care pathway in four Australian states to provide early access to specialist physiotherapy for people at high-risk of delayed recovery from low back pain. This study investigated patients' experiences and acceptance of this pathway.

Design: Qualitative study embedded in the PACE-MSK trial.

Method: One-to-one interviews were conducted with fifteen people at high-risk of delayed recovery following a new episode of low back pain. Interviews took place three months after entering the trial, at the completion of the specialist physiotherapist care. Data were analysed using reflexive thematic analysis and examined in relation to the Theoretical Framework of Acceptability.

Results: Five themes were identified and interpreted with the most relevant Theoretical Framework of Acceptability constructs: (1) Expectations and beliefs shape patient experience (perceived effectiveness, ethicality); (2) Clinical expertise and competence influence acceptance (perceived effectiveness, affective attitude) (3) Person-centred care (intervention coherence, burden); (4) Mechanisms facilitating beneficial responses (perceived effectiveness, self-efficacy, ethicality); (5) Gaps in pathway implementation (intervention coherence, opportunity costs). Participants perceived specialist care as holistic and this care enhanced their own understanding and capacity to self-manage their condition. Gaps were identified in terms of limited experience of inter-professional communication and limited use of online pathway information resources.

Conclusion: A low back pain care pathway allowing earlier access to specialist physiotherapist care was perceived as acceptable to patients at risk of delayed recovery.

**Key Practice Points:** 

• Care pathways for low back pain should consider early review by specialist physiotherapists for patients at risk of delayed recovery.



### The value of N-of-1 studies in musculoskeletal physiotherapy - lessons from a systematic review

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Musculoskeletal 3A, M 1 & 2, October 5, 2023, 1:40 PM - 2:25 PM

Aim: To explore the use, purpose, and outcomes of N-of-1 studies for physiotherapy interventions for musculoskeletal conditions.

Design: Systematic review.

Method: Five databases and the grey literature were systematically searched for studies with at least an ABA design published before January 2019. Studies that involved physiotherapists assessing and managing people with musculoskeletal pain, injuries, conditions or dysfunction were included. Two independent reviewers assessed eligibility and methodological quality using the Risk-of-Bias in N-of-1 trials scale.

Results: 18 studies comprising 88 participants were included. Design, methodology quality, analysis, type of musculoskeletal condition and interventions evaluated varied considerably. Overall quality was low, mainly due to poor internal validity. Visual analysis only was performed in 55% of studies. Assessment of provider and participant satisfaction was limited. 95% of participants responded favourably to the tested intervention.

Conclusion: N-of-1 studies may be well-suited to evaluation of physiotherapy interventions for musculoskeletal conditions. Using a multiple baseline design with randomised baseline length, assessor blinding, replication and more rigorous reporting of inter-rater agreement and treatment adherence, are feasible strategies to increase validity. Complementing visual analysis with statistical analysis, and assessing participant and provider satisfaction with the N—of-1 study, and participants' treatment satisfaction, is recommended.

- N-of-1 study designs consider the heterogeneity of musculoskeletal presentations and can test the effect of an intervention using a small number of patients.
- N-of-1 studies allow interventions to be tailored to the unique needs of a patient and in that way can reflect clinical practice.



# Telehealth provides similar clinical outcomes to in-person care for the management of chronic back pain: a pilot non-randomised clinical trial

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Musculoskeletal 3B, P 2, October 5, 2023, 1:40 PM - 2:25 PM

Aim: To determine if clinical outcomes achieved via telehealth are comparable to in-person for the multidisciplinary management of chronic back pain.

Design: Pilot non-randomised clinical controlled trial

Method: Participants were recruited from a tertiary advanced physiotherapy screening clinic and selfselected treatment either via telehealth (n=51) or in-person (n=20). Measures for pain-related disability, pain severity and health-related quality of life were recorded at baseline, 3-, 6- and 9-months. Non-inferiority was investigated for each clinical outcome by comparing mean between-group differences to established noninferiority margins. In addition, generalised linear model repeated measures ANOVAs were performed to determine within- and between-group differences. Patient satisfaction was compared using Mann Whitney U tests.

Results: Participant characteristics did not differ at baseline. Both groups achieved clinically meaningful improvements for pain-related disability and health-related quality of life. Non-inferiority of telehealth was inconclusive for all clinical outcome measures, however there were no significant differences between groups over the 9-month period for pain-related disability (p=0.71), pain severity (p=0.19) or health-related quality of life (p=0.43). Patient satisfaction was significantly higher in the telehealth group (Med: 97/100 vs. 76.5/100; p=0.02).

Conclusion: Findings suggest patients with chronic back pain can achieve clinically meaningful improvements when accessing care via telehealth. A larger clinical trial is required to further investigate equivalence between the two delivery modes.

- Applying evidence-based interventions for chronic back pain is achievable via telehealth and can result in clinical improvements and high patient satisfaction.
- Telehealth should be considered when access to relevant in-person care is prohibitive.



# Establishing a core capability framework and training requirements for Physiotherapists providing care via telehealth in a public outpatient setting.

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Musculoskeletal 3B, P 2, October 5, 2023, 1:40 PM - 2:25 PM

Aims: Establish a capability framework for delivery of care via telehealth and understand training requirements to achieve competency for physiotherapists in a public outpatient setting.

Design: 3-phase sequential multi-methods study design

Method: Phase 1: Physiotherapists with telehealth experience across a large metropolitan health service participated in a 2-round e-Delphi process to establish consensus on core capability framework domains (Round 1, n=29; Round 2, n=26). Phase 2: Physiotherapists (n=35) subsequently rated current knowledge and confidence for each capability item using a 5-point Likert scale (responses analysed descriptively). Phase 3: Participatory focus groups were held with 37 participants from six facilities to identify theoretical and practical domains most relevant to local contexts via thematic analysis.

Results: Fifty-three capability items were produced across eight domains (Compliance, Patient privacy and confidentiality, Patient safety, Technology Skills, Telehealth Delivery, Assessment and Diagnosis, Care Planning and Management, Access and Equity). Participants reported poorest knowledge/confidence in Technology Skills (median 3/5, IQR 2-4), and highest in Telehealth Delivery (median 4/5, IQR 3-5). Focus groups identified technology skills, risk management (patient safety) and superuser support as priority areas for training.

Conclusion: Physiotherapists identified additional local training competencies to compliment the 53-item capability framework. Adopting a mixed-methodology and participatory approach successfully produced a training package suitable for implementation in a public outpatient setting.

- A 53-item capability framework was co-produced to support public outpatient physiotherapists providing care via telehealth.
- Training and support must be targeted towards technology skills.
- The training package enables standardisation of telehealth capability.



## Evaluation of MyPainHub: a one-stop online resource for people with musculoskeletal conditions and their healthcare professionals

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Musculoskeletal 3B, P 2, October 5, 2023, 1:40 PM - 2:25 PM

Aim: To evaluate the feasibility, practicality, and acceptability of implementing MyPainHub, an online resource developed to promote guideline-based care and support people with musculoskeletal (MSK) conditions and their healthcare professionals in a tertiary-care setting.

Design: Observational study using qualitative methods.

Methods: From May to October 2022, six physiotherapists and eighteen patients referred for treatment of MSK conditions were recruited. Physiotherapists were encouraged to use the resources in MyPainHub to aid in the assessment and management of MSK patients, while patients were given access to these educational resources to support their care. After three months, physiotherapists and patients were invited to attend focus groups to discuss the acceptability, credibility, and feasibility of MyPainHub.

Results: Four key themes were: 1. MyPainHub aids patients' understanding of their MSK condition; 2. MyPainHub is credible and trustworthy; 3. MyPainHub supports self-efficacy; and 4. Ways to improve MyPainHub's acceptability and feasibility. Physiotherapists identified some challenges for implementation in a tertiary-care setting and suggested opportunities for improvement, including more training on using MyPainHub for better integration into practice.

Conclusions: The study suggests that patients and clinicians found MyPainHub credible, easy to navigate, and useful. Physiotherapists found MyPainHub helped support evidence-based practice and pathways of care. In return, when patients found the information from MyPainHub aligned with that provided by their physiotherapist, their acceptance of the resource increased.

Key Practice Points:

• With training and support for implementation into clinical practice, MyPainHub has the potential to support the management of people with MSK conditions in tertiary care.



### What education should be provided to Aboriginal and Torres Strait Islander peoples with osteoarthritis, rheumatoid arthritis and gout?

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Musculoskeletal 4A, P 1, October 5, 2023, 2:30 PM - 3:15 PM

Aim: To develop culturally adapted evidence-based osteoarthritis, rheumatoid arthritis and gout education for Aboriginal and Torres Strait Islander peoples.

Design: Mixed methods study design.

Method: Qualitative interviews with Aboriginal and Torres Strait Islander people with osteoarthritis, rheumatoid arthritis and gout; and systemic review and appraisal of clinical practice guidelines to identify education recommendations in high quality guidelines. Integrated evidence by combining qualitative and systematic review data.

Results: Thirty interviews were completed with Aboriginal and Torres Strait Islander people (Victoria n=9, Western Australia n=21). Eighteen clinical practice guidelines were rated as high-quality on the Appraisal of Guidelines for Research and Evaluation II tool and included education recommendations for osteoarthritis (n=6), gout (n=5) and rheumatoid arthritis (n=7). Education content and delivery was similar across datasets, in that education should include information on disease knowledge, management options (benefits and risks), and care pathways, be personalised and include strengths-based language. Although education often didn't meet the needs and preferences of Aboriginal and Torres Strait Islander people. We recommend education should be comprehensive and recognise Bush Medicines as an arthritis treatment and yarning circles as a delivery modality. Educational resources should be created by Aboriginal and Torres Strait Islander people, include common terms, flags, artwork, positive lived experience stories and holistic support services.

Conclusion: This synthesis can be used by clinicians to provide evidence-based, culturally adapted arthritis education.

Key Practice Points:

• Recommendations can guide future resource developers to adapt evidence-based education to meet the needs and preferences of Aboriginal and Torres Strait Islander peoples.



### "I believe if you know better, you do better": the perspectives of Aboriginal people with arthritis conditions on health information

Linton J<sup>1,2</sup>, Conley B<sup>3</sup>, Bullen J<sup>4</sup>, Lin I<sup>5,6</sup>, Toovey R<sup>3</sup>, O'Brien P<sup>7</sup>, Thompson J<sup>8</sup>, Prehn R<sup>7,8</sup>, Bromley J<sup>8</sup>, Gregory N<sup>8</sup>, Green C<sup>5</sup>, Flanagan W<sup>5</sup>, Bunzli S<sup>9,10</sup>

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Musculoskeletal 4A, P 1, October 5, 2023, 2:30 PM - 3:15 PM

Aim: To co-design recommendations for culturally adapted arthritis resources by exploring the lived experiences and health information needs and preferences of Aboriginal people with arthritis

Design: Qualitative study employing culturally appropriate methods

Method: Qualitative research yarns explored the experiences and perspectives of Aboriginal people living with arthritis (osteoarthritis, rheumatoid arthritis, lupus, gout). Purposive sampling was used to recruit people through Aboriginal Medical Services in Victoria and Western Australia. A diverse representation of participants was recruited (age, gender, arthritis condition, geographical location). Research yarns were analysed using inductive thematic analysis. Identified themes were presented to two Aboriginal community reference groups (Victoria and WA) to generate recommendations for culturally adapted arthritis resources.

Results: Thirty-four research yarns were conducted. Two overarching themes were generated. Contentrelated ('what/why') recommendations included: comprehensive information for the person and Community on their condition and management, including Aboriginal healing practices; role of arthritis in general health and wellbeing, activity, family, and Community health. Format/process-related ('how/who') recommendations included: varied delivery methods (brochures, videos, yarning circles, dedicated educator); culturally appropriate language and artwork; empowerment for self-determination of their health; trust in information resources and clinicians; peer learning and reassurance.

Conclusion: Key themes identified in the qualitative study provided rich data that will enable resources to be created that are culturally adapted and important to Aboriginal people with arthritis.

- Co-designed recommendations can guide the development of information resources for Aboriginal people with arthritis.
- Co-designed recommendations can aid clinicians working with Aboriginal people with arthritis in delivering culturally appropriate information.



### Understanding the impact and tackling the burden of osteoarthritis with Aboriginal and Torres Strait Islander people

<u>**O'Brien P**</u><sup>1</sup>, Prehn R<sup>1</sup>, Green C<sup>2</sup>, Lin I<sup>2</sup>, Flanagan W<sup>2</sup>, Conley B<sup>1</sup>, Bessarab D<sup>3</sup>, Coffin J<sup>4</sup>, Choong P<sup>1</sup>, Dowsey M<sup>1</sup>, Bunzli S<sup>5</sup>

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Musculoskeletal 4A, P 1, October 5, 2023, 2:30 PM - 3:15 PM

Aim: To understand the lived experience of Aboriginal and Torres Strait Islander people with osteoarthritis.

Design: Qualitative study guided by cultural security, which ensures research is conducted in a way that will not compromise the cultural values, beliefs, and expectations of Aboriginal and Torres Strait Islander people.

Method: Participants were purposively sampled. Research yarns (a cultural form of conversation used as a data gathering tool) were conducted with 25 Aboriginal and Torres Strait Islander adults with self-reported osteoarthritis in Western Australia and Victoria. Data were analysed using a framework approach and presented through two hypothetical stories representing an amalgam of participants' experiences.

Results: Composite stories reflected themes relating to beliefs and knowledge, impact, coping, and healthcare experiences. Common beliefs held by participants were that osteoarthritis is caused by previous physically active lifestyles. Many participants feared increasing disability and needing a wheelchair. Pain associated with osteoarthritis impacted daily activities, sleep, work, family, social life and cultural activities. Multidimensional impacts were often experienced within complex health or life circumstances and associated with increased anxiety and depression. Most participants reported negative health care experiences, characterised by poor patient–provider communication.

Conclusion: Findings from this study highlight the need for integrated, multidisciplinary care that is culturally informed and individualised to patient need.

- Improving the management of osteoarthritis amongst Aboriginal communities is critical if the disproportionate prevalence and burden is to be reduced.
- Recommendations will improve practitioners' capacity to provide culturally secure, high value person-centred care for Aboriginal people with osteoarthritis.



# What education to deliver and how to deliver it for rotator cuff-related shoulder pain: practical guidance for clinicians

Malliaras P<sup>1</sup>

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Musculoskeletal 4B, M 1 & 2, October 5, 2023, 2:30 PM - 3:15 PM

Background: Clinical practice guidelines recommend that health care professionals 'provide patient education on condition and management options as part of first-line care for musculoskeletal conditions. Education should be patient centred, and this includes tailoring content to patient needs, preferences, and values, and improving health literacy to enable informed health decisions. There is, however, limited guidance for health care professionals regarding what education content to deliver and how it should be delivered. This 'how to' session outlines development of an education intervention (with stakeholder involvement) for rotator cuff-related shoulder pain whilst highlighting practical aspects of content and delivery strategies.

#### Objectives:

1. to outline the iterative development process of the education intervention;

2. to develop understanding of education content (what) that can be delivered;

3. to explore and discuss strategies for education delivery (how) with consideration to patient-centred care and optimising behaviour change.

#### Approach:

1. Setting the scene: Evidence for education in tendinopathy (5 min)

2. Development and content: Outline engagement of patients and clinicians to develop the education intervention and further testing and appraisal (10 mins)

3. Delivery: Discuss delivery in various contexts (1-1 vs group, face to face vs telehealth) and clinical examples of individualising education based on assessment (10 min)

3. Participant engagement: Questions from the audience and opportunity for peer-to-peer learning (5 mins)

Key Practice Points:

• This 'how to' session is aimed at helping clinicians improve practical knowledge and skills in delivering education for people with rotator cuff-related shoulder pain.



## How does exercise work for rotator cuff-related shoulder pain? A scoping review of randomised clinical trials

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Musculoskeletal 4B, M 1 & 2, October 5, 2023, 2:30 PM - 3:15 PM

Aim: This study aimed to synthesise the range of mechanisms proposed in clinical research to explain beneficial effect of exercise therapy for rotator cuff-related shoulder pain.

Design: Scoping review.

Methods: A systematic search of the Physiotherapy Evidence Database was performed from inception to July 3, 2022. Randomised clinical trials using exercise for RCRSP were included.

Results: Six hundred and twenty-six studies were identified and 110 were included in scoping review. Overall, 32 unique mechanisms were identified, and these were able to be grouped into four themes: 1) neuromuscular 2) tissue factors 3) neuro-endocrine-immune 4) psychological. Neuromuscular mechanisms were suggested by clinical trialists most frequently, at an order of magnitude higher than other mechanisms. The most commonly proposed neuromuscular mechanisms were motor control (n=47) and muscle strength (n=43). When dichotomised into either biomedical or psychosocial, 95% of all proposed mechanisms were biomedical in nature.

Conclusion: Compellingly, the most common causal explanations for the beneficial effect of exercise for rotator cuff-related shoulder pain were improvements in shoulder motor control and muscle strength. Overall, biomedical mechanisms accounted for 95% of all causal explanations for the beneficial effect of exercise, despite a lack of supporting evidence.

- Biomedical mechanisms were the dominant explanation for the beneficial effect of exercise
- Psychosocial explanations were rarely proffered, compared to biomedical
- Clinicians should consider the full range of possible biopsychosocial mechanisms when offering advice and education about how and why exercise might have an effect for an individual with rotator cuff-related shoulder pain.



## How do people with knee osteoarthritis respond to a video delivering empowering education about their condition and its management?

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Musculoskeletal 5A, P 1, October 6, 2023, 10:35 AM - 11:20 AM

Aim: To understand the responses by people with knee osteoarthritis to a brief educational video that aimed to empower and motivate effective self-management. The video content explicitly addressed psychosocial contributors to pain and barriers to behaviour change.

Design: Mixed methods design, including a bespoke survey and semi-structured interviews.

Methods: Data were collected from 118 people (46-83 years, 78% female) with knee osteoarthritis. Descriptive thematic analysis was used to explore the qualitative data.

Results: Quantitative findings: The video was rated positively on 0-6 scales for enjoyability (mean 5.0), helpfulness (4.9), relevance (5.0) and believability (5.4). The majority said they would recommend the video (89%), had learned new information (78%) and reported intentions to change their exercise behaviour (78%). About a quarter (23%) had criticism(s) regarding the video.

Qualitative findings: The thematic analyses identified 10 responses within three themes: 1. Reactions (Emotional, engagement, and trust); 2. Learning (new knowledge, empowerment, unmet information needs, and discordance) and 3. Intentions (exercise behaviour, mindset, and help-seeking behaviour changes).

Conclusion: Education about knee osteoarthritis with a focus on empowerment was mostly very well received. The discordant views and knowledge errors that emerged were used to inform the video implementation recommendations.

- The educational video can be recommended for people with knee osteoarthritis symptoms.
- Some people will feel challenged by the information in the video.
- Effectiveness may be improved if delivered as part of a conversation that supports people who are resistant, corrects knowledge errors, and provides personalised answers to unanswered questions



## Investigating the 'how' of patient education for knee osteoarthritis - An online randomised controlled trial

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Musculoskeletal 5A, P 1, October 6, 2023, 10:35 AM - 11:20 AM

Aim: To compare two short educational videos. Both presented evidence-based knee osteoarthritis information. The main differences were in language and design. The experimental video used design features and careful choice of words to empower and facilitate self-management behaviours, while the control video used a disease and impairment focus to explain the problem and management options.

Design: Randomised controlled trial

Methods: Participants (≥45 years) with knee pain were randomly assigned to watch one of two videos embedded within an online survey that assessed outcomes pre and post watching the video. Primary outcomes were self-efficacy for managing knee osteoarthritis pain (range 0-10) and kinesiophobia (range 6-24). Secondary outcomes included expectations about physical activity benefits, perceived importance and motivation to be physically active, knee osteoarthritis knowledge, hopefulness for the future, level of concern, and perceived need for surgery.

Results: The experimental group (n=296) had better outcomes than the control group (n=293), with improved self-efficacy (mean difference 0.4 [Cl 0.2 to 0.6] units), reduced kinesiophobia (1.6 [Cl 1.1 to 2.0] units), and greater improvements in all secondary outcomes except for hopefulness, which was high in both groups.

Conclusion: The video based on an empowerment and participatory discourse was better at improving self-efficacy and reducing kinesiophobia.

- Video design and language affect self-efficacy and kinesiophobia
- Patient education should be thoughtfully planned and presented to acheive intended purpose
- Clinicians should consider using an empowerment and participatory discourse, rather than focusing on the disease and impairment, when educating people about knee osteoarthritis



# Recommendations for the management of hip and knee osteoarthritis: a systematic review of clinical practice guidelines

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Musculoskeletal 5A, P 1, October 6, 2023, 10:35 AM - 11:20 AM

Aim: Guideline adherence for hip and knee osteoarthritis management is often poor, possibly related to the quality and consistency of recommendations. This systematic review aimed to appraise the quality and consistency in recommendations across higher-quality guidelines for hip and knee osteoarthritis.

Design: Prospectively registered (CRD42021216154) systematic review.

Method: Eight databases, guideline repositories, and professional associations websites were searched on 27/10/2022. Quality was appraised using the AGREE II tool (six domains). Higher-quality was defined as scoring ≥60% for domains 3 (rigour of development), 6 (editorial independence), plus one other. Consistency in recommendations across higher-quality guidelines was reported descriptively.

Results: Seven higher-quality and 18 lesser-quality guidelines were included. Average AGREE II domain scores for higher-quality guidelines was >60%, except for applicability (46%). Higher-quality guidelines consistently recommended in favour of education, exercise, weight management, walking aids, non-steroidal anti-inflammatory drugs (hip and knee), and intra-articular corticosteroid injections (knee). Higher-quality guidelines reported a lack of evidence to preferentially recommend one form of exercise, and lacked detail regarding type, dosage and mode of delivery of exercise. Recommendations relating to other physiotherapist treatments (e.g. manual therapy) were less consistent.

Conclusion: Higher-quality guidelines for hip and knee osteoarthritis consistently recommend exercise, education, and weight management, alongside consideration of non-steroidal anti-inflammatory drugs and intra-articular corticosteroid injections (knee). Future guidelines must prioritise providing implementation guidance, considering consistently low applicability scores.

- Exercise, education and weight management are consistently recommended by higher-quality guidelines
- Higher-quality guidelines reported a lack of evidence to preferentially recommend one form of exercise over another



### Prevalence and physiotherapist awareness of shoulder pain and/or stiffness as an early symptom of Parkinson's disease: an Australian perspective

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Musculoskeletal 5B, P 2, October 6, 2023, 10:35 AM - 11:20 AM

Aim: Parkinson's disease (PD) is the second most common neurodegenerative disorder in Australia. Shoulder pain and/or stiffness has been reported as a possible early manifestation of the disease. The aim of this study was to determine the prevalence of shoulder pain and/or stiffness as an initial symptom of PD, and to gain an understanding of physiotherapy awareness of this early symptom in an Australian population.

Design: Two cross-sectional purpose-designed surveys

Method: A postal mail survey was distributed to 189 patients with PD and an online survey to 336 physiotherapists.

Results: A response rate of 63% was obtained for the PD patients and 23% for physiotherapists. Thirteen percent of PD patients reported an onset of shoulder pain and/or stiffness within five years prior to diagnosis, with no reported past history of shoulder issues. Eight percent specifically reported shoulder symptoms as the initial manifestation of the disease. Seventy-four percent of physiotherapists were unaware of the potential for the early presentation of this symptom.

Conclusion: This study has reinforced the potential for shoulder pain and/or stiffness to be an early symptom of PD. It has also demonstrated that physiotherapists have limited knowledge and awareness of this symptom.

- Almost 1 in 10 people with PD reported shoulder pain and/or stiffness as the initial symptom of PD
- An area for knowledge improvement for physiotherapy professional development has been identified.
- Increasing awareness may lead to earlier diagnosis thereby facilitating more timely and appropriate management.



### Participatory design to co-create educational material for the lived experience of complex regional pain syndrome

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Musculoskeletal 6A, P 1, October 6, 2023, 11:25 AM - 12:10 PM

Aim: People with complex regional pain syndrome express difficulty in accessing reliable and meaningful information about the condition. Review of resources for this group of patient indicates the quality of available information may be lacking. This study used a participatory design process to co-create a trustworthy infographic to share information about the lived experience of complex regional pain syndrome.

Design: Participatory design.

Method: A seven-phase iterative process was used to select educational content (Phases 1 and 2), create an infographic (Phase 3), and select, refine and finalise the infographic (Phases 4 to 7). Consumer engaged occurred specifically in Phase 2 for content selection (n=20), Phase 4 for design selection (n=25) and Phase 6 for refinement of the final design (n=34). The Patient Education Materials Assessment Tool was utilised primarily to review understandability of the infographic during iteration.

Results: The final infographic rated highly for understandability (92%) and participants indicated significant willingness to share this infographic with others (93%).

Conclusion: A participatory design process can be an effective and efficient process for translation of evidence gathered from qualitative research into a trustworthy resource for people with complex regional pain syndrome and their support people.

**Key Practice Points:** 

• There is a role for clinicians to provide credible and trustworthy educational material to people with complex regional pain syndrome.



# Using SUpported Motivational InTerviewing (SUMIT) to improve physical activity for people with knee osteoarthritis. A pilot, feasibility randomised controlled trial

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Aquatic/Musculoskeletal 6, P 8, October 6, 2023, 11:25 AM - 12:10 PM

Aim: To determine the feasibility and effectiveness of using SUpported Motivational InTerviewing (SUMIT) to increase physical activity in people with knee osteoarthritis (KOA).

Design: Randomised controlled trial.

Method: We recruited people who had completed Good Life with osteoArthritis Denmark and randomised participants to receive SUMIT or usual care. SUMIT involved five motivational interviewing sessions targeting physical activity, over 10-weeks, and access to a multimedia web-based platform. Feasibility outcomes included recruitment rate, adherence to motivational interviewing, ActivPAL wear and drop-out rate. Effect sizes (ES) were calculated for daily steps, stepping time, time with cadence >100 steps per minute, time in bouts >1minute; 6-Minute-Walk-Distance, Knee Osteoarthritis Outcome Score (KOOS) subscales, Euroqual, systolic BP, BMI, waist circumference, 30-second chair stand test, and walking speed.

Results: Thirty-two participants were recruited (17 SUMIT, 15 control) including 22 females (69%). All feasibility criteria were achieved, with 32/63 eligible participants recruited over seven months; 100% adherence to motivational interviewing calls, 100% achieved sufficient ActivPAL wear time and two drop-outs (6%). 12/15 outcome measures showed at least a small effect (ES>0.2) favouring the SUMIT group, including daily time with cadence >100 steps per minute (ES=0.43). Two outcomes (walking speed and KOOS quality of life) showed a large effect (ES>0.8).

Conclusion: SUMIT is feasible in people with KOA. Potential benefits included more time spent walking at moderate intensity, faster walking speeds and better quality of life.

- SUMIT is feasible for a larger trial.
- SUMIT may contribute to meaningful improvements in physical activity in people with KOA.



#### Addition of lifestyle modifications to a traditional exercise program for the management of knee osteoarthritis: a systematic review and metaanalysis

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Aquatic/Musculoskeletal 6, P 8, October 6, 2023, 11:25 AM - 12:10 PM

Aim: This review aims to investigate the influence of incorporating lifestyle modifications such as disease education, pain coping strategies, dietary and weight loss programs, tai chi, yoga, and workshops targeting goal setting and lifestyle advice into a traditional exercise program, with regards to pain intensity, functional outcomes, and quality of life among individuals with knee osteoarthritis

Design: Systematic Review with meta-analysis of randomised controlled trials

Methods: Four databases were searched to identify randomised controlled trials investigating the inclusion of life-style modifications to a traditional exercise program. Methodological quality was assessed via the PEDro scale. Results synthesis through meta-analysis was conducted to determine the pooled effect on eligible outcomes. The certainty of evidence was evaluated through the GRADE approach.

Results: 16 studies of overall good methodological quality demonstrated that the inclusion of lifestyle modifications was favourable compared to exercise alone. Meta-analysis of seven studies showed that the inclusion of lifestyle modifications to an exercise program can further decrease pain intensity (SMD -0.61 [95% CI -1.12 to -0.10]), improve joint stiffness (MD -0.69 [95% CI -1.21, -0.17]), and increase physical function (MD -1.26 s ([95% CI -1.34, -1.17]) at six-months. No significant differences were seen for quality of life (MD -0.10 [95% CI -0.24, 0.04]).

Conclusion: The results of this systematic review support the inclusion of lifestyle modifications to an exercise program for greater improvements in pain and function for individuals with knee osteoarthritis.

**Key Practice Points:** 

• Lifestyle modifications should be incorporated into the conservative management of knee osteoarthritis.



## Barriers and facilitators of early referral to specialist musculoskeletal physiotherapists: perspectives of allied health and medical professionals

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Musculoskeletal 8A, P 2, October 6, 2023, 3:35 PM - 4:20 PM

Aim: Explore allied health and medical professionals' perceptions of (i) barriers and facilitators of early referral to specialist musculoskeletal physiotherapists, and (ii) optimal pathways of care for people presenting with musculoskeletal pain.

Design: Inductive qualitative study.

Method: Semi-structured interviews with 56 allied health (e.g., physiotherapists, exercise physiologists, psychologists) and medical professionals (e.g., surgeons, general practitioners) were conducted. Perspectives on the barriers and facilitators of referral to specialist musculoskeletal physiotherapists within a proposed clinical pathway of care were explored. Data collection and thematic analysis were conducted iteratively.

Results: Key themes were: (i) patient-related factors (presence/absence of specific diagnosis or recognised clinical pattern, beliefs, expectations); (ii) practitioner-related factors (perceived expertise, trust, familiarity); and (iii) external/system-related factors (location, funding, procedural). Perspectives around roles, responsibilities and expertise, and barriers and facilitators, regarding optimal pathways of care differed amongst and between different health professionals.

Conclusion: A variety of factors influence when, why and to whom people with musculoskeletal conditions are referred. Patient expectations, financial factors and perceived roles sometimes resulted in referral decisions being misaligned with a professional's own clinical judgement or best practice. Discordant perceptions of roles and responsibilities amongst and between professional groups may be a barrier to optimal care.

- Trust and professional networks strongly influenced referral practices.
- While earlier referral, clear communication, and education regarding roles and expertise were identified as facilitators, lack of awareness of specialist roles and expertise and financial impacts appears a significant barrier to overcome to optimal pathways of care.



#### How diverse expertise amongst musculoskeletal (MSK) physiotherapists can be used to implement models of care for musculoskeletal disorders

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Musculoskeletal 8A, P 2, October 6, 2023, 3:35 PM - 4:20 PM

Background: Risk stratified and individualised models of care featuring MSK and pain physiotherapists are promising ways for our profession to retain leadership in managing MSK conditions. This requires change to collaborative care and understanding of patient perspectives to fully enable implementation.

Aims. To improve participant knowledge in the use of risk assessment tools and key behaviours required to implement risk-stratified models of care.

Approach: Prof Trudy Rebbeck will present the agreement between, and accuracy of risk-assessment tools (e.g. Örebro and Keele STarT MSK tool) for predicting poor outcome from the Australian PACE-MSK trial in primary care. How to establish intra-professional trust when implementing pathways of care for people at high risk will be drawn from clinician data. Finally, how to use credible digital resources to supplement care in low-risk pathways will be discussed. Dr Daren Beales will present results on patient experience of risk-based stratified care pathways in Australia. This will highlight the value-add of engaging specialist physiotherapists from the patient's perspective. The session will conclude with an interactive discussion panel facilitated by Dr Kerrie Evans and featuring Prof Nadine Foster an international expert who will reflect on learnings so far from international trials of stratified care for MSK pain. Key questions explored include what are key barriers to implement stratified care and how can we overcome these?

Key Practise Points:

• Participants will understand how to use risk assessment tools and how to establish patient intraprofessional trust to implement risk-stratified models of care.



### Prevalence, severity and impact of foot pain during pregnancy and postpartum: the Queensland family cohort study

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Musculoskeletal 8C, P 11, October 6, 2023, 3:35 PM - 4:20 PM

Aim: To report the prevalence, severity and impact of foot pain on women during pregnancy and postpartum

Design: Prospective longitudinal cohort study

Method: Pregnant participants were recruited through the Queensland Family Cohort study conducted at a tertiary maternity hospital. Questionnaires were administered at enrolment (12-24 weeks gestation) to collect demographics and at 24 weeks gestation, 36 weeks gestation and 6 weeks postpartum to measure presence, severity and frequency of foot pain and symptoms, and impact of foot pain on work and activities.

Results: 425 pregnant women with a mean age of 32.2 (range 16-45) years and body mass index of 27 (range 17-52) participated. There was a high prevalence of foot pain during pregnancy and postpartum (43% at 24 weeks; 56% at 36 weeks, 54% at 6 weeks postpartum). Severity of foot pain was reported to be at a mild to moderate level throughout pregnancy. Frequency of foot pain increased as pregnancy progressed. Women reported that their feet caused difficulties with their work and activity with 20% at 24 weeks, 37% at 36 weeks, and 32% at 6 weeks postpartum reporting a mild-moderate impact.

Conclusion: Foot pain is a highly prevalent musculoskeletal problem which impacted on the activities of daily living and work for pregnant women.

- Foot pain is likely a significant but unrecognised problem during pregnancy
- Pre-natal and post-natal care provide an opportunity to assess and provide advice, treatment or appropriate referral for management of foot pain



## Psychological factors and pain characteristics, not foot factors, are associated with worse long-term outcomes in chronic plantar heel pain

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Musculoskeletal 8C, P 11, October 6, 2023, 3:35 PM - 4:20 PM

Aim: To determine how change in clinical factors affect pain, function and quality of life in people with chronic plantar heel pain (CPHP).

Design: prospective cohort

Method: We measured foot pain and function (Foot Health Status Questionnaire) and QOL (AQOL-6D) at baseline and 12-months and change in clinical exposures over 12-months in 220 participants with CPHP. Clinical exposures were: body mass index (BMI), waist girth (cm), ankle plantarflexor strength (kg), ankle and hallux dorsiflexion mobility (degrees), pain catastrophizing beliefs (PCS), depression (PHQ-9), multisite pain, night pain, morning stiffness, neuropathic symptoms (painDETECT), and physical activity (accelerometry). Data were analysed using linear mixed effects models with exposure-time interactions.

Results: Increasing pain catastrophising beliefs and neuropathic symptoms over 12-months consistently predicted worse pain, function and QOL at 12-months (beta for exposure-time interaction for pain: -0.96, 95% CI -1.30 to -0.62, -1.80, 95% CI -2.29 to -1.32; function: -0.75, 95% CI -1.18 to -0.32, -0.92, 95% CI -1.37 to -0.47 and QOL: -0.32, 95% CI-0.42 to -0.23, -0.22, 95% CI -0.08 to -0.28: for PCS and painDETECT respectively). Increasing ankle plantarflexor strength was weakly associated with better function (but not pain), and increasing BMI with worse QOL only.

Conclusion: People with increasing pain catastrophizing and neuropathic symptoms over 12-months are at risk of worse CPHP outcomes.

- Most risk factors for poor CPHP outcomes are psychological and symptom-based rather than foot-specific.
- painDETECT and PCS may be useful to identify those at risk of worse prognosis and tailor their management.



# The relationship between allostatic load and pain and physical function in individuals with knee or hand pain: a cross-sectional study

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Musculoskeletal 8C, P 11, October 6, 2023, 3:35 PM - 4:20 PM

Aim: Understanding the influence of cumulative, systemic dysregulation, known as allostatic load (AL), on joint pain and function could improve primary prevention of musculoskeletal conditions, such as osteoarthritis. This study investigated the cross-sectional relationship between AL and knee and hand pain and physical function.

Design: Cross-sectional study.

Method: Sub-samples of individuals with self-reported 1) knee pain and 2) hand pain from the North West Adelaide Health Study were analysed. The Western Ontario McMaster Universities Osteoarthritis Index (WOMAC) was used for knee pain and physical function outcomes, while the Australian Canadian Hand Osteoarthritis Index (AUSCAN) was used for hand pain and physical function outcomes. The exposure, AL, was a composite index of nine dichotomised biomarkers. Adjusted Poisson regression models estimated the association between AL and each outcome.

Results: In the knee pain sub-sample (n = 280, mean age 55, 58% female), AL was associated with WOMAC pain (RR = 1.11, 95% CI 1.07-1.15) and physical function (RR = 1.15, 95% CI 1.13-1.17). In the hand pain sub-sample (n = 282, mean age 58, 64% female), AL was associated with AUSCAN pain (RR = 1.05, 95% CI 1.03-1.08) and physical function (RR = 1.06, 95% CI 1.04-1.08).

Conclusion: There is preliminary support for an association between AL and both pain and physical function, in individuals with self-reported hand pain or knee pain.

- Allostatic load is related to pain and physical function in individuals with hand pain and knee pain.
- Chronic systemic dysregulation may influence joint pain-related outcomes.



# Targeted exercise in physiotherapy practice reduces risk of osteoporotic fracture

#### Beck B<sup>2</sup>

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Musculoskeletal 9B, P 11, October 7, 2023, 10:35 AM - 11:35 AM

Aim: To present outcomes from a translational research clinic established to manage osteoporosis through exercise intervention.

Design: The LIFTMOR trials demonstrated high-intensity resistance and impact training (HiRIT) improves bone, muscle and function in older men and women with low bone mass under RCT conditions. We translated HiRIT into a clinical practice specifically designed for systematic longitudinal monitoring of musculoskeletal and functional outcomes.

Method: At baseline, clients undergo comprehensive testing for anthropometry, spine(LS), hip(TH) and femoral neck(FN) bone mineral density(BMD), body composition, back extensor strength(BES), functional performance, falls and fracture, then annually thereafter. Supervised HiRIT with balance training is provided. Compliance and injuries are recorded. In the absence of a control group, effectiveness is determined from two-sample T-tests of baseline and follow-up measures, and one-sample T-tests of percent change.

Results: Outcomes from 415 clients completing at least 12 months HiRIT ( $63.4\pm7.7$ yrs,  $162.4\pm6.7$ cm,  $61.4\pm10.7$ kg, LS T-score - $1.9\pm1.2$ , FN T-score - $2.0\pm0.7$ , compliance  $60.4\pm42.4\%$ ) are reported. Significant improvements occurred in LS ( $3.0\pm4.8\%$ , p<0.0001), TH ( $1.2\pm3.5\%$ , p<0.0001) and FN BMD ( $1.8\pm4.6\%$ , p<0.0001), lean mass ( $2.3\pm5.1\%$ , p<0.0001), fat percent ( $-4.2\pm10.2\%$ , p<0.0001), functional reach ( $7.5\pm15.2\%$ , p<0.0001), timed up and go ( $10.3\pm14.6\%$ , p<0.0001), tandem walk ( $18.8\pm33.9\%$ , p<0.0001), sit to stand ( $11.7\pm18.1\%$ , p<0.0001), BES ( $20.2\pm34.7\%$ , p<0.0001), and kyphosis ( $7.1\pm55.5\%$ , p<0.011). Previous 12-month falls decreased 51\% (p<0.01). Fractures decreased 78% (p<0.001). Fourteen injuries were sustained in 44,742 training sessions.

Conclusion: Bone-targeted, supervised exercise is highly effective intervention for older adults with low bone mass.

#### **Key Practice Points**

• Onero exercise classes reduce risk of fracture in patients with osteoporosis



Does exercise with or without manual therapy influence sensory characteristics in people with elbow tendinopathy? A single-blinded, randomised cross-over trial.

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Musculoskeletal 9B, P 11, October 7, 2023, 10:35 AM - 11:35 AM

Aim: To examine the effects of exercise alone and in combination with Mobilisation-with-Movement on sensory characteristics, pain and function in individuals with lateral elbow tendinopathy (LET).

Design: Within-subject, single-blinded, randomised study.

Methods: Twenty-three participants (mean age 49.5 ±8.3) with elbow tendinopathy underwent three experimental conditions: Control, Exercise (6x10-seconds isometric gripping to pain threshold) and Exercise with concurrent Mobilisation-with-Movement. A blinded assessor measured pressure pain threshold and temporal summation (over the elbow, deltoid, tibialis anterior), and resting pain intensity (11-point scale) before (pre), immediately after (post-0) and 10 minutes after (post-10) each condition. Grip force was recorded during the Exercise conditions. Repeated-measures ANOVAs were used to compare between conditions and over time.

Results: Elbow pressure pain threshold (mean difference 29 kPa, 95%CI 2 to 56) and temporal summation over tibialis anterior (0.6/10, 95%CI 0.1 to 1.2) significantly improved following Exercise + Mobilisation-with-Movement compared to Exercise. Resting elbow pain significantly increased by 0.8/10 following the Exercise-only condition (95%CI 0.3 to 1.3) compared to other conditions. Exercise + Mobilisation-with-Movement significantly increased grip force compared to Exercise alone (mean difference 42 N, 95%CI 9.5 to 75.2).

Conclusion: Adding Mobilisation-with-Movement to exercise produced an analgesic response and a greater exercise output compared to exercise alone.

- Combining manual therapy with exercise provides an analgesic response
- Combining manual therapy with exercise increases exercise output, which is known to be important for stimulating a biological response within the tendon
- Exercise alone increases resting pain levels, potentially negatively impacting adherence to an exercise program



### Exercise adherence in trials of therapeutic exercise interventions for common musculoskeletal conditions: a scoping review

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Musculoskeletal 9B, P 11, October 7, 2023, 10:35 AM - 11:35 AM

Aim: To evaluate how commonly trialists assess and report adherence to exercise intervention for common musculoskeletal conditions and report the levels of adherence to exercise for musculoskeletal conditions and whether this was influenced by variables of interest.

Design: Scoping review of relevant trials from 1986 to 2022.

Method: Five databases were searched using predefined terms. Published randomised controlled trials were included. Trials were included if they investigated the effectiveness of an exercise intervention for low back pain, shoulder pain, Achilles tendinopathy and knee osteoarthritis (we selected a priori as indicative common musculoskeletal conditions). Data extraction was performed independently by teams of two reviewers.

Results: 321 trials were included; less than half (46.7%, 150/321) measured adherence. When adherence was assessed, 21% (31/150) of trials did not report the results. Adherence levels were greater when people were supervised. Reporting adherence was more common in registered trials. Adherence was measured most frequently via self-report (47.3%, 71/150) followed by supervised sessions (32.0%, 48/150) or combination of both (20.7%, 31/150). The majority of trials (97.0%, 97/100) reported the level of adherence in terms of a frequency.

Conclusion: A majority of trials investigating exercise interventions for common musculoskeletal conditions do not assess exercise adherence. Trials that were registered reported exercise adherence more frequently. The majority of trials measure adherence via self-report with reliance on only one dimension of exercise adherence (frequency).

- Exercise adherence is poorly assessed and reported among musculoskeletal trials.
- Most trials measured adherence via self-report, relying on one dimension-frequency.



## A qualitative investigation of patient perspectives of care pathways for people with low back pain

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Musculoskeletal 10A, P 11, October 7, 2023, 11:40 AM - 12:40 PM

Aim: Care pathways are designed to support consistent, efficient, evidence-informed approaches to management. This study explored patients' understanding and perspectives of four care pathways for low back pain (stepped care, risk-based stratified care, matched care, no care pathway).

Design: Qualitative descriptive design.

Method: One-to-one interviews were conducted with people having their low back pain managed in primary care (n=14). Participants were provided with diagrammatic representations of the four types of care pathways to aid discussion. Inductive thematic analysis was performed using a framework method.

Results: Five themes were identified: (1) Participants acknowledged that care pathways can guide decisionmaking, (2) Familiarity with no and/or stepped care pathways was common, but participants expressed preference for matched or blended care pathways, (3) Participants expressed a need for shared decisionmaking regardless of the specific care pathway, (4) Participants identified multiple barriers to implementation including the skill of the clinician and time/cost, and (5) Facilitators to implementation include multidisciplinary collaborative care delivered by skilled clinicians. Further to these themes, participants emphasised the need to be understood as an individual within any care pathway.

Conclusion: Understanding patient perspectives is important for the design and implementation of care pathways in healthcare.

- Development of trust with their healthcare practitioners, feeling validated and being included in decision making were key attributes valued by the participants, regardless of the care pathway.
- Shared decision-making is critical to future implementation of low back pain care pathways.
- Consumer engagement in the design of future care pathways is recommended.



### The perceptions of individuals with musculoskeletal disorders towards prognosis: an exploratory qualitative study

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Musculoskeletal 10A, P 11, October 7, 2023, 11:40 AM - 12:40 PM

Aim: To explore the perceptions of individuals with a musculoskeletal disorder towards prognosis; how they define prognosis; how they perceive receiving a prognosis impacts their recovery; and what they perceive as a good, or poor prognosis.

Design: Exploratory phenomenological study.

Method: Fifteen participants with a musculoskeletal disorder were recruited from private physiotherapy practices. Data was collected via semi-structured one-on-one interviews and analysed using inductive coding and thematic analysis.

Results: Five themes were identified. First, participants defined prognosis as the likely outcome associated with their diagnosis. Their prognosis was often associated with outcomes related to pain, tissue health, and function. Second, participants perceived pain has a negative impact on prognosis by limiting function and having a psychological impact. Third, participants held biomedical views including that poor tissue health was perceived as a cause for their pain and tissue healing would result in pain cessation. Fourth, participants equate their ability to complete leisure and functional activities when determining the success of recovery. Finally, participants perceived receiving individual prognoses for pain, tissue health, and function which may occur simultaneously as important and beneficial.

Conclusion: People with musculoskeletal disorders consider receiving prognostic information as important and beneficial to their understanding of recovery. People consider that pain, tissue health, and functional ability each have a prognosis, and that all three contribute to overall prognosis.

- Patients wish to discuss prognosis
- Patients may relate their prognosis to different outcomes
- Physiotherapists should consider conceptualising and discussing prognosis in terms of pain, tissue health, and function.



#### Neurodiversity affirming practice for physiotherapists

#### Taylor C<sup>2</sup>

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Musculoskeletal 10B, Great Hall 3, October 7, 2023, 11:40 AM - 12:40 PM

Background: Approximately 15-20% of the adult population are neurodivergent. Diagnoses include autism, ADHD, dyspraxia, dyslexia and Tourette Syndrome. There are associations between neurodivergence and injury and chronic pain, as well as a greater likelihood of complex painful physiological disorders. Neurodivergent people have different and specific needs in accessing physiotherapy treatment and thus recognising, including, and practically supporting them in practice is vital for inclusive access to physiotherapy. Gaining an understanding of what neurodiversity affirming care is, from an authentic autistic viewpoint is critical for individual physiotherapists, and different practice settings.

Aims / objectives :

- To help participants understand neurodivergence and neurodiversity affirming practice.
- Participants will understand the benefits of working from a neurodiversity affirming perspective to provide physiotherapy.
- Participants will become aware of practical aspects of clinical practice that can be reviewed with a neurodiversity affirming perspective.

Approach: The presenter will provide a lecture style presentation supported by research and authentic autistic voices about neurodiversity affirming practice of 20-25 minutes followed by 5 minutes Question and Answer session. Learning materials provided will include an outline of categories of neurodiversity affirming practice, and a checklist to consider how neurodiversity affirming practice may be considered in practice.

- Participants will understand neurodivergence/neurodiversity affirming practice and the benefits to themselves, their practice, and their clients in working in a neurodiversity affirming way.
- Participants will be able to identify components of neurodiversity affirming practice and ways they may be able to improve access to physiotherapy for neurodivergent clients.



# Physiotherapist-administered performance-based tests via telehealth in people with chronic lower limb musculoskeletal disorders: test-retest reliability and agreement with in-person assessment

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Musculoskeletal 11B, P 6, October 7, 2023, 1:40 PM - 2:25 PM

Aim. To investigate the test-retest reliability of performance-based tests via telehealth, and agreement between scores obtained via telehealth and in-person.

Design. Reliability study.

Method. Fifty-seven adults aged  $\geq$ 45 years with chronic lower limb musculoskeletal pain underwent three testing sessions: one in-person and two via videoconferencing. Tests included 30 second chair stand, 5 metre fast-paced walk, stair climb, timed up and go, step test, timed single-leg stance, and calf raises. Test-retest reliability and agreement were assessed via intraclass correlation coefficients [ICC] (lower limit of 95% confidence interval [CI]  $\geq$ 0.70 considered acceptable). ICCs were interpreted as poor (<0.5), moderate (0.5-0.75), good (0.75-0.9), or excellent (>0.9).

Results. Test-retest reliability of telehealth was good-excellent with acceptable lower CI for stair climb test, timed up and go, right leg timed single-leg stance, and calf raises (ICC=0.84-0.91, 95% CI lower limit=0.71-0.79). Agreement between telehealth and in-person sessions was good-excellent with acceptable lower CI for 30 second chair stand, left leg single-leg stance, and calf raises (ICC=0.82-0.91, 95% CI lower limit=0.71-0.85).

Conclusion. Many performance-based tests demonstrated acceptable test-retest reliability via telehealth and acceptable agreement with in-person scores.

- Stair climb, timed up and go, right leg timed single-leg stance, and calf raise tests have acceptable reliability for use via telehealth in research and clinical practice.
- If re-testing via a different mode (telehealth/in-person), clinicians and researchers should consider using the 30 second chair stand test, left leg timed single-leg stance, and calf raise tests.



### Predicting recurrence in patients recently recovered from non-specific low back pain: development and validation of a multivariable prediction model

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Musculoskeletal 11B, P 6, October 7, 2023, 1:40 PM - 2:25 PM

Aim: Identifying an individual's risk of experiencing low back pain could aid clinical decision-making and dictate the appropriateness of preventative management. This study aimed to produce a tool to predict recurrence.

Design: Development and validation of a clinical prediction model to predict the probability of an activitylimiting recurrence of low back pain by 3- or 12-months following recovery.

Methods: Data for prediction model development, came from a prospective inception cohort study of participants (n= 250) recently recovered from low back pain. The outcome was a recurrence of activity-limiting low back pain. Baseline candidate predictor variables (e.g., demographics, back pain history, physical activity, etc) were considered for inclusion in a multivariable Cox model. Model performance was tested in a separate validation dataset of participants (n= 261) from a trial investigating exercise for low back pain prevention.

Results: The final model included three variables; number of previous episodes, sitting time, and education level. In the development sample discrimination was acceptable, where Harrell's C-statistic was 0.61 (95% CI, 0.59 to 0.62) and calibration reasonable across timepoints. In the validation sample, discrimination was poor with a C-statistic of 0.56 (95% CI, 0.54 to 0.58) and calibration at 3-months was reasonable, but poor at 12-months.

Conclusion: The model did not perform sufficiently to be recommended for use.

- Low back pain recurrences remain a difficult outcome to predict.
- Stronger predictors which were not collected in this study may exist.
- Further work to identify variables with strong predictive ability is required.



#### A Shoulder/Elbow Triage and Assessment model of care reduced a public orthopaedic shoulder/elbow clinic waitlist with high patient satisfaction

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Musculoskeletal 11B, P 6, October 7, 2023, 1:40 PM - 2:25 PM

Aim: To evaluate the effectiveness of a collaborative Shoulder/Elbow Triage and Assessment (SHELTA) model of care involving orthopaedic surgeons and physiotherapists to reduce the waitlist and improve service and clinical outcomes for patients on an orthopaedic shoulder/elbow clinic waitlist.

Design: Prospective trial within a clinical service redesign project.

Method: Patients on the waitlist were triaged by surgeons and physiotherapists and invited to an assessment by physiotherapists. Patients were treated nonoperatively or transferred to orthopaedic management based on clinical discussion. The primary outcome was the number of patients on the waitlist. Secondary outcomes included adverse events and patient satisfaction. Pain, function and patient global impression of change were recorded for participants managed nonoperatively.

Results: From July to December 2019, the waitlist reduced from 451 to 298 patients with no adverse events. Nonoperatively managed participants reported high satisfaction with the service, a median score of 6 on a 7-point Patient Global Impression of Change scale, change in pain of 2.5/10 (95% CI 3.3, 1.7; P < 0.001) on a numerical pain rating scale, and change in function of 17.4/100 (95% CI: 10.8, 24.1; P < 0.001) on the QuickDASH, indicating improvement.

Conclusions: The SHELTA model of care effectively reduced the number of patients on an orthopaedic shoulder/elbow clinic waitlist with good service and clinical outcomes.

- Physiotherapists involved in the orthopaedic triage, assessment and treatment of patients with shoulder and elbow conditions is safe and effective.
- Collaborative models may be useful where physiotherapy-led models may not be feasible.



#### A scoping review on the role of resilience on function and movementevoked pain when experiencing a musculoskeletal injury

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Musculoskeletal 11B, P 6, October 7, 2023, 1:40 PM - 2:25 PM

Aim: To determine the role of resilience in the experience of movement-evoked pain (MEP) and return to functional activity following a musculoskeletal injury.

Design: Scoping review.

Method: Five databases and one grey literature database were searched using predetermined key words and index terms. Two authors independently screened the title and abstract of each record, with the full text of eligible records being reviewed. Papers were eligible for inclusion if they examined the population, concept and context of interest, were written in English and the full text was available.

Results: After screening, 24 articles were included in the final analysis. There was inconclusive evidence to confirm the relationship between resilience, MEP and functional activity after musculoskeletal injury. However, resilience does appear to have a protective role during recovery from hip fracture and shoulder arthroplasty. The choice of functional and MEP assessments in the included studies were often guided by the pathology of interest, with some being general or injury specific. This review identified that psychological resilience has primarily been investigated in the context of age-related pathologies and demonstrated a paucity of research examining resilience in young adults.

Conclusion: There is inconclusive evidence to confirm the relationship between resilience, MEP and function after musculoskeletal injury.

- Resilience may have a protective role for some musculoskeletal conditions, such as hip fracture and shoulder arthroplasty, but not for all complaints.
- Further longitudinal research and studies on young adults are required to investigate resilience and its development across the lifespan.



### How to clinically assess and plan a movement rehabilitation strategy for people with mild to moderate Upper Cervical Instability

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Musculoskeletal 11C, P 7, October 7, 2023, 1:40 PM - 2:25 PM

Background: Upper cervical instability (UCI) is a common, potentially debilitating problem in people with hypermobility spectrum disorders / hypermobile Ehler's Danlos syndrome. Mild-moderate UCI is underdiagnosed due to poor diagnostic evaluation and severity classification of UCI. Furthermore, clinicians often lack consensus on management of UCI in this population. Our recent publication (Russek et al 2023) provides expert consensus recommendations on this dilemma.

Aims / objectives: To provide delegates with an appropriate framework to examine patients with suspected mild-moderate UCI, incorporating evaluation, implications, and application of: cervical postural changes; controlled movement examination and altered sensorimotor control. Delegates will be presented with a systematic rehabilitation framework, employing strategies of graded retraining, to enhance functional tolerance and symptom management.

Approach: The presenters will introduce guidelines to identify people with suspected UCI, followed by a practical demonstration of postural evaluation, sensorimotor control screening, and active movement evaluation. A flow chart detailing graded movement control retraining strategies will be presented for use in clinical practice. Delegates will have the opportunity to practise several of these tests and retraining strategies during the practical demonstrations. Learning materials provided include a downloadable manual of relevant tests and strategies for graded movement control retraining.

Key Practice Points: At the end of this session, delegates will be able to:

- Assess aspects relating to the examination of people with suspected UCI including evaluation and interpretation of:
  - postural changes
  - sensorimotor control
  - graded movement assessment.
- Apply information gained from assessment to develop an individualised graded rehabilitation programme.



### Impact of an interactive workshop on specialist physiotherapists' practice when implementing a new clinical pathway

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Musculoskeletal 11C, P 7, October 7, 2023, 1:40 PM - 2:25 PM

Aim: To evaluate whether an interactive educational workshop influences specialist musculoskeletal (MSK) physiotherapists' knowledge, beliefs and clinical practice and facilitates their understanding of their role in a risk-stratified care pathway.

Design: Mixed-methods observational study.

Method: Fifty specialist MSK physiotherapists were recruited from four Australian states. Participants attended a 2-day interactive workshop delivered by researchers and clinical opinion leaders. Outcomes were assessed immediately and at 3-months using surveys and case vignettes.

Results: Knowledge about key guideline messages improved and were maintained at follow-up. Most participants agreed to provide more targeted interventions to patients at risk of poor outcome (92%, 95% CI: 81%–98%) and utilise prognostic screening tools (84%, 95% CI: 71 to 93). However, only 56% (95% CI: 39%–68%) of participants believed implementing a shared care pathway was easy. At follow-up, participants' beliefs were more aligned with the proposed care pathway (i.e., shared care: 83%, 95% CI: 68%–93%). With respect to clinical practice, there were 16% more referrals back to the primary physiotherapist at 3 months than before the workshop. Barriers (practitioner, patient and system factors) to implementation of the care pathway were discussed.

Conclusion: An interactive educational workshop influenced specialist MSK physiotherapists' knowledge, beliefs and clinical practice and improved their understanding of the proposed role in the risk-stratified care pathway. However, barriers need to be overcome.

- An interactive workshop is an effective method to educate the proposed role of specialist MSK physiotherapists in the care pathway.
- Enhancing collaborative work is necessary to facilitate implementation.



## Agreement between the Keele STarT MSK Tool and the SF-ÖMSPQ in people with musculoskeletal pain in Australian primary care

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Musculoskeletal 11C, P 7, October 7, 2023, 1:40 PM - 2:25 PM

Aim: To evaluate agreement between the Keele STarT MSK Tool and SF-ÖMSPQ for people with common musculoskeletal (MSK) conditions and discriminative validity of the two tools using core outcomes.

Design: Cross-sectional study embedded within a randomised controlled trial.

Method: 767 participants with MSK conditions (low back pain (LBP), neck pain (NP), knee osteoarthritis (OA)) seeking primary care within four weeks were recruited in Australia. Participants completed the risk screening tools, disability and health-related quality of life questionnaires at baseline. Correlation co-efficients and one-sample t-tests determined agreement and validity.

Results: Most participants were classified as at medium risk (Keele STarT MSK Tool) irrespective of their MSK condition (NP 63.7%; LBP 51.5%, knee OA 59.5%) and low risk (SF-ÖMSPQ; NP 57.9%, LBP: 51.8%, knee OA 63.7%). More people with knee OA (63.7%) were stratified as at low risk (SF-ÖMSPQ) compared with other conditions (e.g., NP 57.9%, LBP: 51.8%). There was "moderately strong" agreement between the two tools across the three MSK conditions (r=0.72-0.74, p<0.01). Discriminative validity was demonstrated for both tools, with significant differences in self-reported disability and health-related quality of life between risk subgroups (p<0.01).

Conclusion: In our Australian cohort, there was "moderately strong" agreement between the tools. Risk subgroups for both tools discriminated well for core outcomes.

- Clinicians could use either tool in an Australian primary care setting.
- The choice of tool may depend on the treatment options available for each risk subgroup in the particular healthcare setting.



## Force-generating capacity of hip muscles (volume and fatty infiltration) in people with unilateral knee osteoarthritis and its association to function

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Musculoskeletal 12A, Great Hall 3, October 7, 2023, 2:30 PM - 3:15 PM

Aim: To determine if lateral hip muscle (LHM) force-generating capacity (volume and fatty infiltration), (1) differs between the affected and non-affected limb of people with unilateral knee osteoarthritis (KOA) and/or asymptomatic controls, and (2) relates to physical function and/or balance.

Design: A cross-sectional study.

Method: Eighteen participants with KOA and asymptomatic controls were included. Gluteus maximus (Gmax), medius (Gmed) and minimus (Gmin) volume and fatty infiltration was estimated from 3-Tesla Magnetic Resonance Imaging. 40m Fast-paced walk test, 30sec Chair-stand test, Timed stair-test and Star Excursion Balance Test (SEBT) were performed.

Results: Gmax was smaller (4%, 0.6%-7%) and Gmed fatty infiltration was greater (anterior [5.8%] and middle [6.1%]) on the affected than the non-affected limb of people with KOA (p<0.05). Bilaterally, Gmed [14.6% (8.2%-21.0%)] and Gmin [19.9% (4.3%-35.6%)] were smaller, and Gmax, Gmed (posterior) and Gmin (anterior and posterior) had greater fatty infiltration (range 52.0%-63.5%) (p<0.05 for all). Gmed and Gmin size was associated with Timed stair-test (R<sup>2</sup>=0.48 and R<sup>2</sup>=0.47), and Gmin size was associated with reach during SEBT (anterior R<sup>2</sup>=0.49 and posteromedial R<sup>2</sup>=0.40) (p<0.05 for all).

Conclusions: LHM force-generation capacity is lower in the affected than non-affected limb of people with KOA and lower bilaterally compared to asymptomatic controls. Larger LHM (especially Gmin) associates to better performance on stairs and dynamic balance in people with KOA.

#### Key Practice Points:

When tailoring exercise programs for people with KOA clinicians/researchers should consider that,

- LHM force-generating capacity is lower bilaterally, and
- targeting Gmin size may improve function on stairs and balance.



# Safe, competent, and strong – a simple guide for physiotherapists prescribing gym-based rehabilitation

<u>Travers M</u><sup>1</sup> <sup>1</sup>Optimise Rehab

Musculoskeletal 12A, Great Hall 3, October 7, 2023, 2:30 PM - 3:15 PM

Background: Despite a pressing societal need and increasing advocacy, many physiotherapists lack the knowledge and confidence to prescribe safe and effective resistance exercises for their clients. Specifically, they report unfamiliarity with minimum exercise requirements and confusion regarding the specifics of resistance exercise prescription parameters. Such confusion is understandable given a lack of formal, intensive training in prescription of resistance exercise in many physiotherapy curricula. As a result, we prescribe to the limits of our knowledge, resources, and available experiences.

Aims / Objectives: This session aims to present a simplified model for the prescription of strength training exercises that is widely applicable in contemporary practice: Get safe, get competent, get strong. It will also provide an update on contemporary strength training parameters. The objective is to demystify gym-based rehabilitation for clinicians and, in turn, optimise outcomes in the clinic.

Approach: A streamlined and user-friendly approach to getting patients started with gym-based rehabilitation will be presented. This framework is based on synthesis of the most recent strength and conditioning evidence, rehabilitation frameworks and extensive clinical experience in gym-based rehabilitation.

Video examples will punctuate this presentation and example programmes will be outlined to give the audience key take-home messages to immediately implement in practice.

#### Key Practice Points:

Participants will learn:

- How to apply a simplified model for the prescription of strength training.
- The current best evidence for optimising strength outcomes balanced with pragmatic choices that we face in clinic.
- How to prescribe safe, efficient, and executable strength programmes.



### Performance of key physical tests for temporomandibular disorder via telehealth: establishing validity and reliability

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Musculoskeletal 12B, P 7, October 7, 2023, 2:30 PM - 3:15 PM

Aim: Establish the validity and reliability of telehealth against in-person assessments on a battery of physical tests routinely used in diagnosing temporomandibular disorder.

Design: Repeated-measures study design.

Method: Thirty-six participants (19 'healthy', 17 with temporomandibular dysfunction) undertook concurrent TMJ physiological movement measurements via telehealth and in-person by two independent assessors. Participants with temporomandibular dysfunction completed seven additional pain provocation tests, using a standardised assessment proforma. Absolute agreement and test-retest reliability of physiological movement measurements were analysed using intraclass correlation coefficients (ICC) and Bland-Altman limits of agreement statistics. Pain provocation tests were analysed using percentage agreement and prevalence-adjusted, bias-adjusted kappa (PABAK).

Results: Agreement between telehealth and in-person physiological movement measures was excellent (ICC >0.90, 95%CI: 0.53 to >0.99). Inter- and intra-rater reliability for telehealth measures indicated excellent reliability (ICC >0.97, 95%CI: 0.91 to >0.99). Limits of agreement for mouth opening, laterotrusion, but not protrusion were within predetermined non-inferiority margins. Exact agreement for provocation tests ranged between 58.8% to 94.1%. Fourteen of the 26 individual tests produced substantial to near perfect agreement (PABAK=0.65 to 0.88), while 12 produced poor to moderate agreement (PABAK=0.18 to 0.53).

Conclusion: There is substantial agreement between telehealth and in-person when performing individual physical tests for temporomandibular dysfunction. Diagnostic agreement between delivery mediums, once individual tests are combined within full assessment proforma, requires further investigation.

- Routine assessment of physiological movement measures can be reliably and consistently performed via telehealth.
- Telehealth provides an alternative way in which individuals can access (re-)assessment for temporomandibular dysfunction.



#### Self-reported motor and non-motor symptoms in people with functional gait disorder: A cross-sectional study

<u>Issak S</u><sup>1,2</sup>, Kanaan R<sup>1</sup>, Nielsen G<sup>3</sup>, Fini N<sup>1</sup>, Williams G<sup>1,2</sup> <sup>1</sup>University Of Melbourne, <sup>2</sup>Epworth Healthcare, <sup>3</sup>St George's, University of London

Neurology 1A, P 9, October 5, 2023, 11:05 AM - 11:50 AM

Background: Functional gait disorder is a common subset of motor-functional neurological disorders.

Aim: To determine the prevalence and severity of motor and non-motor symptoms in people with functional gait disorder, and associations between these symptoms and participation in activities of daily living and quality of life.

Design: Observational cross-sectional study.

Methods: Participants with a formal diagnosis of functional gait disorder (n =158) completed an online survey that included clinical and demographic information, self-reported symptoms and standardised outcome measures. Descriptive statistics and independent sample t-tests were used for the analyses.

Results: Weakness (86.1%), reduced balance (80.4%) and tremor (62%) were the most prevalent motor symptoms, and fatigue (86.1%), sensory symptoms (70.5%) and cognitive symptoms (69.6%) were the most common non-motor symptoms. Participants reported a high severity rating for motor symptoms (mean of 63.3/100) and non-motor symptoms (mean of 66.3/100). Both motor and non-motor symptoms were associated with reduced participation in activities of daily living (e.g., weakness p<.001, Cohen's d= .857). Motor and non-motor symptoms were associated with reduced physical quality of life measures (e.g., tremor p=.007, Cohen's d = -.486), but only non-motor symptoms were associated with reduced mental health quality of life scores (e.g., anxiety p<.001, Cohen's d = -1.249).

Conclusions: A combination of motor and non-motor symptoms were reported that are associated with participation in activities of daily living and quality of life.

Key Practice Points:

• The assessment and treatment of motor and non-motor symptoms should be considered during physiotherapy management of people with functional gait disorder.



#### Barriers and enablers to implementing a specialized Functional Neurological Disorder (FND) service

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Neurology 1A, P 9, October 5, 2023, 11:05 AM - 11:50 AM

Aim: To determine the barriers and enablers to 1) implementing a specialised Functional Neurological Disorder (FND) service and 2) providing best practice management to patients with FND.

Design: Mixed methods

Method: We recruited clinicians from a range of Victorian metropolitan public healthcare networks and select Australian public/private healthcare settings identified to be leading best practice healthcare for adults with FND. Clinicians were contacted via phone to complete a benchmarking survey. A content analysis was conducted by inductively coding the data into axial codes and then themes using NVivo.

Results: There were 21 respondents. Eleven were from Victorian metropolitan healthcare networks. Overall, there were five healthcare services that provided a specialised FND service. All were delivered in an outpatient setting. These had varying characteristics, including multidisciplinary team (MDT) members involved, referral pathways and duration of program. Themes identified as barriers by healthcare services with a FND service included 'access to funding', need for a 'coordinated approach' and 'system issues'. Enablers included 'engaging stakeholders' and having a clear 'service driver'. 'Importance of diagnosis', 'access to staff' and a 'collaborative MDT', were themes identified as barriers to implementing best practice management by those without a service, while enablers were 'staff attitudes' and 'staff knowledge'.

Conclusion: These project findings help us understand the barriers and enablers for implementing an evidence-based specialised service for people with FND.

- A clear diagnosis is critical to providing best practice care
- Access to a collaborative and coordinated MDT supports implementation of a specialised FND service



#### How are patients with functional neurological disorder managed in Australian hospitals? An observational multi-site study

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Neurology 1A, P 9, October 5, 2023, 11:05 AM - 11:50 AM

Aim: To observe clinical management of patients with Functional Neurological Disorder (FND) during hospital admission, specifically communication of diagnosis, accessibility to a multidisciplinary team and health service utilisation.

Design: Prospective observational study across six public hospitals.

Methods: Participants were sourced from inpatient wards over a 4-month period during 2020-21. Treating medical offers identified whether a patient was managed as having FND. A chart review was conducted to extract data including communication of the diagnosis of FND, access to the multidisciplinary team in hospital, hospital length of stay and Emergency Department presentations.

Results: A total of 113 patients were included. Median length of stay was 6 (IQR 3-14) days. 35 (31%) presented to ED with 9 (8%) re-presenting two or more times after hospital discharge. Inpatient referrals were made to Physiotherapy (100, 88%), Psychology (29, 26%), Psychiatry (27, 24%), and Neurology (81, 72%). Eighty-two (73%) had a new diagnosis; 44 (54%) were not told of the diagnosis; and 20 (24%) did not have their diagnosis documented in their medical record. Total hospital utilisation cost was AUD\$3.5million.

Conclusions: Current gaps in service provision during inpatient hospital admissions for people with FND include low rates of communication of a diagnosis and limited and variable access to inpatient multidisciplinary teams.

- Communication is a practical skill. Both didactic and experiential learning is required and Physiotherapy University programs should introduce FND
- Advocating for specialised services has the potential to reduce healthcare costs associated with FND and improve efficiency of care delivery



# Controlling the Modified Tardieu Scale assessment speed to match joint angular velocities during walking impacts spasticity assessment outcomes

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Neurology 1B, P 11, October 5, 2023, 11:05 AM – 11:50 AM

Aim: To investigate whether controlling the speed of the Modified Tardieu Scale assessment to reflect joint angular velocity during walking influences spasticity assessment outcomes.

Design: Observational study.

Method: Ninety adults with lower-limb spasticity underwent a standardized Modified Tardieu Scale assessment (V1 and V3) of their gastrocnemius, soleus, hamstrings, and quadriceps. Two additional assessments were completed, reflecting joint angular velocities during walking based on healthy controls, and the individual's real-time joint angular velocities during walking. Inertial measurement unit sensors were used to provide feedback regarding testing speed. Cohen's and Weighted Kappa statistics compared the agreement between the V3 and controlled trials.

Results: There was poor agreement when rating trials as spastic or not spastic at the ankle (Cohen's Kappa = 0.01-0.17). At the ankle, trials were classified as spastic during V3 and not spastic during the controlled conditions in 81.6 - 85.1% of trials (stance phase) and 48.0 - 56.4% of trials (swing phase). The severity of reaction demonstrated poor agreement at the ankle (Weighted Kappa = 0.01-0.28). At the knee, there was moderate to excellent agreement between the conditions when rating a trial as spastic or not spastic (Cohen's Kappa = 0.66-0.84) and excellent agreement when comparing the severity of response (Weighted Kappa = 0.73-0.94).

Conclusion: The speed of assessment impacted spasticity outcomes, especially at the ankle.

- The standardized Modified Tardieu Scale may over classify spasticity relevant to walking;
- Standardisation of assessment speed may assist in improving the ecological validity of the Modified Tardieu scale.



## Patient assessment, selection and management of surgery for lower-limb spasticity in adult-onset neurological conditions

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Neurology 1B, P 11, October 5, 2023, 11:05 AM - 11:50 AM

Introduction: Lower-limb tendon lengthening surgery is now becoming a more common procedure to manage spasticity, hypertonia and contracture in adults with neurological gait disorders. While there are well established corrective surgeries demonstrating the procedure is safe and can improve mobility, there are no guidelines regarding indications, patient selection and use of outcome measures. Identifying patients, and optimal timing of referral for surgical intervention is often clinically challenging.

Aims: To inform clinicians with the relevant knowledge and skills required to identify and recommend people with neurological gait disorders requiring corrective lower-limb tendon lengthening surgery.

Approach: Evidence from focal-spasticity and gait biomechanics literature will be presented to inform clinicians how a spasticity assessment can be tailored for a referral for lower-limb tendon lengthening. The presentation will integrate international spasticity guidelines and the International Classification of Functioning, Disability and Health with biomechanical and surgical data. Multiple case studies will be used to illustrate how to assess complex neurological gait disorders in a clinical setting. The clinical reasoning in these cases will assist clinicians to identify and manage adults requiring lower-limb surgical intervention.

Key Practice Points: For patients with lower-limb spasticity and contracture impacting walking, clinicians will learn how to:

- Perform a patient and gait specific, impairment-based lower-limb assessment of spasticity and contracture using the Modified Tardieu Scale, in accordance with a published protocol;
- Employ advanced clinical reasoning skills to identify patients that may benefit from lower-limb surgical intervention;
- Appropriately select treatment interventions pre/post-surgical intervention for lower-limb neurological gait disorders



#### Hamstring hypertonicity and spasticity assessment: does the hip flexion angle impact assessment outcomes?

#### Banky M<sup>1,2</sup>, Clark R<sup>3</sup>, Mentiplay B<sup>4</sup>, Olver J<sup>5</sup>, Williams G<sup>1,2</sup>

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Neurology 4A, P 7, October 5, 2023, 2:30 PM - 3:15 PM

Aim: To investigate whether the prevalence and severity of hamstring hypertonicity and spasticity differs when assessed in 40° hip flexion compared to 90° hip flexion; and whether these findings impact walking speed.

#### Design: Observational study

Method: Thirty-six adults with a neurological condition underwent a Modified Ashworth and Modified Tardieu Scale assessment of the hamstrings at 90° (standardised position) and 40° hip flexion (ecologically valid position for walking). A Chi-Square and Wilcoxon signed rank test were used to examine whether the proportion of trials rated as hypertonic and spastic, and the severity of the response, differed between the two positions. A one-way between groups ANOVA explored the impact that the findings had on walking speed.

Results: There was a significant increase in the proportion of trials rated as hypertonic (p = .01), and spastic (p < .001), and the severity of hypertonicity (p < .001), and spasticity (p < .001), at 90° compared to 40° hip flexion. There was no significant difference in walking speed in those who had hypertonicity (0.67  $\pm$  0.58m/sec) or spasticity (0.80.  $\pm$  0.41m/sec) at 40° and 90° hip flexion, compared to hypertonicity (0.77  $\pm$  0.41m/sec), or spasticity (0.73  $\pm$  0.43m/sec) only at 90° hip flexion.

Conclusion: The hip flexion angle significantly impacted hamstring hypertonicity and spasticity assessment findings. This may have implications for clinical decision making.

Key Practice Points:

• Completing hamstring hypertonicity and spasticity assessments in 40° hip flexion may reduce the passive insufficiency of the muscle and improve the ecological validity of assessment, for walking.



## The Modified Ashworth and Modified Tardieu Scales differ in their classification of lower-limb spasticity

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Neurology 4A, P 7, October 5, 2023, 2:30 PM - 3:15 PM

Aim: To investigate agreement in spasticity classification between the Modified Ashworth and the Modified Tardieu Scales when performed on four lower-limb muscles in adults following neurological injury.

Design: A retrospective cohort study.

Method: 129 adults with acquired brain injury underwent spasticity assessment of hamstrings, quadriceps, gastrocnemius and soleus using the Modified Ashworth and Modified Tardieu Scales. Assessment findings were dichotomised into spastic (Modified Tardieu X≥2 or Modified Ashworth≥1) or not spastic (Modified Tardieu X≤1or Modified Ashworth=0) categories. To evaluate agreement, 2x2 contingency tables and Chi<sup>2</sup> statistics were calculated.

Results: The Modified Ashworth Scale classified the presence of spasticity more frequently than the Modified Tardieu Scale. Across the muscle groups, the proportion of trials with agreement in spasticity classifications according to both scales and their Chi<sup>2</sup> measure of agreement were quadriceps (77.0%, x<sup>2</sup> (1, N=119) = 27.73 p<0.01); (hamstrings (42.4%, x<sup>2</sup> (1, N=125) = 0.44, p>0.01); soleus (73.6%, x<sup>2</sup> (1, N=129) = 9.98, p<0.01); and, gastrocnemius (79.1%, x<sup>2</sup> (1, N=129) = 1.39, p>0.01). Discrepancy in spastic classification was markedly greater for proximal (quadriceps/hamstrings) than distal muscle groups (gastrocnemius/soleus), occurring in 59.0% and 27.1% of trials as rated by Modified Ashworth and Modified Tardieu Scales, respectively.

Conclusion: The Modified Ashworth and Modified Tardieu Scales demonstrate a high level of disparity in their classification of lower-limb spasticity.

- The Modified Ashworth and Modified Tardieu Scales may measure different features within the Upper Motor Neuron Syndrome.
- The implications of these findings on clinical spasticity assessment are yet to be determined.



### Does the distribution and severity of lower-limb hypertonicity and spasticity impact walking speed in people with neurological injuries?

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Neurology 4A, P 7, October 5, 2023, 2:30 PM - 3:15 PM Aim: To investigate the relationship between the distribution and severity of hypertonicity and spasticity on walking speed in people with neurological injuries.

Design: Observational cohort study.

Method: Seventy-five ambulant people with a neurological condition underwent a hypertonicity assessment using the Modified Ashworth Scale, and a spasticity assessment using the Modified Tardieu Scale. Four lower-limb muscles (gastrocnemius, soleus, hamstrings and quadriceps) were assessed. A self-selected 10metre walk test was completed to measure walking speed. Muscles were classified as hypertonic with Modified Ashworth Scores ≥1, and as spastic with Modified Tardieu Scores of ≥2. Participants were classified as having a distal (gastrocnemius/soleus), proximal (quadriceps/hamstrings) or mixed presentation for each impairment. Summed hypertonicity and spasticity scores rated the impairment severity.

Results: Those with a distal distribution of spasticity walked significantly faster than those with a proximal distribution (1.05 vs 0.54m/sec, p = 0.005). The distribution of hypertonicity did not impact walking speed (p = 0.16). As the severity of hypertonicity and spasticity increased, walking speed decreased, however this finding was only significant when examining hypertonicity (r = -0.502, p < 0.001), and not for spasticity (r = -0.171, p = 0.14).

Conclusion: The distribution of spasticity impacted walking speed more so than hypertonicity however, the severity of hypertonicity demonstrated a greater relationship with walking speed than the severity of spasticity.

- Spasticity and hypertonicity differentially impact walking speed and need to be independently assessed.
- The implications of these findings on long-term patient outcomes need further investigation.



#### Management of persistent post-concussion symptoms: "How to" tips for physiotherapists

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Neurology 4B, P 2, October 5, 2023, 2:30 PM - 3:15 PM

Background: Clients presenting with persistent-concussion symptoms (PCS) are complex with symptoms involving multiple body systems and structures. Optimal management of PCS requires a divergent skill set that crosses multiple physiotherapy sub-specialties and recognition of complex body symptom profiles and integration categories.

Aims/objectives: The multi-system assessment of PCS symptom profiles will be illustrated through a case study and from our research and clinical practice experience. This will step the participant through the complex nature of these clients and the cross-over of different areas of physiotherapy (neurology, vestibular, musculoskeletal). Such multi-system practice evidence has recently been published by the presenters (2022). The participants should understand and recognise the different symptom profiles, suitable assessment strategies for differential diagnosis and treatment evidence approaches.

Approach: A case study will guide the participant's clinical reasoning skills and will detail the assessment of sub-sets of persistent PCS (vestibulo-oculomotor, cervicogenic and physiological presentations), as well as how physiotherapists can work within the greater team of health professionals to manage these clients. The presentation will include infrared-video of BPPV nystagmus provoked by a concussive event, and examples of a graded rehabilitation approach when returning clients to their usual activities and work.

- Participants will understand the complex interaction between neurological, vestibular, musculoskeletal and physiological/autonomic systems in PCS.
- Participants will understand the complex nature and common characteristics of PCS clients which will enhance their clinical reasoning.
- Participants will understand the value of the multidisciplinary team to successfully rehabilitate these clients.



## The influence of referral time for treatment and outcomes of individuals with persistent post-concussive symptoms

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Neurology 4B, P 2, October 5, 2023, 2:30 PM - 3:15 PM

Aim: This study aimed to investigate differences in the symptom profile and outcomes of patients referred for early treatment ( $\leq$  3 months) compared to late treatment (> 3 months) for persistent post-concussive symptoms in Epworth's Rehabilitation Concussion Clinic.

Design: Retrospective audit.

Outcome Measures: Persisting symptoms experienced post-concussion are patient-rated on clinic admission and after rehabilitation intervention using the Oregon Post Concussion Symptom Checklist. The checklist consists of 23 symptoms clustered into physical, cognitive, emotional and sleeping subscales, which the patient rates between 0 - 6 in severity. Patients also rate their activity levels compared to normal (ranging from 0-100%).

Results: The sample included 302 patients discharged from the Clinic. The initial symptom profile was similar between the late referral group (38.4% of patients) and the early referral group (61.6% of patients). Common symptoms included: fatigue, headache, feeling slowed down/mentally foggy and difficulty concentrating/remembering.

The late referral group required longer clinic treatment (mean: 342.3 days, standard deviation [SD]: 248.8) compared to the early referral group (mean: 248.1, SD: 240.4). After treatment, the late referral group had significantly higher total checklist and subscale scores (p<.01). Return to activity levels on discharge were significantly reduced in the late referral group (68.7%) compared to the early referral group (80.4%).

Conclusion: Persisting symptoms post-concussion may prolong recovery and return to daily activity levels. Earlier referral for interventional rehabilitation treatment can promote more favourable outcomes.

**Key Practice Points:** 

• Early detection of persisting post-concussion symptoms and appropriate referral for therapy should be the focus of clinical practice.



## Considerations for optimal recovery of the upper limb after stroke: in practice and in principle - a qualitative study

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Neurology 5B, P 7, October 6, 2023, 10:35 AM - 11:20 AM

Aim: To investigate the neuroscientific and clinical considerations to maximise upper limb recovery after stroke.

Design: A qualitative content analysis of semi-structured interviews.

Method: Four participant groups were targeted via purposive sampling. Three groups included participants from eight countries with expertise in preclinical research, clinical research, and clinical practice. The fourth group was Australian stroke survivors. Participants with research expertise were selected from top published authors using group-specific keywords in SCOPUS. Participants with clinical expertise had treated upper limb impairment post-stroke for at least seven years. Stroke survivors had more than six months lived experience with upper-limb impairment. Interviews were transcribed and analysed to develop themes. Thematic saturation (three consecutive interviews without new themes) signalled the end of recruitment to a given group.

Results: Thirty-seven interviews were conducted (preclinical research n=9, clinical research n=9, clinicians n=9, stroke survivors n=10). The first theme 'recovery in practice and in principle' included three subthemes: 'Optimisation', 'Stroke heterogeneity', and 'Restitution'. The second theme 'Complex, personalised, neuroscience-based interventions drive upper-limb recovery post-stroke' included four subthemes: 'Motivation', 'Content', 'Dose', and 'The therapist'. The third theme was 'The pipeline to intervention development' with two subthemes: 'Answerable questions' and 'Roles in the pipeline'.

Conclusions: Complex, personalised, neuroscience-based interventions are needed to drive optimal upperlimb recovery post-stoke. Each participant group examined in this study uniquely contributes to developing such interventions.

- Stroke is heterogenous and requires personalised, neuroscience-based interventions for recovery of the upper-limb.
- Multiple interacting elements form complex packages of care that drive recovery.



#### Perseverance with home-based upper limb practice after stroke: perspectives of individuals with stroke and their significant others

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Neurology 5B, P 7, October 6, 2023, 10:35 AM – 11:20 AM

Aim: To explore factors that influence perseverance with home-based upper limb practice from the perspectives of individuals with stroke and their significant others.

Design: A qualitative descriptive study within an embedded theoretical framework.

Method: Semi-structured focus group, dyadic, and individual interviews were used. Thirty-one adults with upper limb impairment following stroke, and 13 significant other/s, living at home in Queensland, Australia participated. The Theoretical Domains Framework and Capability, Opportunity, Motivation – Behaviour (COM-B) model guided data collection and directed content analysis.

Results: Within the three central tenants that aligned with the COM-B, six themes were identified. Participants identified that their capability to persevere was influenced by being physically able to practice and being able to understand, monitor and modify practice; their opportunity to persevere was influenced by accessing therapy and equipment required for practice and fitting practice into everyday life; and their motivation to persevere was influenced by having goals and experiencing meaningful outcomes and having support and being accountable.

Conclusion: Persevering with practice is multifaceted. All facets need to be addressed in the design of strategies to enhance perseverance with practice after stroke.

- Individualised goal-based home programs that can be completed independently or with support, within everyday life, could enhance perseverance with practice.
- Coaching to monitor and modify practice, and map progress towards meaningful recovery could enhance perseverance with practice.
- Strategies to enhance capability, opportunity, and motivation to persevere across the continuum of recovery need to be co-designed with individuals with stroke.



### Implementation of constraint-induced movement therapy in stroke rehabilitation is about 'playing the long game': a systematic review of qualitative studies

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Neurology 5B, P 7, October 6, 2023, 10:35 AM - 11:20 AM

Objective: To summarise and synthesise the qualitative literature relating to constraint-induced movement therapy (CIMT) among stroke survivors, carers, therapists, and rehabilitation managers.

Design: Systematic review of qualitative studies. Quantitative studies using survey data were also included if they investigated perceptions and/or experiences related to CIMT.

Data sources: Cochrane Library, OVID Databases (Medline, JBI, Emcare, Embase, PsycInfo), CINAHL, PEDro and OT Seeker from inception to January 2022.

Data extraction and synthesis: Two reviewers independently extracted data and assessed comprehensiveness of reporting using established tools. Thematic analysis was undertaken to synthesise findings for studies using focus groups and interviews. Inductive themes were generated for quantitative studies using survey data to complement the qualitative synthesis.

Results: Searches yielded 1450 titles after removal of duplicates, from which 14 studies were included. Thematic synthesis generated four analytical themes: 1) CIMT is challenging but support at all levels helps; 2) therapists need the know-how, the resources and the staffing; 3) CIMT is different to other interventions; 4) 'playing the long game': functional outcomes don't always meet high expectations. Quantitative survey themes included: knowledge, skills and confidence in delivering CIMT programs; patient factors; and institutional factors.

Conclusions: Several determinants of behaviour implementation related to CIMT have been identified to support the sustainable implementation of this effective intervention.

- CIMT has strong evidence supporting efficacy, but translation to clinical practice remains poor
- Understanding perceptions and experiences of CIMT among a range of stakeholders is important to address the evidence-to-practice gap of this complex intervention



# Physiotherapy delivery during the period of post-traumatic amnesia (PTA) after moderate to severe traumatic brain injury (TBI)

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Neurology 6A, P 7, October 6, 2023, 11:25 AM - 12:10 PM

Aim: To characterize physiotherapy delivery for people with TBI in PTA, and evaluate factors impacting therapy engagement and physical outcomes.

Design: Observational study

Method: Physiotherapists conducted usual physiotherapy practice for people in PTA and documented therapy time; factors causing limited/cancelled sessions; treatment location (secure ward or hospital gym). Outcomes included agitation, pain, fatigue and engagement. Selected motor Functional Independence Measure items quantified physical progress.

Results: Seventy-seven participants with severe TBI (mean PTA duration 47.5 days) engaged in two sessions per day (mean duration 30.9 minutes). Lower agitation (z=-8.79; p<.001), fatigue (z = -6.30; p<0.001) and improved cognition (z=3.10; p<0.001) were significantly associated with higher therapy engagement. Lower agitation (p=0.008) and pain (p=0.030) predicted greater physical improvement. Of planned sessions, 68.5% were unrestricted. Fatigue limited 8.1% of sessions with 86.4% of moderate-severely fatigued participants still successfully participating in  $\geq$ 20-30mins of therapy. Only 5.3% of sessions were limited by agitation, despite 72.2% above the clinical agitation cut-off.

Conclusion(s): Physiotherapy was feasible during PTA following moderate-severe TBI despite moderate levels of agitation and fatigue.

- People in PTA can effectively participate in physiotherapy despite fatigue and agitation
- People in PTA may tolerate therapy in higher-stimulation gym-based environments without symptom exacerbation
- A flexible tailored therapy approach is required to deliver therapy when patients are least fatigued, agitated and functioning at their cognitive best
- Environmental and reorientation strategies should be used to facilitate therapy effectiveness
- These results are incorporated in the recent INCOG 2.0 international TBI rehabilitation guidelines



## Exercise-induced symptom exacerbation in moderate-to-extremely severe traumatic brain injury

<u>**Gallow S**</u><sup>1,2</sup>, McGinley J<sup>2</sup>, Olver J<sup>1</sup>, Williams G<sup>1,2</sup> <sup>1</sup>Epworth Healthcare, <sup>2</sup>University of Melbourne

Neurology 6A, P 7, October 6, 2023, 11:25 AM - 12:10 PM Aim: To determine the incidence of exercise-induced symptom exacerbation and adverse events (AEs) during cardiorespiratory fitness (CRF) and high-level mobility (HLM) assessment in the early sub-acute phase ( $\leq$  3 months post injury) following moderate-to-extremely severe traumatic brain injury (TBI).

Design: Observational study.

Method: Consecutive admissions to a TBI inpatient unit were screened for recruitment. One hundred fifty eligible and consenting participants undertook CRF assessment on a cycle ergometer, HLM assessment on the High-level Mobility Assessment Tool or both for a total of 209 testing sessions. Symptom ratings were recorded pre and post assessment on a 22-item, seven-point Likert scale. A summed symptom severity score (SSS) was calculated with an increase of  $\geq$  10 points classified as symptom exacerbation.

Results: Two participants experienced exercise-induced symptom exacerbation, one during HLM testing and one during CRF testing. One AE, a fall, occurred during a HLM testing session. Sixteen of 140 CRF sessions resulted in a SSS reduction  $\geq$  10 points. Nine of 69 HLM sessions resulted in a SSS reduction  $\geq$  10 points.

Conclusion: Cardiorespiratory fitness and HLM assessment in the early sub-acute phase of recovery following moderate-to-extremely severe TBI appears to be safe, with low rates of symptom exacerbation and AEs identified in this study. Participants were more likely to show a significant improvement in SSS post CRF and HLM assessment than an exacerbation of symptoms.

Key Practice Points:

• An individualised, sub-symptom approach to CRF and HLM assessment should be applied in the early sub-acute phase of recovery following moderate-to-extremely severe TBI.



# Cardiorespiratory fitness assessment and training in the early sub-acute phase of recovery following traumatic brain injury: a systematic review

#### <u>**Gallow S**</u><sup>1,2</sup>, Beard J<sup>1</sup>, McGinley J<sup>2</sup>, Olver J<sup>1</sup>, Williams G<sup>1,2</sup> <sup>1</sup>Epworth Healthcare, <sup>2</sup>University of Melbourne

Neurology 6A, P 7, October 6, 2023, 11:25 AM - 12:10 PM Aim: To examine the safety of cardiorespiratory fitness (CRF) assessment and training in the early sub-acute phase of recovery following moderate-to-extremely severe traumatic brain injury (TBI).

Design: A systematic review was completed in accordance with the PRISMA guidelines.

Method: Studies investigating adults and adolescents with moderate-to-extremely severe TBI in the early sub-acute phase of recovery (≤3 months post injury) were considered for inclusion. Extracted data included type of CRF exercise, occurrence and type of physiological monitoring, symptom monitoring, and adverse events (AEs).

Results: Eleven studies with a total of 380 participants were included in the review. Overall, AEs and symptom monitoring were poorly reported. Only four studies reported on the occurrence of AEs with a total of eight AEs reported. Three of the reported AEs were concussion-like symptoms with no further exercise-induced symptom exacerbation reported. No serious AEs were reported.

Conclusion: There is no evidence to suggest that CRF assessment and training is unsafe in this population. However, despite the low AE and symptom exacerbation rates identified, a timeframe for safe commencement was unable to be established due to poor reporting and/or monitoring of exercise-induced symptoms, and AEs in the current literature.

- It is likely that an individualised, sub-symptom approach to CRF training is safe following moderateto-extremely severe TBI, as has been found in concussion.
- However, as this has yet to be established, routine monitoring and reporting of AEs, concussion-like symptoms and physiological response should be utilised when initiating CRF assessment or training in this population.



# Artificial Intelligence: a theoretical and practical application crash course for physiotherapists

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Neurology 6B, M 3, October 6, 2023, 11:25 AM - 12:10 PM

Background: Artificial Intelligence(AI) is a widely publicised revolutionary new technological innovation. Its impact on the healthcare industry is redefining clinical practice. Despite the hype little knowledge exists by healthcare professionals on how AI works, where it will be applied and its implication for clinical practice. To harness potential applications of AI Physiotherapists must develop a knowledge of what AI actually is.

Aims/objectives:

- 1. Explain how AI actually works,
- 2. Explain the different domains of AI that currently exist,
- 3. Identify where AI is being applied and will be applied in healthcare,

4. Provide a Physiotherapists perspective on how AI is impacting Physiotherapy practice now and in the future

5. Provide practical examples of AI for Physiotherapists to explore during the presentation.

Approach: Face to face presentation of the theory and applications of AI that are currently occurring within healthcare and Physiotherapy practice. Practical examples of AI which can be utilised in Physiotherapy practice will utilised during the presentation.

Key Practice Points:

Participants after this session will be able to identify how:

- AI will redefine how Physiotherapists interact with patients and reach informed clinical decisions about appropriate care.
- Physiotherapists can collate and utilise health care data to power AI use in their own clinical practice.
- Al will impact on Physiotherapists practice in the future in relation to future workforce planning, professional development and scope of practice.
- Identify resources that exist for Physiotherapists to seek to utilise AI in their clinical practice.



# Rehabilitation technology: a mixed methods study of clinicians' uptake, experiences and perceptions

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Neurology 6B, M 3, October 6, 2023, 11:25 AM - 12:10 PM

Aim: Royal Rehab, a Sydney-based rehabilitation-provider, opened a technology therapy centre in July 2022, incorporating 35 technologies including upper limb robotic, lower limb robotic and virtual reality gaming devices. Current literature about clinician adoption of technology is variable. This study aims to explore clinicians' uptake, experiences and perceptions of using rehabilitation technology.

Design: Mixed methods, including clinician interviews and device usage data.

Method: Device usage data was extracted from consecutive patient electronic medical records during the study period. Descriptive statistics were used to analyse monthly usage patterns. All allied health clinicians at Royal Rehab were invited to participate in semi-structured interviews. Thematic analysis was used to analyse qualitative data.

Results: Device usage increased from 219 uses per month at centre opening to 367 uses five months later. Main users were physiotherapists (73%), particularly in outpatient services and with patients aged 18- to 83years with neurological conditions. Twenty clinicians across disciplines (physiotherapists, 35%) participated in interviews. Key themes reveal a story of individual and collective change at a clinician, discipline, service and organisational level, with barriers and facilitators to technology use highlighted at each level.

Conclusion: Clinicians see a bright future for technology in rehabilitation. However, key factors at multiple levels should be considered. Future research will explore ongoing implementation and sustainment of technology use in rehabilitation practice.

- Strong organisational support and clinician buy-in are powerful enablers of successful technology implementation.
- Distinct factors should be considered at each level of service delivery (clinician, discipline, service, organisation).



# Contributing factors to upper limb associated reactions during walking in people with acquired brain injury

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Neurology 7A, P 10, October 6, 2023, 2:15 PM - 3:00 PM

Aim: To determine which potential contributing factors are associated with expression of upper-limb associated reactions.

Design: Observational study.

Method: Forty-two participants with a brain injury and upper-limb associated reaction during walking underwent three-dimensional motion analysis. Composite score outcome measures quantified upper-limb kinematic deviation compared to healthy controls. Clinical assessment included: upper and lower-limb hypertonicity, spasticity and strength, balance, postural stability, arm and leg function, anxiety, arm pain/discomfort, and fear of falling.

Results: Significant, moderate-to-strong correlations (r=0.42–0.74, p<0.05) existed between associated reactions and hypertonicity and spasticity of the upper-limb muscles and knee extensors. Significant, moderate correlations (r=0.42–0.59, p<0.05) existed for balance, postural stability, upper-limb strength, and arm function. Participants who had shoulder internal rotator, elbow, forearm, and finger flexor hypertonicity; elbow and finger flexor spasticity; knee extensor spasticity; and, reduced postural stability had a more severe associated reaction (p<0.05; effect sizes≥0.80). Associated reactions were also present without these features. For example, an elbow joint axis associated reaction was present in 21% of participants without concurrent elbow flexor hypertonicity and 33% without concurrent elbow flexor spasticity.

Conclusion: Associated reactions are complex and multi-factorial. Upper-limb muscle hypertonicity and spasticity were prevalent; however, associated reactions were present in the absence of these features.

- Upper-limb muscle hypertonicity and spasticity should be prioritised for assessment; however, they are not prerequisites
- Hypertonicity and spasticity should be differentiated in their relationships to associated reactions
- Knee extensor hypertonicity and spasticity, postural stability, upper-limb strength, and arm function may also be important to consider



# Inter-disciplinary rehabilitation after mild traumatic brain injury – description of a clinical pathway

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Neurology 7A, P 10, October 6, 2023, 2:15 PM - 3:00 PM

Aim: Describe the clinical pathway within an inter-disciplinary rehabilitation service for adults with complicated mild traumatic brain injury (mTBI).

Design: Descriptive analysis within an observational study.

Method: Clinical practice data from an inter-disciplinary mTBI rehabilitation service, comprising Occupational Therapy, Physiotherapy, Social Work, Rehabilitation Medicine, Speech Pathology and Clinical Psychology were audited covering a 12-month period. Qualitative data were gathered from a series of focus group discussions with staff. Clinical activity data were analysed and the service's clinical pathway and core principles of care described.

Results: Median number of sessions per participant ranged 1-4 for all disciplines; the majority of services were provided by physiotherapy (38%) and occupational therapy (37%). Telehealth was the most common mode of service delivery (54% of all services). An Allied Health Screening Assessment, identifying rehabilitation priorities across disciplines, formed a key element in the clinical pathway. Six core principles of care were identified.

Conclusion: The clinical pathway demonstrated the potential complexity experienced following mTBI. Early screening of symptoms, provision of education at the triage phase and individualised timing and manner of rehabilitation were provided by experienced rehabilitation personnel. While most participants required a relatively small number of rehabilitation sessions, those who received a more protracted service demonstrated complex issues including a background of pre-injury confounding issues.

- Rehabilitation after mTBI requires early, rigorous and broad screening of symptoms
- An Allied Health Screening tool used at triage phase can support an individualised rehabilitation plan
- Follow-up after discharge may avoid regression for complex cases



# Physical activity interventions for people with moderate-to-severe traumatic brain injury: a rapid systematic review and meta-analysis

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Neurology 7A, P 10, October 6, 2023, 2:15 PM - 3:00 PM

Aim: To identify the effects of physical activity on health outcomes in people with moderate-to-severe Traumatic Brain Injury (TBI).

Design: Rapid systematic review with meta-analysis.

Method: Four databases (CENTRAL, SPORTDiscus, PEDro, Ovid MEDLINE) were searched from inception to October 8, 2021. Studies were included if they were randomised controlled trials, included people of any age with moderate-to-severe TBI, and investigated physical activity interventions compared to any comparison. The primary outcomes of interest were physical function, cognition, and quality of life. Secondary outcomes included mortality, comorbid conditions, mood, participation, and physical activity. We calculated mean difference (MD) or standardised mean difference and 95% confidence intervals (95%CI) using a random-effects model to pool estimates.

Results: Twenty-three studies were included incorporating 812 participants (36% females, average age ranging from 22 to 52 years, time post-TBI in studies ranged from 56 days (median) to 16.6 years (mean)). We pooled data from the end of the intervention for eight outcomes. Participation in a virtual reality physical activity intervention improved mobility more than standard balance training (2 studies, 80 participants, MD=2.78, 95%CI 1.40 to 4.16; low certainty evidence). There was uncertainty of effect for all other outcomes.

Conclusion: This review consolidates the current evidence base for the prescription of physical activity for people with moderate-to-severe TBI. These results will contribute to the development of evidence-informed national clinical practice guidelines.

- People with moderate-to-severe TBI can benefit from physical activity.
- It is safe for people with moderate-to-severe TBI to participate in physical activity.



## Physical exercise for people with mild traumatic brain injury: a systematic review of randomized controlled trials

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Neurology 7A, P 10, October 6, 2023, 2:15 PM – 3:00 PM

Aim: To determine the effect of physical exercise on persistent symptoms in people with mild traumatic brain injury (mTBI).

Design: Systematic review and meta-analysis of randomized controlled trials.

Method: A search of randomized controlled trials was conducted in CINAHL, Cochrane Library, EMBASE, MEDLINE, SportDiscus and Web of Science, from 2010 to January 2021. Studies were included if they described the effects of a physical exercise intervention in people with mTBI on persistent symptoms. Study quality, intervention reporting, and confidence in review findings were assessed with the CASP, TIDieR and GRADE respectively.

Results: 11 eligible studies were identified for inclusion. Study interventions broadly comprised of two categories of physical exercise, i.e., aerobic (n = 8) and vestibular (n = 3). A meta-analysis (n = 3) revealed the aerobic exercise group improvement was significantly larger compared to the usual care group -0.39 (95% CI: -0.73 to -0.05, p = 0.03). Only three studies using vestibular exercise reported on persistent symptoms and yielded mixed results.

Conclusion: This study demonstrated that the use of aerobic exercise is supported by mixed quality evidence and moderate certainty of evidence, yet there is limited evidence for the use of vestibular exercise for improving persistent symptoms in people with mTBI.

- The main forms of physical exercise interventions for people with mTBI are aerobic and vestibular exercise
- There is evidence for the effectiveness of aerobic exercise for improving persistent symptoms.



## MOVE-IT: a system for remote vestibular assessment and intervention following concussion

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Neurology 7A, P 10, October 6, 2023, 2:15 PM - 3:00 PM

Aim: To describe the design and development process of MOVE-IT. MOVE-IT is a mobile phone application, associated head mount device and clinician dashboard which aims to enhance remote vestibular assessments and intervention following concussion via telehealth.

Design: A design and development study of health technology.

Method: This study used a Living Labs methodology. MOVE-IT was developed in three phases: Exploration, Experimentation and Evaluation. Exploration included a scoping review, focus group and consultation interviews. Experimentation included the co-creation of a minimum viable product in a real-life setting with regular feedback from multi-stakeholders. Evaluation will be conducted in the next phase.

Results: A solution to challenges identified in focus groups and interviews was the development of MOVE-IT, which included three components: a mobile phone application, head mount device, and clinician dashboard. MOVE-IT assists a support person in the physical aspect of the assessment or intervention by a guided video in the mobile application. The head mount device enables video recording of client's eyes which is then sent to the clinician dashboard for diagnosis and interpretation.

Conclusion: The Living Lab method was successfully used in the development of a fit for purpose system, enabling remove vestibular assessment and intervention. Next, usability, reliability, and validity of MOVE-IT will be determined.

- The Living Lab method was a useful strategy for the development of MOVE-IT.
- MOVE-IT enables clear view of client's eyes during remote vestibular assessments and interventions following concussion, aiming to facilitate the use of telehealth.



## What's important to measure in physical activity after stroke? Opinions of expert clinicians and researchers

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Neurology 7B, P 11, October 6, 2023, 2:15 PM – 3:00 PM

Aim: Physical activity measurement is inconsistent following stroke. We aimed to determine which physical activity outcomes are most important to measure in stroke rehabilitation and to determine the key considerations for measuring post-stroke physical activity according to expert clinicians and researchers.

Design: Online survey series.

Methods: Internationally 256ecognized stroke clinicians and researchers were invited to participate. In Survey 1 respondents identified key physical activity outcomes and considerations for measuring physical activity post-stroke in clinical practice and research. In Survey 2 respondents ranked key outcomes and considerations in order of perceived priority and provided their rationale.

Individuals' Survey 2 results were aggregated using rank-ordered lists. A graph theory-based voting system produced a final ranked list of key physical activity outcomes and considerations.

Results: Seventeen clinician and 19 research experts from six continents participated. The highest-ranked physical activity outcomes were step count and time in moderate-to-vigorous physical activity. Key measurement considerations included the ability to measure across all domains (e.g., frequency, intensity) in real-world settings; ability to detect meaningful changes; and user-friendliness of measurement tools.

Conclusions: These results establish international consensus on key outcomes and considerations for poststroke physical activity measurement. The results will enable clinicians to select physical activity measurement tools depending on measurement purpose, user-knowledge and resources.

- Daily step count and time in moderate-to-vigorous physical activity are important outcomes to measure post-stroke.
- Physical activity measurement tools should be user-friendly and measure in real-world settings, across all domains.



# Can therapeutic and behaviour change interventions increase physical activity after stroke? A systematic review

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Neurology 7B, P 11, October 6, 2023, 2:15 PM - 3:00 PM

Aim: To determine if therapeutic and behaviour change interventions are effective at increasing physical activity after stroke.

Design: A systematic review with meta-analysis of randomised controlled trials.

Methods: Studies of adults with stroke, exploring the effectiveness of interventions on accelerometerderived measures of daily step count and moderate-to-vigorous intensity physical activity (MVPA) were included. Interventions were classified as therapeutic (interventions targeting impairments, activity limitations or participation restrictions) or behaviour change (interventions encompassing at least one behaviour change technique). Effect size was calculated as mean difference (MD) or standardised mean differences (SMD).

Results: Twenty-seven eligible studies (1953 adults with stroke) were identified. The quality of the trials was high (PEDro score 6.7/10). Therapeutic interventions targeted strength, mobility, balance and fitness and increased daily steps immediately following the study (MD: 405, 95%CI: 239 to 571) and 3-months later (MD: 553, 95% CI 322 to 784). Behaviour change interventions included techniques such as feedback, goal setting, self-monitoring and action planning, which were often used alongside strategies targeting mobility. Behaviour change interventions increased daily steps (MD: 1607, 95% CI: 999 to 2215) and time in MVPA (SMD: 0.64, 95% CI: 0.24 to 1.04). There were insufficient trials exploring the effect of therapeutic interventions on MVPA, and the long-term effect of behaviour change.

Conclusions: Both therapeutic and behaviour change interventions are effective at increasing post-stroke physical activity.

- Therapeutic interventions targeting strength, balance, mobility and fitness can increase daily steps after stroke.
- Behaviour change interventions can increase physical activity after stroke.



### In stroke survivors, counting and recording repetitions and using target numbers increases intensity of practice: a randomised control trial

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Neurology 7B, P 11, October 6, 2023, 2:15 PM - 3:00 PM

Aim: Strategies to increase amounts of practice in stroke rehabilitation are needed. The aim of this study was to establish if counting and recording repetitions of exercise and providing target numbers, in addition to usual care, increases intensity of practice in stroke rehabilitation.

Design: A Randomised Controlled Trial with concealed allocation, assessor blinding and intention to treat analysis.

Methods: Twenty-seven participants were randomly allocated to the control group or intervention group. In the intervention group, in addition to usual therapy, all exercise repetitions were counted and recorded and target numbers were used over five therapy sessions. In the control group, usual therapy only was provided. The primary outcome was change in intensity of practice, measured as repetitions per minute. The secondary measure was quality of movement, measured on a visual analogue scale. Outcomes were measured at baseline and after five therapy sessions.

Results: The between group difference for increase in intensity of practice was 118% (95% CI 37 to 199%) indicating a large effect in favour of the intervention. The between group difference for change in quality of movement was 0.1 out of 10 (95% CI, -0.89 to 1.09).

Conclusion: Counting and recording repetitions and providing a target number leads to a large increase in intensity of practice in stroke rehabilitation and does not have a detrimental effect on quality of movement.

Key Practice Points:

• Therapists should count and record exercise repetitions and provide target numbers to increase intensity and amounts of practice in stroke rehabilitation.



### Evaluating feasibility of a secondary stroke prevention program

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Neurology 8B, P 6, October 6, 2023, 3:35 PM – 4:20 PM

Aim: to evaluate the implementation of a secondary stroke prevention program involving exercise and education for people with mild stroke or transient ischaemic attack.

Design: Program evaluation

Method: We implemented a new group-based program involving multidisciplinary education, supervised exercise, and telehealth coaching to reduce modifiable stroke risk factors. We evaluated feasibility by collating service information (referrals, uptake, participant demographics), and consumer acceptability (satisfaction and attendance). Clinical outcomes examined self-reported change in lifestyle factors, and prepost scores on standardized tests, [e.g., waist-circumference, 6-Minute-Walk (6MWT), Fatigue-Severity-Scale (FFS)].

Results: We ran seven programs in 12-months. Of 90 referrals, 37 people participated, 10 were wait-listed, 28 received an alternative program, and 15 were not suitable (medical, technology, not indicated). Education session attendance was 79%, and 34/37 participants completed the program. No adverse events occurred. Consumer satisfaction was high (strongly agree & agree) for 'relevance' (100%), 'would recommend to others' (96%), 'felt safe to exercise' (96%) and 'intend to continue' (96%). Most participants (89%) changed (on average) 2.5 lifestyle factors (diet, exercise, smoking, alcohol). Potential clinical benefits were observed for 6MWT (MD 59m, 95%CI –33m to 159m), FFS (MD –1/7, 95%CI –3.6/7 to 1.7/7) and waist-circumference (MD –2cm, 95%CI -4cm to 1cm).

Conclusion: The program was feasible to deliver, acceptable to consumers and seemed beneficial for health. Access to similar programs may assist in secondary stroke prevention.

- A group-based program addressing modifiable stroke risk factors was feasible to deliver.
- Consumers were satisfied with the program.
- Health benefits of participation look promising.



# How to increase self-efficacy and self-management to improve physical activity levels in stroke survivors

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Neurology 8B, P 6, October 6, 2023, 3:35 PM - 4:20 PM

Introduction/ Background: Stroke survivors complete very low amounts of therapeutic exercise and general physical activity. Self-efficacy beliefs have a large mediating effect on people's ability to self-manage chronic health conditions. Therapists can play an important role in changing clients' self-efficacy beliefs to facilitate better self-management of chronic conditions such as Stroke. To do this successfully, therapists need an understanding of self-efficacy and self-management theories to inform strategies to implement into their clinical practice.

Aims/ objectives: The aim of this session is to provide participants with increased awareness of self-efficacy and self-management theory and provide them with strategies to implement in clinical practice to improve their clients' self-efficacy beliefs and self-management related to physical activity. The learning outcomes are:

At the completion of this session, participants should be able to;

- Outline the critical features of self-efficacy and self-management
- Describe strategies to increase clients' self-efficacy beliefs in relation to physical activity
- Describe strategies to improve clients' self-management in relation to physical activity

Approach: This session will use short presentations and facilitated discussions to increase understanding of the theoretical constructs of self-efficacy and self-management. Video case study examples will be used to facilitate small group discussions. Interactive Google docs will allow workshop participants to work through a problem-solving process to identify strategies they can implement in their clinical practice.

- Therapists can play an important role in improving clients' self-efficacy beliefs in relation to physical activity
- Therapists can facilitate self-management of chronic conditions such as Stroke



## Devices used for shoulder subluxation in a stroke population: a systematic review

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Neurology 10A, P 7, October 7, 2023, 11:40 AM - 12:40 PM

Aim: This systematic review aims to examine the current literature for the common devices used to manage shoulder subluxation following stroke and whether the effectiveness of these devices is short or long-term.

Design: Systematic review.

Method: The search included PubMed, CINAHL, Embase and Web of Science databases. Eligibility was established using the PICO format. Included studies consisted of randomised controlled trials and quasi-experimental trials. Following the PRISMA guidelines, three reviewers independently screened and critically appraised the included studies and extracted data.

Results: Seven studies met the inclusion criteria, of which three were randomised control trials and four quasi-experimental trials, with 222 participants. The methodological quality of one study was excellent, four studies were rated as good, and two studies as fair. This review identified 12 different devices, including 11 shoulder sling-type devices and one lap tray device. Of the sling devices, nine allowed elbow extension, and two supported the elbow in flexion. Short-term benefits were observed in five studies and two had no benefit. There was no conclusive evidence regarding the long-term effects.

Conclusion: The evidence suggests that devices reduce shoulder subluxation on initial application but the long-term efficacy of the devices remains unclear.

- The Australian and New Zealand Stroke Clinical Guidelines suggest using these devices as 'good practice', which this review supports for the short-term effect.
- Clinicians will require other long-term strategies to manage shoulder subluxation.



### Are current self-efficacy measures reliable and valid for stroke survivors? Measuring and understanding confidence for physical activity post stroke

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Neurology 10A, P 7, October 7, 2023, 11:40 AM - 12:40 PM

Aim: To evaluate the test-retest reliability and construct validity of three self-efficacy scales for use in stroke.

Design: Repeated-measures reliability and construct validity study.

Method: Fifty-one community-dwelling stroke survivors (mean age =74 years, median steps/day =4,664) completed three self-efficacy scales (Self-Efficacy for Exercise scale (SEE), Spinal Cord Injury Exercise Self-Efficacy Scale (SCI-ESES) and community management domain of the Participation Strategies Self-Efficacy Scale (PS-SES)) on two occasions, seven days apart. Test-retest reliability was analysed using intraclass correlation coefficients. Construct validity was assessed using eight hypotheses determined a-priori, evaluating physical activity, function, community participation, and comorbidities via Pearson's Correlation Coefficients and t-tests.

Results: Test-retest reliability was established for the SEE (ICC=0.8), PS-SES (ICC=0.8) and the SCI-ESES (ICC=0.7). The SEE and SCI-ESES achieved 3/8 hypotheses for construct validity, while the PS-SES achieved 2/8. The SCI-ESES predicted self-efficacy levels in people with higher pre- and post-stroke physical activity. While positively correlated, the strength of correlation of each self-efficacy measure against daily step count and Frenchay Activities Index failed to achieve target levels ( $r \ge 0.5$ ).

Conclusion: The SEE, PS-SES and SCI-ESES all show high test-retest reliability. The SCI-ESES may be considered superior due to its correlation with pre-stroke physical activity. However, construct validity appears insufficient for clinical or research settings. To understand and measure the physical activity self-efficacy post-stroke, development of valid and reliable tools is warranted.

- The SEE, PS-SES and SCI-ESES all show high test-retest reliability.
- All three measures lack the required construct validity for clinical or research use.



## High dosage training can be achieved in a post-stroke mobility booster program

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Neurology 10A, P 7, October 7, 2023, 11:40 AM - 12:40 PM

Aim: To describe the dosage of practice achieved in a short-term mobility booster program. To determine the acceptability of higher dosage training post stroke in a community setting.

Design: An observational study was conducted within two community-based rehabilitation clinics in Sydney, Australia. The mobility booster program was scheduled for 45 hours over three weeks. Mixed methods were used to review the program, specifically the dose of practice achieved.

Method: Adherence, specifically dosage, was measured throughout the program. Dosage was measured as number of sessions attended and rate of work completed, including time repetitions and difficulty of training.

Results: Five participants who met the inclusion criteria undertook the mobility booster program. A high adherence rate to scheduled sessions was observed (79%). Participants completed a mean (SD) of 185 (8) minutes and 1869 (543) repetitions of training per day. Training difficulty averaged a Rating of Perceived Exertion (RPE) of 6/10 per day. All five participants reported they would recommend the program to others. The program was implemented with a low number of adverse events.

Conclusion: A high dosage mobility booster program can be implemented with more than 500 repetitions completed per hour of the program. Further, participants tolerated this dose well and would recommend participation to others.

Key Practice Points:

• High dose training is possible in post-stroke community mobility programs.



## Knowledge, attitudes and needs of stroke survivors, carers, and health professionals regarding exercise adherence

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Neurology 10A, P 7, October 7, 2023, 11:40 AM - 12:40 PM

Aim: To explore the knowledge, attitudes and needs of stroke survivors, carers, and health professionals regarding exercise adherence following stroke.

Design: Mixed methods.

Method: An electronic survey was developed and disseminated nationally to explore stroke survivors,' carers' and health professionals' attitudes and beliefs about exercise and adherence. Focus group questions were developed, based on the survey analysis, and focus groups (hybrid), facilitated by a health professional and stroke survivor, were conducted.

Results: 164 survey responses were completed (n=49 stroke survivors/carers; n=115 health professionals). Stroke survivors indicated that physical capability, having to rely on others, and lack of motivation were barriers to adherence. Health professionals identified a lack of time to spend with stroke survivors and limited resources to support long-term follow up as factors influencing adherence. Seven focus groups (3 stroke survivors/carers and 4 health professionals) were conducted with 29 participants. Strategies to improve adherence were explored and included having some accountability, variety in programs and providing exercise targets (stroke survivors). Health professionals identified having quick access to evidence-based resources and skills in motivational interviewing as ways to improve adherence.

Conclusions: This study has identified barriers and enablers to exercise adherence in stroke survivors and provides the foundation for development of an 'Adherence Counselling Toolkit' (ACT now).

#### Key Practice Points:

Participants will learn:

- The influence of barriers and enablers to exercise adherence in stroke survivors.
- Strategies to consider when developing exercise programs which aim to maximise adherence.
- The perspectives of stroke survivors regarding participating in exercise programs.



# Portable wearable upper limb exoskeletons on activities of daily living and motor function after stroke: a systematic review and meta-analysis

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Neurology 10A, P 7, October 7, 2023, 11:40 AM - 12:40 PM

Aim: To summarise, appraise, and analyse current literature to determine the effectiveness of portable wearable exoskeletons in improving activities of daily living and gross motor function in the upper limb of stroke survivors.

Design: Systematic review and meta-analysis.

Method: A systematic review of the literature was conducted using four databases to evaluate portable wearable exoskeletons on activities of daily living and gross motor function. Included studies were independently reviewed, and data was extracted and synthesised as per the PRISMA guidelines. Studies with similar data points were compared with a meta-analysis.

Results: Eleven articles with 147 participants, were included in this review. Two studies used the same exoskeleton, whereas nine studies used different exoskeletons. The methodological critical appraisal ranged from poor to good. Six studies used elbow exoskeletons and five studies used hand exoskeletons. Meta-analysis showed statistically significant improvements in gross motor function and range of motion for elbow exoskeletons, and positive trends were seen for hand exoskeletons. No significant changes were demonstrated for activities of daily living outcomes.

Conclusion: Using portable wearable exoskeletons for post-stroke upper limb rehabilitation can aid gross motor recovery, but not activities of daily living.

- Following a stroke, thousands of movement repetitions are needed for recovery.
- Utilising an exoskeleton with stroke survivors could allow them to extend their therapy in the comfort of their homes, outside of structured therapy.
- Therefore, clinicians prescribing elbow exoskeletons can expect improved upper limb gross motor function.



# Acceptability of a hybrid telehealth falls prevention intervention for people with stroke transitioning home

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Neurology 10A, P 7, October 7, 2023, 11:40 AM - 12:40 PM

Aim: To explore the acceptability of a hybrid telehealth falls prevention intervention from the perspective of stroke survivors returning home from hospital.

Design: Theory-informed qualitative study nested within a feasibility randomised controlled trial.

Method: Eight adults with stroke (mean age 76; 5 female) received a 4-week hybrid (in-person and telehealth) physiotherapist-delivered falls prevention intervention. Data collection and analysis were informed by the Theoretical Framework of Acceptability. Data were collected via semi-structured interviews and analysed deductively using a six-step thematic analysis process.

Results: Fourteen themes were identified within the eight framework constructs. Key drivers of acceptability were: physical improvements perceived as reducing falls risk and enabling resumption of meaningful activities (perceived effectiveness); feeling supported by physiotherapists delivering the intervention (affective attitude); and confidence that exercises and supports were tailored (self-efficacy). Participants preferred in-person sessions, but acknowledged telehealth advantages, such as convenience and additional home-based support. The initial in-person session and explicit risk management strategies for telehealth exercise sessions (perceived safety and risk) were also important for acceptability.

Conclusion: A hybrid falls prevention intervention was acceptable to stroke survivors. Key factors related to acceptability were perceived physical improvements, tailored support, inclusion of in-person therapy and risk management for telehealth. These factors need to be considered for future implementation and scaling.

- A hybrid telehealth falls prevention intervention was perceived as acceptable for reducing falls risk and improving function.
- Stroke survivors valued an individualised program with expert physiotherapist support.
- In-person care was preferred, but participants acknowledged telehealth advantages.



### Telehealth for persons with multiple sclerosis – experiences and

#### suggestions for improvement

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Neurology 10B, Great Hall 4, October 7, 2023, 11:40 AM - 12:40 PM

Background: We investigated how commonly telehealth is used by people with MS, their satisfaction with telehealth during the COVID-19 period, and recommendations to improve their experiences with telehealth.

Methods: In October-December 2020 we surveyed Australians with MS. We collected demographic, diseaserelated and social health determinant data, data on telehealth use and experiences during the COVID-19 pandemic, and recommendations on telehealth improvements. We conducted univariate analysis to compare factors associated with telehealth use versus no use, established frequencies of experiences and suggestions for improvement, and conducted thematic analysis on free-text suggestions for improvement.

Results: Of the 1485 participants, 69.7% had used telehealth since the start of the COVID-19 pandemic, there were small differences in demographical, disease and social health determinants to explain telehealth use . Most participants who used telehealth had good or very good experiences (74.3%). Most common suggestions to improve telehealth experiences was "guidance on preparing for telehealth sessions" (n = 545, 60%). Themes of expansion in telehealth availability and expansion to physical test and physical treatments were wanted by participants.

Conclusion: Persons with MS in Australia commonly used telehealth during the COVID-19 pandemic and were generally satisfied with their experiences. Implementing the suggested improvements will further optimise the use of telehealth.



# Non-invasive brain stimulation enhances the effect of physiotherapy for balance and mobility impairment in people with Multiple Sclerosis

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Neurology 10B, Great Hall 4, October 7, 2023, 11:40 AM - 12:40 PM

Aim: Balance therapy improves mobility and independence in people with multiple sclerosis (MS). This study aimed to determine if combining non-invasive brain stimulation (transcranial direct-current stimulation - tDCS) to balance therapy further enhances balance and mobility.

Design: In a double-blind, randomised controlled trial, participants with MS were randomised into a real or sham tDCS group. All patients received individualized physiotherapy.

Method: Real or sham tDCS was administered for 20 minutes followed by one hour of physiotherapy focusing on balance, strength, and mobility twice a week for six weeks. A range of outcome measures assessed balance and mobility pre- and post-intervention, and at six months.

Results: Forty participants were enrolled with 36 completing the program. Results were analysed using generalised linear mixed models with random patient effects to account for patient baseline variation. After adjusting for age and disability status (EDSS), we found a small but significant difference in the 10-metre walk test (p = 0.02) and on the Berg Balance score (p = 0.007) in the real tDCS group compared to the sham group after six weeks of training, with patients in the real tDCS group showing greater improvement. Differences between groups remained significant at six months follow-up.

Conclusion: Our results suggest that the addition of tDCS prior to physiotherapy provides a small but significant improvement in walking speed and balance in people with MS, compared to physiotherapy alone.

Key Practice Point:

• Non-invasive brain stimulation may be a useful adjunct to enhance physiotherapy outcomes in MS with long-lasting effects.



# 'The EYES have it': how to achieve BPPV treatment success when the nystagmus does not make sense (a case-based exploration)

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Neurology 10B, Great Hall 4, October 7, 2023, 11:40 AM - 12:40 PM

Introduction/Background: Observation of nystagmus assists in appropriate canal identification and BPPV treatment selection. Unfortunately, the presenting nystagmus doesn't always follow an expected pattern. This causes clinicians to doubt the diagnosis and can impact patient outcomes. The literature provides some guidance on atypical BPPV nystagmus patterns, however there are very few opportunities for clinicians to learn from real patient exemplars, practice tracking of otoconial migration and reflect on ways to alter treatment plans based on nystagmus changes.

Aims/objectives: To improve participant's knowledge, skills and clinical reasoning when managing patients with complex and atypical BPPV nystagmus patterns. Participants will be presented with case examples of patients who first presented with typical BPPV nystagmus but then converted to an atypical variant mid-session. Learning objectives include: 1) acquiring skills in tracking eye movements and correlating eye movements to otoconial migration mid-technique; 2) learning to identify direction-fixed paroxysmal nystagmus in lateral canal BPPV, apogeotropic posterior canal BPPV and anterior canal crisis during posterior canal treatments; and 3) developing skills in rapidly adjusting treatment techniques in response to presenting nystagmus.

Approach: Case-based presentation using infra-red eye recordings and demonstration videos to enhance understanding of complex and atypical BPPV nystagmus patterns. Each case will be linked to contemporary literature. Live practical demonstration of treatment techniques will be provided.

Key Practice Points: Participants will learn how to:

- Use nystagmus to track otoconial migration mid-technique
- Apply the literature to real-life atypical BPPV presentations
- Practically alter treatment techniques in response to a change in nystagmus patterns



### Spatiotemporal gait parameters in adults with premanifest and manifest Huntington's Disease: a systematic review

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Neurology 11A, P 10, October 7, 2023, 1:40 PM – 2:25 PM

Aim: To determine whether spatiotemporal gait deviations in individuals with premanifest and manifest Huntington's Disease could be used to identify symptom onset or disease progression.

Design: Systematic review with meta-analysis.

Method: Studies from eight databases comparing spatiotemporal footstep parameters in adults with premanifest or manifest Huntington's Disease to healthy controls were systematically screened, critically appraised and synthesized. Meta-analysis was performed on gait speed, cadence, stride length and stride length variability measures.

Results: Strong evidence supported the presence of spatiotemporal gait deviations in participants with Huntington's Disease compared to healthy controls, commencing in the premanifest stage. Individuals with premanifest disease walk significantly slower (mean difference = -0.17 m/s (95% CI -0.22, to -0.13)), with reduced cadence (mean difference = -6.63 steps/min (95% CI -10.62 to -2.65)) and stride length (mean difference = -0.09 m (95% CI -0.13 to -0.05)). Stride length variability also increased in premanifest cohorts (mean difference = 2.18% (95% CI 0.69 to 3.68)), with these changes exacerbated in participants with manifest disease.

Conclusion: Individuals with premanifest and manifest Huntington's Disease display significant footstep deviations. Clinicians should monitor gait patterns in the premanifest stage of disease to identify the onset of symptoms as early as possible..

- Gait assessment should commence at premanifest stages of Huntington's Disease.
- The presence of hypokinetic gait patterns in individuals with premanifest disease can inform decisions to commence timely interventions.
- Changes in spatiotemporal gait parameters may be a sensitive biomarker of motor deterioration in people with manifest Huntington's Disease.



### Telehealth empowered people living with Parkinson's disease during COVID-19: a phenomenological study of patient and therapist experiences

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Neurology 11A, P 10, October 7, 2023, 1:40 PM - 2:25 PM

Aim: To explore the perspectives of people receiving and therapists delivering Parkinson's disease physical therapy services before and during the COVID-19 pandemic in Melbourne, Australia.

Design: A qualitative study using a phenomenological approach.

Method: Purposive recruitment occurred in an outer metropolitan rehabilitation hospital and participants completed interviews. Reflexive thematic analysis was used to interpret shared meaning across the dataset from the perspectives of people with Parkinson's disease and therapists.

Results: Ten people with Parkinson's disease and five therapists were interviewed. Six themes were identified: patients value access to therapy, a key mechanism is trust, an opportunity to empower patients, ticking boxes for telehealth, contrasting experiences of telehealth, and something is better than nothing.

Conclusion: Contrary to previous literature that people with complex neurological conditions are not suited to telehealth, people with Parkinson's disease valued having the option of telehealth during the pandemic. Telehealth empowered people living with Parkinson's disease to learn new skills and encouraged self-management. Therapists found telehealth challenging initially and had to quickly adapt. Therapists developed guidelines addressing patient safety, technological support, and staff training. Due to the success of telehealth for Parkinson's disease services, therapists continued to use telehealth beyond the pandemic.

- Telehealth was generally acceptable to people with Parkinson's disease and clinicians, with clinicians citing more barriers.
- Health services should develop or refer to guidelines to ensure telehealth is used effectively.
- Guidelines should address participant safety, technological support, and training for health professionals.



### Perspectives of people with myasthenia gravis on physical activity and experience of advice from health professionals: a qualitative Australian study

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Neurology 11A, P 10, October 7, 2023, 1:40 PM - 2:25 PM

Aim: To explore barriers to, enablers, and perceptions of physical activity of people with myasthenia gravis.

#### Design: Qualitative

Method: Data was collected using individual semi-structured interviews that were audio recorded and transcribed. Verbatim transcripts were thematically analysed.

Results: Ten adults (median age 64.5 years) with generalised myasthenia gravis were interviewed. Three key findings were identified: (1) Fatigue is the most frequently mentioned barrier to physical activity. (2) Pharmaceutical management was considered an important enabler of physical activity due to sufficient symptom management. (3) Experiences with healthcare professionals were mostly dismissive and failed to provide disease specific advice regarding myasthenia gravis and physical activity, seemingly prompting participants to source information from other avenues.

Conclusions: People with myasthenia gravis have unique barriers and enablers to physical activity engagement that clinicians should consider when providing physical activity behaviour change support to this population.

- Clinicians should consider the potential unique barriers and enablers to physical activity in this rare population and tailor physical activity change support accordingly
- Fatigue and medical management are reported as influences on physical activity in people with myasthenia gravis, and should be considered when tailoring care



### Does the intramuscular injection of Botulinum Neurotoxin-A induce muscular weakness in adult-onset neurological patients with focal spasticity? A systematic review

**<u>Gill R</u>**<sup>1,2</sup>, Moore E<sup>1</sup>, Yang Z<sup>2</sup>, Medina Mena P<sup>1</sup>, Woo A<sup>1</sup>, Banky M<sup>1,2</sup>, Williams G<sup>1,2</sup> <sup>1</sup>Epworth HealthCare, <sup>2</sup>The University of Melbourne

Neurology 12A, P 10, October 7, 2023, 2:30 PM - 3:15 PM

Aim: To investigate the effect of Botulinum Neurotoxin-A injections on focal muscle strength in adults with neurological conditions.

Design: Systematic review

Method: A systematic literature search of eight databases was completed. The methodology and reporting of results were performed in accordance with the PRISMA guidelines (CRD42022315241). Article quality was assessed using the Downs and Black checklist and PEDRO scale. Where able, data extraction included the type and dose of Botulinum Neurotoxin-A injections, pre and post agonist/antagonist muscle strength and spasticity outcomes. Short, medium and long-term strength change results were analysed.

Results: The search identified 7709 articles (duplicates removed) of which 49 met the inclusion criteria. A meta-analysis could not be performed due to the heterogeneity of studies. The most common outcome measures were the Medical Research Council Scale and grip strength dynamometry. Most studies reported outcomes at six weeks post-injection with minimal reporting of long-term results. Five studies found a significant weakening of lower-limb muscles six weeks post-injection. Grip strength typically increased and remained significantly stronger at three to six months post-injections (four studies). Elbow extensor strength increased at six weeks post-injection to the elbow flexors (four studies).

Conclusion: Overall, the impact of Botulinum Neurotoxin-A on muscle strength is inconclusive.

- The impact of Botulinum Neurotoxin-A on muscle strength especially when examining long-term outcomes remains unknown.
- Current clinical strength measures used in this field have limited capacity to detect change.
- High-quality evidence is required to examine the quantifiable impact of Botulinum Neurotoxin-A on strength.



# Finding the right balance with exercise and sport for people with multiple sclerosis – a feasibility study

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Neurology 12A, P 10, October 7, 2023, 2:30 PM - 3:15 PM

Aim: To assess the feasibility of a flexible exercise participation program (FEPP) for individuals with minimal disability from multiple sclerosis (MS).

Design: A stage 1 feasibility study using a single group pre-post intervention design.

Method: Individuals with MS (EDSS 0-3.5) participated in the 12-week FEPP which supported their engagement in exercise or sport of their choice. Exercise progression was guided by the individual's energy levels. A physiotherapist provided weekly coaching sessions using behavioural change techniques such as goal setting and self-monitoring. Outcomes included the Goal Attainment Scale (GAS) T-score, exercise participation (exercise diary), high-level mobility (HiMAT), biomarkers for inflammation (cytokine levels [IL2, IL4, IL6, IL10, and TNF]), and acceptability (participant survey).

Results: Ten participants completed the FEPP. There was a significant increase in GAS T-score indicating achievement of exercise participation goals (z=2.68, p=0.007). Sixteen of 26 goals were achieved. HiMAT scores improved significantly (z=2.50, p=0.01). Cytokine results were cautiously suggestive of an anti-inflammatory response to exercise: IL2 significantly increased, (t(9)=2.5; p=0.03); IL4, IL6, IL10 trended towards increase and TNF (pro-inflammatory) trended towards decrease. Participants rated the FEPP as highly acceptable in all survey domains.

Conclusion: The FEPP was feasible and acceptable for use with individuals with MS. Preliminary findings indicate the FEPP can enable achievement of personal exercise participation goals whilst managing energy levels.

- The FEPP is feasible and acceptable for people with MS.
- Flexible methods of assisting individuals with MS to participate in exercise that incorporate behavioural change strategies should be considered by practitioners.



## Factors impacting the uptake and adherence of mHealth technology by adult stroke survivors in community settings: a scoping review

#### **Luxton N**<sup>1</sup>, Noone I<sup>2</sup>, Slater J<sup>1</sup>, Wellwood I<sup>2</sup>

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Neurology 12A, P 10, October 7, 2023, 2:30 PM - 3:15 PM

Aim: To examine factors affecting the uptake and adherence of Mobile Health (mHealth) technology by adult stroke survivors in community rehabilitation settings.

#### **Design: Scoping review**

Method: We followed Joanna Briggs Institute methods to systematically search eight databases for studies including adult stroke survivors using mobile/smartphones or tablets (mHealth) in community rehabilitation settings. Studies promoted physical activity and quality of life (QoL) and measured mHealth uptake and adherence. Data were managed in Covidence and narratively synthesised using the Unified Theory of Acceptance and Use of Technology behavioural framework.

Results: Of 1843 articles identified, 12 were included. Studies varied in sample size (range 9 - 60), location (12 countries), and study design. Uptake of mHealth was positively affected by prior device ownership, device experience, access to internet; and negatively affected by older age. Adherence was positively affected by the personalisation of mHealth interventions, physical, environmental and cognitive capacity of stroke survivors and perceived appropriateness of intervention content; and negatively affected by older age and perceived effort required. Overall, moderate improvements in physical activity and QoL were reported by those stroke survivors able to access and use the mHealth technology.

Conclusions: Our review identified factors influencing uptake and adherence of mHealth to improve physical activity and QoL among stroke survivors. Consistent definitions and reporting of these factors and outcomes will facilitate future research.

Key Practice Points:

• Factors influencing uptake and adherence of mHealth to improve physical activity and QoL in stroke survivors were identified, which clinicians and researchers should be mindful of.



### Is game-based robotics training an alternative to improve upper limb function and independence after stroke?

**<u>Rivera</u>**<sup>1</sup>, Stubbs P<sup>1</sup>, Verhagen A<sup>1</sup>, Lee M<sup>2</sup>, McCambridge A<sup>3</sup>, Quel de Oliveira C<sup>1</sup> <sup>1</sup>University Of Technology Sydney, <sup>2</sup>University of New South Wales, <sup>3</sup>Public Health Association New Zealand

Neurology 12A, P 10, October 7, 2023, 2:30 PM - 3:15 PM

Aim: To evaluate if game-based robotic training is effective when compared to conventional training for upper limb function and independence after stroke.

Design: Systematic review with meta-analysis

Methods: We included randomised and quasi-randomised clinical trials from eight databases that compared game-based robotics and conventional training for upper limb function and independence after stroke. Two independent reviewers performed screening, data extraction and risk of bias assessment. Meta-analyses were conducted using the random effects model and GRADE-approach to assess the certainty of the evidence.

Results: We included 48 trials in the review and 45 in the meta-analysis. For upper limb function, gamebased robotics was not effective when compared to conventional training (SMD=0.02, 95% CI -0.18 to 0.23), but when used as a supplementary intervention it was more effective relative to conventional training alone (SMD=0.23; 95% CI 0.11 to 0.34). There was "moderate" certainty of evidence which was downgraded for high-risk bias.

For independence, game-based robotics was not effective when compared to conventional training (SMD=0.18, 95%CI -0.05 to 0.40, supplementary: SMD=0.22, 95%CI -0.04 to 0.47), with "low" certainty evidence due to high-risk bias and heterogeneity.

Conclusion: We found low to moderate certainty of evidence that game-based robotics as a standalone therapy is no more effective than conventional training, with some benefit for game-based robotics as a supplementary therapy to improve upper limb function after stroke.

Key Practice Point:

• Clinicians should consider other therapies with a higher certainty of evidence. High-quality research is still needed to support game-based robotics training.



## Wellbeing after finalising a workers' compensation claim: a cross-sectional study

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Occupational Health 3, P 1, October 5, 2023, 1:40 PM - 2:25 PM

Background: A claim for workers' compensation may have significant negative impacts on a person's wellbeing with the lasting effect after finalisation unclear. The aim of the study was to investigate associations between wellbeing after claim finalisation and factors related to a workers' compensation claim.

Methods: An online cross-sectional survey was conducted in Western Australia between 2022 and 2023, which included questions regarding socioeconomics, claim experience and post-finalisation experience. 291 people volunteered with 129 completing the survey. Participants were aged over 18 years and had finalised their workers' compensation claim at least three months prior to survey completion. Wellbeing was assessed with the 18-item version of Ryff's Scale of Psychological Wellbeing. Univariate regression analyses were performed to test the association with multiple factors that might influence wellbeing.

Results: There were no factors associated with positive wellbeing after claim finalisation. Variables associated with poorer wellbeing after claim finalisation included: the claim having a lasting negative effect on physical health, mental health and personal relationships, as well as difficulty gaining equivalent employment after the claim. Several factors were not associated with wellbeing including: self-estimation of being treated fairly by people engaged in the claim process, gender, age at the time of the claim, time since claim closure, the affected body area, and having a pended claim.

Conclusion: These results suggest that a workers' compensation claim may have lasting negative effects on wellbeing.

**Key Practice Points:** 

• Identifying ways to improve individuals' wellbeing during a workers' compensation claim may be important for wellbeing post-claim.



# Wellbeing outcomes after finalising a workers' compensation claim: a scoping review

#### <u>Weir J</u><sup>1</sup>

<sup>1</sup>Curtin University, <sup>2</sup>Pain options Specialist Physiotherapy

Occupational Health 3, P 1, October 5, 2023, 1:40 PM - 2:25 PM

Aim: To investigate wellbeing, as well as individuals' experiences and health or social outcomes, following workers' compensation claim finalisation; and to understand recommendations related to wellbeing following the claim.

Design: Scoping review.

Method: The review was performed in accordance with established guidelines, utilising databases Scopus, Proquest, Business Source Ultimate, Medline and Web of Science. Quantitative, qualitative and mixedmethod studies, and grey literature published between 1887 and November 2022 were eligible for inclusion. Participants included adults aged over 18 years who had engaged in, and subsequently finalised, a workers' compensation claim.

Results: Seventy-one articles were full-text screened for inclusion, with a total of 32 articles included in the review. None of the included articles evaluated wellbeing as a specific construct. Individuals who were involved in a workers' compensation claim were generally disadvantaged in some manner following finalisation of a workers' compensation claim, particularly in terms of ongoing physical health issues and reduced work engagement. The literature recommends further work to reduce individual and broader social burden after a claim, and to reform policy in respect to workers' compensation.

Conclusion: There is a gap in knowledge about wellbeing of people post workers' compensation claim. This is important because wellbeing is considered an important contemporary measure in healthcare and the wellbeing economy.

- Some injured workers might be worse off after finalising their claim.
- This may significantly and negative impact on the broader community.
- Opportunity exists to improve an individual's transition to life after a workers' compensation claim.



# Development and initial application of a harmonised multi-jurisdiction work injury compensation database

**<u>Di Donato M</u>**<sup>1</sup>, Sheehan L<sup>1</sup>, Gray S<sup>1</sup>, Iles R<sup>1</sup>, van Vreden C<sup>1</sup>, Collie A<sup>1</sup> <sup>1</sup>School of Public Health and Preventive Medicine, Monash University

Occupational Health 3, P 1, October 5, 2023, 1:40 PM – 2:25 PM

Aim: To develop and deploy a new database of health service and income support data, mobilization data from multiple Australian workers' compensation schemes.

Design: A methodological summary.

Method: We worked with authorities from six Australian workers' compensation schemes to combine claims, healthcare, medicines and wage replacement data for a sample of compensated workers with claims for musculoskeletal conditions. We designed a structured relational database and developed a bespoke health services coding scheme to harmonise data across schemes.

Results: The Multi-Jurisdiction Workers' Compensation Database is a structured relational database containing four datasets: the claims, services, medicines and wage replacement datasets. The claims dataset contains 158,946 claims for low back pain (49.6%), limb fracture (23.8%) and non-specific limb conditions (26.7%). The services dataset contains a total of 4.2 million cleaned and mobilization services including doctors (29.9%), physical therapists (56.3%), psychological therapists (2.8%), diagnostic procedures (5.5%) and examinations and assessments (5.6%). The medicines dataset contains 524,380 medicine dispenses, with 208,504 (39.8%) dispenses for opioid analgesics.

Conclusion: The development of this database presents potential opportunities to gain a greater understanding of health service use in the Australian workers' compensation sector, to measure the impact of policy change on health services, and provides a method for further data mobilization. Future efforts could seek to conduct linkage with other data sources.

- It is possible to harmonise healthcare and medicines data from multiple Australian workers' compensation schemes
- Detailed services data at a national scale presents the potential for important new insights



### Why are we still doing 'how to lift' training in workplaces?

#### Rogerson S<sup>1</sup>

<sup>1</sup>Workplace Health and Safety Queensland (WHSQ)

Occupational Health 7, P 6, October 6, 2023, 2:15 PM - 3:00 PM

Aim: To determine the prevalence of 'how to lift' training (HTLT) and the accuracy and effect of employer and provider beliefs about HTLT on its inclusion in musculoskeletal injury prevention programs in workplaces.

Design: Online survey of employers, workers, and providers.

Method: Disseminated via social media, emails to databases, union, employer and provider peak bodies for distribution to members.

Results: 1271 employers, 204 workers and 236 providers responded. Most businesses and one third of providers think HTLT is effective for reducing injuries at work and had conducted training recently. Of those who believe HTLT is ineffective, most had still delivered it in the past two years. Many incorrectly believe HTLT is a WHS legislative requirement. Provider confusion arises from differing industry accreditation and workers compensation common law practices. While many providers and employers also used risk management strategies for controlling hazardous manual tasks, lower order risk controls predominated.

Conclusion: Despite a long-standing evidence base that HTLT is ineffective at reducing injury frequency in workplaces there is a high prevalence of providing HTLT and mistaken beliefs that it is effective and required by legislation.

- HTLT is not evidence-based nor, of itself, meeting WHS legislative requirements yet providers frequently deliver it as a prevention service in workplaces.
- Providers mistakenly believe HTLT is a WHS legislative requirement. Australian and New Zealand WHS regulators have released a position statement clarifying that HTLT is not a requirement.
- WHS Inspectors have issued noncompliance notices to employers who use only HTLT



## Patterns of physiotherapy attendance by compensated Australian workers with low back pain: a retrospective cohort study

**<u>Di Donato M</u>**<sup>1</sup>, Sheehan L<sup>1</sup>, Iles R<sup>1</sup>, Gray S<sup>1</sup>, Buchbinder R<sup>1</sup>, Collie A<sup>1</sup> <sup>1</sup>School of Public Health and Preventive Medicine, Monash University

Occupational Health 8, P 7, October 6, 2023, 3:35 PM – 4:20 PM

Aim: To identify patterns of physiotherapy attendance and the factors associated with these patterns in Australians with accepted workers' compensation claims for low back pain.

Design: A retrospective cohort study.

Method: We used trajectory modelling to group workers by their monthly physiotherapy attendance in the first two years since workers' compensation claim acceptance. We used descriptive statistics and logistic regression to compare the characteristics of each trajectory group and the number of physiotherapy encounters.

Results: 79.0% of the sample (N=22,768) attended physiotherapy at least once in the first two years since claim acceptance. Trajectory modelling identified four distinct patterns of physiotherapy attendance. Most had a short-term low-volume pattern (N=11,807, 51.9%), 26.8% (n=6,091) had a short-term high-volume pattern, 14.3% (n=3,255) had a long-term low-volume pattern and 7.1% (n=1,615) had a long-term high-volume pattern. Those in the long-term high-volume group attended physiotherapy a median of 100 times. Workers from the state of Queensland were significantly more likely to receive any physiotherapy compared to none. Workers from Victoria were significantly more likely to be in one of the two long-term groups.

Conclusion: A small but significant proportion of compensated Australian workers with low back pain attend physiotherapy long-term, accumulating a substantial total number of services. Physiotherapy attendance may be driven by workers' compensation funding, clinician revenue seeking and patient preferences.

- Most Australians with a workers' compensation claim for low back pain attend physiotherapy relatively few times
- A small but significant portion of workers attend physiotherapy frequently and long-term



## Sex-specific differences in fit between two different types of body armour: a pilot study

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Occupational Health 8, P 7, October 6, 2023, 3:35 PM - 4:20 PM

Aim: to assess sex-specific differences in wearability and comfort when wearing body armour.

Design: A randomized counter-balanced study.

Method: Ten participants (females n = 6, mean height =  $167.97 \pm 3.67$  cm, mean mass =  $65.30 \pm 10.57$  kg: males n = 4, mean height =  $82.15 \pm 6.98$  cm, mean weight =  $85.55 \pm 9.96$  kg) were included following eligibility criteria and assessed against occupational tasks for which they gave subjective feedback when wearing a law enforcement (2.1 kg) and military (6.4 kg) body armour system. Subjective feedback was provided on mannequin sketches and compared between sexes and body armour types. Bond University Human Research Ethics Committee provided ethics approval (RO15803).

Results: Greater negative feedback was received, subjectively, from both sexes regarding the military body armour. Female participants recorded areas of most discomfort to include the neck, shoulder, chest, and hip, whilst males recorded areas to be the neck, shoulder, and abdomen. Females reported greater subjective concerns than males regarding body armour fit.

Conclusion: With levels of discomfort associated with injury in police officers wearing body armour, the comfort and fit of body armour and differences between sexes must be considered. These differences require consideration when returning injured officers back to work, especially following brachial plexus palsy and meralgia paresthetica injuries.

**Key Practice Points:** 

• Understanding sites of, and gaining injured officer insights using, subjective ratings of discomfort when wearing body armour can inform return-to-work practices for police officers following injury.



# Work-related outcomes in individuals with and without lower limb osteoarthritis: an online survey

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Occupational Health 8, P 7, October 6, 2023, 3:35 PM - 4:20 PM

Aim: To compare work-related outcomes (e.g., work ability, absenteeism, productivity loss and difficulty in meeting work demands) in workers with and without lower limb osteoarthritis.

Design: A cross-sectional case–control online survey was conducted between May 2020 and February 2022.

Method: The sample included 124 workers with lower limb osteoarthritis and 106 healthy workers. Different outcome measures were used – Work Ability Index, World Health Organization's Health and Work Performance Questionnaire, and Work Role Functioning Questionnaire. The data were analyzed using an analysis of covariance with age, BMI and physical job demands included as covariates.

Results: workers with lower limb osteoarthritis had poorer work ability (p < 0.001), and a higher loss of work performance (p < 0.001) than healthy workers. There was no statistical difference in absenteeism and the overall of worker's ability to meet work demands between the two groups. However, workers with lower limb osteoarthritis had more difficulty with work scheduling demands (p=0.05) and physical demands (p=0.003) than healthy workers.

Conclusion: Lower limb osteoarthritis was associated with reduced work ability, lost performance, and difficulty in meeting physical work demands and work scheduling commitments. Health professionals and employers should consider these challenges when managing patients with lower limb osteoarthritis and supporting them to remain in the workforce.

- Workers with lower limb osteoarthritis have poorer work-related outcomes than healthy workers.
- Physical work demands increased the limitations at work among workers with osteoarthritis.
- Health professionals should include conversations about any difficulties experienced at work.



# How to add value and facilitate change when communicating with case managers in workers compensation setting?

#### Patel R<sup>1</sup>

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Occupational Health 10, P 3 & 4, October 7, 2023, 11:40 AM – 12:40 PM

Background: Communication amongst stakeholders in the workers compensation setting has long been identified as a vital factor in creating a timely and effective recovery and return to work. Physiotherapists play a key role in a worker's recovery from injury and their return to function. Hence, a disciplined, timely and efficient communication process is warranted in clinical practice with all stakeholders, nonetheless with the case managers, who often hold the responsibility of a coordinator, facilitator and, an important decision maker.

Objective: To improve participants' communication skills when liaising with case managers and claims agents. Participants will gain an understanding of the specific nature and extent of ethical information sharing with case managers. This may stimulate a behavior change in this key stakeholder, whose proactive and responsible actions can make a crucial impact in a person's recovery and return to work.

Approach: With use of Power Point slides, the presenter will decipher the information commonly sought by claims agents. Presenter will demonstrate written and verbal communication methods that can facilitate the biopsychosocial model of recovery, impact on major treatment decisions and steer the 'return to work' planning. This will be undertaken through two short case studies from my experience in the workers compensation insurance set-up.

Key Practice Points:

Participants will learn:

- The significant importance of their communication with their client's case manager
- How to make clear, adequate and timely written and verbal communication with the case manager



# Acute hip fracture rehabilitation delivered by allied health assistants is feasible and adheres to hip fracture 285obilization guidelines

**Snowdon D**<sup>1,2,3</sup>, Vincent P<sup>3</sup>, Callisaya M<sup>1,2</sup>, Collyer T<sup>1,2</sup>, Wang Y<sup>3</sup>, Brusco N<sup>1</sup>, Taylor N<sup>4,5</sup> <sup>1</sup>Monash University, <sup>2</sup>National Centre for Healthy Ageing, <sup>3</sup>Peninsula Health, <sup>4</sup>La Trobe University, <sup>5</sup>Eastern Health

Orthopaedic 1, P 10, October 5, 2023, 11:05 AM - 11:50 AM

Aim: To determine feasibility of allied health assistant (AHA) rehabilitation of people with hip fracture in the acute hospital setting and provide an estimate of effect on guideline adherence and length of hospital stay, compared to physiotherapist delivered rehabilitation.

Design: Assessor-blind, parallel feasibility randomised controlled trial.

Method: People with hip fracture who had undergone surgery were randomised to receive rehabilitation from either a physiotherapist or AHA overseen by a physiotherapist. Feasibility was evaluated according to Bowen's framework focus areas: demand, acceptability, practicality and implementation. Feasibility and length of stay were analysed using descriptive statistics and t-tests. Adherence to guidelines was analysed using Cox proportional hazards regression.

Results: Fifty people were allocated to AHA (n=25) or physiotherapy (n=25). AHA rehabilitation had high demand (49% of eligible participants recruited), acceptability (participant satisfaction comparable with physiotherapy rehabilitation) and practicality (no difference in adverse events between groups). AHA participants received an average of 11 minutes (95%CI 4 to 19) more therapy per day than physiotherapy participants (i.e. successful implementation). The AHA group were 20% (95%CI 1% to 28%) more likely to mobilise on any day and may have had a shorter length of stay (mean difference -0.8 days, 95%CI -2.3 to 0.7).

Conclusion: AHA rehabilitation of people with hip fracture was feasible. A larger study is required to confirm whether AHA rehabilitation can improve adherence to hip fracture mobilisation guidelines and reduce health service costs and length of stay.

Key Practice Points:

• Physiotherapists can delegate post-operative rehabilitation of people with hip fracture to AHAs.



# Can a new ward environment and intensive allied health staffing model enhance therapeutic opportunities in trauma care?

**<u>Ekegren</u>** C<sup>1</sup>, Mather A<sup>1</sup>, Reeder S<sup>1</sup>, Kimmel L<sup>1</sup>, Ashe M<sup>2</sup>, Gabbe B<sup>1</sup> <sup>1</sup>Monash University, <sup>2</sup>University of British Columbia

Orthopaedic 1, P 10, October 5, 2023, 11:05 AM - 11:50 AM

Aim: To assess changes in patient behaviour observed in response to a new trauma ward at a level 1 trauma centre, and subsequently, a new allied health staffing model.

Design: Quasi-experimental study

Method: Behavioural mapping of hospitalised trauma patients' locations, activities and interactions was conducted by two observers over three four-day observation phases: i) at baseline, ii) on the new ward, and iii) with the new staffing model. Changes in patient behaviour were assessed via negative binomial regression models and reported as incident rate ratios (IRRs).

Results: In total, 1264 patient observations were recorded over an 18-month period. After moving to the new ward, patients were observed performing activities of daily living significantly more than at baseline (IRR [95% CI]: 2.12 [1.18, 3.81]) but walking/standing/climbing stairs significantly less (0.46 [0.22, 0.94]). Subsequent to the new staffing model, patients were observed outside their rooms (1.79 [1.08, 2.97]), in the gym (4.07 [1.60, 10.32]) and interacting with allied health professionals (9.10 [4.88, 16.98]), significantly more than at baseline. After COVID-19 restrictions were introduced, patients were observed lying down more (1.22 [1.04, 1.43]), with fewer visitor interactions (0.27 [0.17, 0.43]).

Conclusion: Significant changes in patient behaviour were observed following implementation of the new allied health staffing model, including greater engagement in physical and social activities.

- Greater allied health input led to greater engagement in physical and social activities for hospitalised trauma patients
- COVID-19 restrictions on hospital wards may necessitate more independent therapy practice to maintain activity levels



### A virtual clinic for spine fractures - a safe alternative model of care

<u>**Cross E**</u><sup>1</sup>, Cavka B<sup>1</sup>, Kong E<sup>1</sup>, Turner P<sup>1</sup>, Yang Y<sup>1</sup>, Cunningham J<sup>1</sup>, Ambikaipalan A<sup>1</sup>, Bucknill A<sup>1,2</sup> <sup>1</sup>The Royal Melbourne Hospital, <sup>2</sup>Department of surgery, University of Melbourne

Orthopaedic 1, P 10, October 5, 2023, 11:05 AM - 11:50 AM

Aim: To assess the feasibility and safety of a spine virtual fracture clinic (SVFC) in a level 1 trauma centre.

Design: A retrospective cohort study.

Method: SVFC, established July 2022, accepted patients for orthopaedic management of low-risk acute spine fractures without neurological symptoms. An orthopaedic consultant reviewed clinical details and imaging. An Advanced Practice Physiotherapist (APP) communicated the management to the patient by telephone i.e. bracing or collars, education and advice, and repeat imaging plan. Key outcomes of the novel service: proportion of referrals diverted from the outpatient clinic; number of patients who failed management; number lost to follow up; and unplanned operations. Data were extracted from existing hospital databases.

Results: 320 referrals were received during the 7-month intervention period; 63% of patients were managed and discharged. Overall participants lived an average 106 kilometres from RMH; 62% were male. Eighteen (6%) required in-person assessment and 5(2%) were managed at another facility. Sixteen (5%) could not be contacted. Seventy-two (23%) patients were still receiving care at the end of the study period; two patients (0.6%) required operations. Five participants died of other causes (<2%). Overall, there were no adverse events using the virtual approach to clinical care.

Conclusion: The SVFC is a safe, alternative model of care for patients with low-risk spine fractures.

- SVFC was a safe alternative for low-risk spinal fracture.
- SVFC provided a novel role for APP MSK physiotherapists.
- SVFC reduced the hospital outpatient clinic burden and negated the need for patient travel.



### The Melbourne e-scooter trial – how safe are they wheelie?

**<u>Cross</u> E**<sup>1</sup>, Treseder T<sup>1</sup>, Gibb K<sup>1</sup>, Shepherd L<sup>1</sup>, Cavka B<sup>1</sup>, Bucknill A<sup>1,2</sup> <sup>1</sup>The Royal Melbourne Hospital, <sup>2</sup>Department of Surgery, University of Melbourne

Orthopaedic 1, P 10, October 5, 2023, 11:05 AM - 11:50 AM

Aim: To determine the number and nature of e-scooter related injuries referred from The Royal Melbourne Hospital emergency department (ED) to the orthopaedic unit over 12 months.

Design: Single site retrospective data audit.

Method: Data was extracted from existing hospital databases between 01/02/22 and 01/02/23. Dates were selected to align with the Melbourne e-scooter trial. Referrals of interest were to the orthopaedic unit and contained the key word 'e-scooter.' Patient files were reviewed manually to extract injury type, management and duration of care.

Results: Public records reported 2,712,300 rides on shared e-scooters during the audit period. The unit received >8000 referrals from ED, 93 documented e-scooter use. Average age was 31 years (range 15-72), 78 (84%) were male. Eighty-eight (95%) patients were e-scooter riders, five (5%) were pedestrians. Rider helmet use was confirmed in 14 cases, documented 'not worn' in 11 cases and the remaining 63 not specified. The most common injuries were: isolated upper limb fracture (n=37), isolated lower limb fracture (n=16); and soft tissue injury (n=13). Other injury categories were: multi trauma (n=11); joint (n=6); spine (n=5); and fracture-dislocation (n=5). The most common management was outpatient clinic (n=38); surgery (n=32) and virtual fracture clinic (n=16).

Conclusion: E-scooter-related injuries requiring orthopaedic management were a low proportion of all referrals to the unit, but commonly required surgery.

- E-scooter related orthopaedic injuries requiring hospital treatment are minimal and represent a small proportion of overall caseload
- Surgical management was required in more than one third of cases



### The knee arthroplasty physiotherapy pathways (KAPPA) trial

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Orthopaedic 3, P 3 & 4, October 5, 2023, 1:40 PM - 2:25 PM

Aim: To determine if supervised-physiotherapy benefits those individuals with suboptimal outcomes at twoweeks following total knee replacement (TKR) surgery.

Design: Non-randomised quasi-experimental trial.

Methods: Fifty patients scheduled for TKR surgery were initially allocated to a self-directed exercise protocol for their post-operative rehabilitation. Demographics, along with functional and self-reported outcomes, were assessed pre-operatively and at two, six- and sixteen-weeks following surgery. At the two-week assessment, patients were referred to the supervised-physiotherapy group if their 1) knee extension range of motion (ROM) was lacking by more than ten degrees, 2) knee flexion ROM was less than ninety degrees, or 3) they were dissatisfied with the progress of their rehabilitation. Subsequent assessment of these variables, along with the number of supervised-physiotherapy sessions attended, were recorded at six and sixteen weeks.

Results: At two-weeks 23 participants met the criteria for referral to supervised-physiotherapy and 27 continued with self-directed exercises. There were no differences between the groups pre-operatively with respect to demographics or functional outcomes. At two-weeks there were differences seen across all outcomes between the two groups, however, at sixteen-weeks, after four supervised-physiotherapy sessions, there were no longer any significant differences between the groups for any outcome.

Conclusion: The results of the KAPPA trial support supervised-physiotherapy for those individuals identified at two-weeks as having suboptimal knee range of motion or dissatisfaction following TKR surgery.

- Early referral to supervised-physiotherapy benefits patients who have poor knee range of motion.
- A self-directed exercise protocol is feasible for some patients following TKR surgery.



# Which patient factors best predict discharge destination after primary total knee arthroplasty? The ARISE Trial

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Orthopaedic 4, P 3 & 4, October 5, 2023, 2:30 PM - 3:15 PM

Aim: To further explore patient beliefs around expectations for discharge destination, a pre-operative questionnaire, the ARISE (Arthroplasty Rehabilitation Initial Screening Evaluation) tool was developed. The ARISE tool is comprised of functional, social and psychological domains to determine their predictivity of discharge destination following total knee replacement (TKR) surgery.

Design: Prospective cohort trial

Methods: One hundred patients scheduled for TKR surgery completed the ARISE questionnaire and discharge destination was used as the primary outcome. Individual questions and their respective domains were first assessed using linear regression, factors that were significant in the univariable model were included in multivariable analysis to determine the combination of factors that most predicted inpatient rehabilitation discharge.

Results: After multivariable regression, the domain which contained three questions around beliefs about rehabilitation showed a 9.9 times greater likelihood of discharge to inpatient rehabilitation. Not having someone to help at home also made inpatient rehabilitation discharge 6.3 times more likely. The only baseline characteristic that was predictive of inpatient rehabilitation discharge was an age greater than seventy-five years. The final model demonstrated 84% correct predictivity.

Conclusion: The ARISE trial demonstrated that patient beliefs about inpatient rehabilitation are highly predictive of discharge destination. Questions on physical function were not predictive.

- Patient beliefs about rehabilitation are more predictive of discharge destination than pre-operative function after total knee arthroplasty surgery.
- Pre-operative interventions to increase the likelihood of home discharge after total knee arthroplasty should take into account the patient's beliefs about rehabilitation settings.



### Discharge destination and long-term outcomes in patients with two or more non-weightbearing limbs receiving intensive allied health therapy

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Orthopaedic 7, P 7, October 6, 2023, 2:15 PM - 3:00 PM

Aim: To evaluate inpatient rehabilitation admission rates and long-term outcomes of patients with two or more non-weightbearing limbs following trauma.

Design: Retrospective observational cohort study.

Method: Patient demographics, hospital and long-term outcomes were collected for patients undergoing intensive therapy admitted to The Alfred trauma ward with two or more non-weightbearing limbs between November 2020 - August 2021. Multi-variable regression analysis was performed to determine factors associated with discharge to inpatient rehabilitation and residence at 6 and 12 months.

Results: Ninety-one patients had two or more non-weightbearing limbs. More than half (51%) of patients with two or more non-weightbearing limbs were discharged home. Patients who were admitted to intensive care were more likely to be discharged to inpatient rehabilitation (Adjusted OR=3.73). Patients who were discharged home reported better levels of mobility, pain & activity than those who were discharged to inpatient rehabilitation. There was no difference in anxiety or disability at 6 or 12 months between groups. There was no association with age, funding status or injury severity on residence at 6 and 12 months.

Conclusion: Admission to intensive care is the only factor associated with discharge to inpatient rehabilitation for patients with two or more non-weightbearing limbs following trauma. Patients who discharged directly home from the acute hospital with two or more non-weightbearing limbs may have improved outcomes than those discharged to inpatient rehabilitation.

Key Points:

- Admission to intensive care is associated with discharge to inpatient rehabilitation.
- Patients discharged home may have improved outcomes compared to inpatient rehabilitation.



### Joint replacement may be a valuable treatment for Aboriginal and Torres Strait Islander people with osteoarthritis, but uptake is low

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Orthopaedic 7, P 7, October 6, 2023, 2:15 PM – 3:00 PM

Aim: To examine disparities in access, utilization and surgical outcomes associated with total joint replacement in Aboriginal and Torres Strait Islander people.

Design: Registry-based retrospective cohort study.

Method: We conducted a retrospective cohort study comparing sociodemographic and clinical characteristics of all Aboriginal and Torres Strait Islander and non-Aboriginal patients who underwent primary hip and knee replacement at St Vincent's Hospital Melbourne between 1996-2019.

Results: A total of 10,277 total knee or hip replacements were performed in the 1996-2019 study period, of which 49 (0.5%) patients identified as either Aboriginal and/or Torres Strait Islander. Aboriginal and Torres Strait Islander patients were younger (61.7±11.8 vs 68.3±10.3 years; p<0.001), recorded higher Body Mass Index scores (median [IQR], 36.0 [29.5-41.4] vs 30.8 [27.0-35.3]; p<0.001) and were more likely to experience multiple co-morbidities at the time of surgery. Despite these findings, Aboriginal and Torres Strait Islander patients did not experience higher complication rates and experienced comparable, clinically meaningful quality of life improvements 12-months post-surgery.

Conclusions: Total joint replacement appears to be a valuable treatment option for Aboriginal and Torres Strait Islander people with end-stage osteoarthritis. Our study was limited by the small number of procedures conducted in patients who identify as Aboriginal and Torres Strait Islander. Further research is needed to understand why uptake of total joint replacement by Aboriginal and Torres Strait Islander people is low.

Key Practice Points:

 Physiotherapists play a role in surgical decision making. Understanding the value of joint replacement within the Aboriginal population can inform evidence-based shared decision making.



# Shoulder pre-operative exercise and education (SPrEE) program for patients awaiting rotator cuff surgery: a randomised controlled trial

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Orthopaedic 7, P 7, October 6, 2023, 2:15 PM – 3:00 PM

Aim: To evaluate whether the addition of a shoulder pre-operative exercise and education (SprEE) program to usual care (UC) will enhance function and quality-of-life (QoL) outcomes before and after rotator cuff repair (RCR).

Design: Randomised controlled trial

Method: Fifty subjects awaiting RCR were randomly allocated to an 8-week SprEE program or UC. Primary outcome measures included the Shoulder Pain and Disability Index (SPADI), Western Ontario Rotator Cuff Index (WORC) and Short-Form 36 (SF-36). Secondary outcomes included changes in the Depression Anxiety Stress Scale (DASS), Hospital for Special Surgery (HSS) Shoulder Surgery Expectations, and Global Perceived Effect (GPE). Data was collected at baseline, after intervention and post-operatively at 3, 6 and 12 months.

Results: The SprEE program was more effective than UC alone in the pre-operative phase for improving primary outcomes of SPADI (95% CI 4.45 to 19.47, p = .002), WORC (95%CI 0.94 to 15.77, p = 0.02), and SF-36 (95%CI -10.79 to -1.47, p = 0.01). For secondary outcomes, SprEE was more effective for GPE, Depression, and Anxiety. SprEE was not more effective than UC alone in improving primary outcomes at 3, 6, or 12-months.

Conclusion: A period of exercise and education is more effective than UC in the pre-operative period, but no differences were detected at 3, 6, or 12 months.

- Prehabilitation, like SprEE, can enhance function and QoL for patients awaiting RCR.
- The benefits of prehabilitation following surgery remain uncertain
- Prehabilitation may potentially reduce the likelihood of surgery



## Walking self-confidence is associated with meeting recommended physical activity levels after hip fracture: a cross-sectional study

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Orthopaedic 7, P 7, October 6, 2023, 2:15 PM - 3:00 PM

Aim: We explored whether psychological factors are associated with meeting recommended physical activity levels in people after hip fracture.

Design: Cross-sectional observational study comprising adults ≥65 years living in community after hip fracture.

Method: Physical activity was measured via accelerometry and expressed as daily steps. Independent variables were: Ambulatory Self-Confidence Questionnaire; Modified Falls Self-Efficacy Scale; Depression Anxiety and Stress Scale (DASS-21); Charlson Co-Morbidity Index; previous gait aid use; nutritional status; age; and gender. Multiple ordinal regression analysis determined factors associated with meeting two physical activity thresholds associated with positive health outcomes for older people (4400 and 7100 daily steps).

Results: Of 216 adults (70% female, mean age 79 (SD 7) years, mean time after fracture 89 (SD 40) days), 43 (20%) met lower threshold of 4400 daily steps and 30 (14%) met upper threshold of 7100 daily steps. Ambulatory confidence was positively associated with meeting activity thresholds (OR 1.32, 95%CI 1.11 to 1.57). Age (OR 0.93, 95%CI 0.89 to 0.98), anxiety score (OR 0.81, 95%CI 0.69 to 0.94) and co-morbidity index (OR 0.52, 95%CI 0.36 to 0.72) were negatively associated with meeting activity thresholds.

Conclusion: After hip fracture walking self-confidence is associated with meeting recommended physical activity levels.

- Potentially modifiable psychological factors of walking self-confidence and anxiety are associated with meeting recommended physical activity levels after hip fracture
- One in seven older people living in the community after hip fracture are very physically active, suggesting there is a sub-group who make excellent early mobility recovery



# My PreHab Program – a hospital-initiated, community-based digital prehabilitation program

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Orthopaedic 7, P 7, October 6, 2023, 2:15 PM – 3:00 PM

Aim: To determine the feasibility, acceptability, and appropriateness of a hospital-initiated, communitybased global prehabilitation program for patients referred for elective orthopaedic hip and knee joint replacement surgery.

Design: Hybrid effectiveness-implementation.

Method: Adults referred to two tertiary hospitals at clinical triage were invited to register by text message and use the My PreHab Program digital pathway, created using Personify Care. The My Prehab Program contained a structured health questionnaire to identify modifiable risk factors, targeted evidence-based health information and resources (eg. Exercise, pain, weight management and mental wellbeing) and scheduled check-ins to follow-up progress. Data were prospectively collected from July 1 2022 – Feb 28 2023.

Results: 77% of 451 invitees registered and 98% completed the health questionnaire. All had modifiable risk factors and 90% reviewed at least one targeted health information activity. High body mass index (BMI) and chronic pain (80%) were highly prevalent, with 55% classified as obese (BMI>30). Socioeconomic disadvantage and residing in rural areas did not impact participation. Participants evaluated the program as feasible (3.4/5), appropriate (3.3/5) and acceptable (3.2/5).

Conclusion: This novel digital program has been successfully implemented at two tertiary hospitals. It facilitates the timely provision of targeted evidence-based information for hip or knee joint replacement candidates, enabling the opportunity for optimal optimization and potential avoidance of unnecessary surgery. Surgical outcome data are not yet available.

- High activation and engagement despite no prior contact with hospitals
- Wide-spread communication of health advice and how to access community-based in-person and online programs



# Measuring participation in sports and physical recreation for people with disabilities: a systematic review

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Paediatric 1, M 3, October 5, 2023, 11:05 AM - 11:50 AM

Aim: Examine psychometric evidence for assessments of participation in sport/physical recreation for people with disabilities.

Design: Systematic review

Method: Four databases were searched for population (people with disabilities), focus (sport/physical recreation participation), and psychometric evidence. Papers were included if they included a participation assessment (attendance or involvement) with ≥20% items (full test or subscale) specific to sport/physical recreation and had original psychometric data for people with disabilities. Quality and strength of evidence was evaluated with COSMIN and GRADE.

Results: Ten assessments (65 papers) met criteria. Assessments of attendance (n=7) included Children's Assessment of Participation and Enjoyment (CAPE), Paediatric and pre-school Activity Card Sorts (PACS, Pre-ACS), Activity Card Sort (ACS), Activity Card Sort for Australian Adults (ACS-Aus) Children's Leisure Assessment Scale (CLASS) and Leisure Assessment Inventory (LAI). Assessments of involvement (n=4) included CAPE's enjoyment subscale, Measure of Experiential Aspects of Participation (MEAP), Self-reported Experiences of Activity Settings (SEAS) and Pittsburgh Rehabilitation Participation Scale (PRPS). No assessment had >31% sport/physical recreation items.

MEAP and PRPS had strong evidence for validity and reliability. CAPE had strong validity, conflicting reliability and strong evidence against responsiveness. SEAS, pre-ACS, PACS, LAI and CLASS had strong validity but inadequate reliability.

Conclusions: No assessment adequately assessed participation in sport/physical recreation. New assessments should be developed and tested in people with disabilities.

- Current assessments do not adequately measure participation in sport/physical recreation.
- Flexible measures such as the Goal Attainment Scale or Canadian Occupational Performance Measure may be alternatives to measure participation in sport/physical recreation.



# Ability of early parent-reported questionnaires and clinical assessments to explain motor performance of extremely preterm infants at two years

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Paediatric 3A, P 10, October 5, 2023, 1:40 PM - 2:25 PM

Aim: Increased survival of extremely preterm (EPT) infants necessitates population-based screening to identify children at-risk of later motor difficulties. We aimed to determine whether 2-year-old motor performance was best explained by parent questionnaire or clinical assessments throughout infancy.

Design: Prospective longitudinal cohort (2015-2018)

Method: Participants were EPT infants (n=191, 60.2%male, mean[SD] gestational age 26.83[1.83]weeks). Parents completed the Ages and Stages Questionnaire (ASQ-3; 4-, 8- and 12-months). Infants were assessed on the Alberta Infant Motor Scale (AIMS; 4-, 8-, 12-months), Neuro-Sensory Motor Developmental Assessment (NSMDA; 4-, 8-, 12-months, 2-years) and Bayley Scale of Infant and Toddler Development (Bayley-III; 2-years). Friedman's tests were used to assess infant performance stability. Multiple linear regressions were used to identify assessments best explaining 2-year-old performance.

Results: Motor performance was substantially (AIMS 76.95% agreement) to highly (ASQ-3 88.68%, NSMDA 82.03%) stable throughout infancy. Using single time-point analysis, 2-year NSMDA performance was best explained by 12-month AIMS and NSMDA scores and socioeconomic status; 2-year Bayley-III score was best explained by 4-month NSMDA scores, gestational age, size for gestational age and socioeconomic status. Using multiple time-point analysis, 2-year Bayley-III and NSMDA scores were best explained by 8-month NSMDA and 12-month AIMS scores.

Conclusions: Motor performance of EPT infants is substantially-highly stable during infancy. Two-year-old motor performance is better explained by NSMDA and/or AIMS scores than ASQ-3 scores.

- Follow-up should be provided at regular intervals (4-, 8- and 12-months).
- Clinical assessment is superior to parent questionnaire in identifying infants with motor difficulties that may persist into childhood.



### Ultra-early parent-administered physiotherapy to improve motor outcomes in infants at high-risk of cerebral palsy or motor delay (randomised controlled trial)

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Paediatric 3A, P 10, October 5, 2023, 1:40 PM – 2:25 PM

Aim: Does parent-administered physiotherapy delivered to preterm/term infants at high-risk of cerebral palsy (CP) or motor delay commencing in the neonatal intensive care unit (NICU) improve motor outcomes at 16 weeks corrected age (CA) compared to usual care?

Design: Single-blind randomized controlled feasibility trial.

Method: Infants meeting study criteria were enrolled (34 weeks post menstrual age (PMA) to 16 weeks CA) in experimental care versus usual care physiotherapy. The primary outcome was the Alberta Infant Motor Scale (AIMS) total score at 16 weeks CA. Secondary outcomes measures were (i) Depression Anxiety and Stress Score (DASS-21) and Parents Perceptions Survey at 16 weeks CA; and (ii) Bayley Scales of Infant Development version 4 (BSID4) at 12 months CA.

Results: All 30 infants enrolled received the allocated intervention until 16 weeks CA. There were no between-group differences at 16 weeks CA for the AIMS score (- 0.2, 95%CI -2.4 to 2.0) or DASS-21 results; or at 12 months CA for BSID4 gross motor domain (-1.1, 95%CI -3.5 to 1.3). However, the parents' "perception of treatment effectiveness" (2.1, 95%CI 0.5 to 3.7) and "perception of change" (1.8, 95%CI 0.6 to 3.1) were significantly in favour of the experimental group.

Conclusion: It is unclear whether the insignificant motor outcomes are the result of the treatment, the measure's psychometric properties or broad homogeneity of inclusion criteria.

- Ultra-early intervention from 34 weeks PMA is feasible and safe to deliver.
- Parents perceived that infant physiotherapy was effective, not burdensome and beneficial.



### PreEMPT (Preterm infant Early intervention for Movement and Participation Trial): using video coding to evaluate content fidelity

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Paediatric 3A, P 10, October 5, 2023, 1:40 PM - 2:25 PM

Aim: Evaluate content fidelity of PreEMPT, a novel, early, participation-grounded physiotherapy intervention for preterm infants, compared to usual physiotherapy care (UPC).

Design: Treatment fidelity examination

Methods: Thirty-eight session videos of PreEMPT (n=33) and UPC (n=5) were rated by two experienced therapists not involved in study intervention. Videos were coded in one-minute epochs for two aspects: 'what' happened (Therapeutic Content) and 'how' (Therapeutic Behaviours). Fidelity was evaluated across five dimensions: Dosage; Adherence; Program Differentiation; and Participant responsiveness/engagement.

Results: (1) Dosage: there was no difference in mean duration of PreEMPT versus UPC sessions (95%CI: -4.9 to 20.5). (2) Adherence to Essential-PreEMPT items was rated good to very good across sessions. (3) Program Differentiation of PreEMPT versus UPC was evident in Therapeutic Content for goal setting and intervention; and Therapeutic Behaviours such as active listening and open-ended questions. (4) Parental engagement was higher in PreEMPT versus UPC sessions across all three domains (Affective: PreEMPT mean(SD)=17.7(2.3), UPC=9.6(2.5), p=<0.001; Behavioural: PreEMPT=7.2(1.1), UPC=3.4(1.5), p=<0.001; Cognitive: PreEMPT=10.8(1.4), UPC=6.2(1.6), p=<0.001).

Conclusion: PreEMPT is a novel, participation-grounded, early physiotherapy intervention for preterm-born infants. Fidelity examination shows greater use of positive Therapeutic Behaviours and higher Parental Engagement than UPC.

- Early intervention for preterm infants should support the infant/parent dyad.
- PreEMPT intervention shows greater use of positive Therapeutic Behaviours and higher Parental Engagement across Affective, Behavioural and Cognitive domains than UPC.
- Future research could explore the relationship between therapeutic behaviours, parental engagement and confidence and infant motor and participation outcomes.



# Impact of generalised joint hypermobility and musculoskeletal pain on motor function, activity levels and quality of life in children

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Paediatric 3B, P 6, October 5, 2023, 1:40 PM - 2:25 PM

Aim: To evaluate the impact of Generalised Joint Hypermobility (GJH) and pain on motor function, activity levels and quality of life (QoL).

Design: Cross-sectional design

Method: Forty-one children (6-12 years) were assessed via telehealth using the Beighton Score, Upper Limb Hypermobility Assessment, Lower Limb Assessment, Paediatric Pain Questionnaire, Bruininks-Oseretsky Test-Short Form, Moderate Vigorous Physical Activity and Pediatric Quality of Life Inventory. Multiple regression was performed to determine greatest contributors to motor function, MVPA and QoL.

Results: Greater hypermobility impacted motor function, MVPA and QoL less than higher pain. Strongmoderate correlations were observed between: higher pain and lower motor function (p<0.05) higher pain and lower QoL (p<0.003); and lower motor function with lower QoL (p<0.001). Moderate correlations were observed between: higher hypermobility and lower QoL, (p<0.05); lower motor function and lower MVPA (p<0.001); and lower MVPA with lower QoL (p<0.03). When present, pain was more common in lower than upper limbs; hypermobility was mild-moderate.

Conclusion: Pain has a greater impact on motor function, physical activity and QoL in children than higher hypermobility does. Clinical assessment for children with GJH should include separate evaluation of hypermobility and pain, as well as QoL, motor function and fatigue.

- •As pain has a greater impact on function in children with GJH compared to children without GJH, clinicians need to assess and treat hypermobility and pain separately.
- •With assessment of children with GJH and pain, clinicians need to consider not only hypermobility and pain, but include QoL, motor function and fatigue when indicated.



# Hand impairment and function in children and adolescents with heritable disorders of connective tissue who exhibit symptomatic joint hypermobility

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Paediatric 3B, P 6, October 5, 2023, 1:40 PM - 2:25 PM

Aim: To describe hand impairment and function and determine the extent to which these explain the variation in functional performance.

Design: Cross-sectional observational study.

Method: Children and adolescents 8–17 years with Hereditable Disorders of Connective Tissues (HDCTs) were recruited (n = 73). Hand function outcomes included grip and thumb strength, manipulation and dexterity (Functional Dexterity Test, Nine-Hole Peg Test), and fine motor skills (Bruininks–Oseretsky Test of Motor Proficiency, BOT-2). Upper limb hypermobility was assessed using the Upper Limb Hypermobility Assessment Tool and functional performance using the Childhood Health Assessment Questionnaire. Hand pain and fatigue were recorded for a timed button test and 3- and 9-min handwriting tasks.

Results: All hand function measures scored below expected norms, with only tip and lateral pinch, fine motor precision and integration (BOT-2), timed button test and 3- and 9-min handwriting tasks reaching significance (p < .05). Pain and fatigue were worse after the writing tasks (p < .001), but not the button test (p = .40). Variation in functional performance was explained by grip strength (6%) and upper limb hypermobility and dexterity (16%).

Conclusion: Young people with HDCTs have poorer hand function, likely attributed to poor grip and hand strength, and hand pain and fatigue.

- Children and adolescents with HDCTs have difficulty with hand function that affect their participation in daily activities.
- Comprehensive upper limb evaluation of daily activities, performance skills, and symptoms, especially during the school years may be warranted to inform timely intervention.



# Outcomes of a custom-made orthotic intervention for children and adolescents with symptomatic joint hypermobility

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Paediatric 3B, P 6, October 5, 2023, 1:40 PM - 2:25 PM

Aim: To describe outcomes of custom-made foot orthotics on pain, fatigue and function of children with symptomatic joint hypermobility.

Design Cohort study

Methods Fifty-two children (median age 10 years, 35 females, mean Beighton score 7/9) with lower limb pain were fitted with custom-made orthotics. Assessments of pain (visual analogue scale (VAS /10)), function (six-minute walk test (6MWT)) and fatigue (Pediatric quality of life inventory (PedsQL-MFS /100)), occurred at baseline, 1 and 3 months post fitting. A mixed effects model, assessed differences in outcomes over time. Adverse events were recorded.

Results Statistically and clinically significant improvement between one month and baseline were seen in pain and fatigue (mean difference (95% CI): VAS -2.7 (-3.3 - -2.1), PedsQL-MFS 13 (8.7 – 17), all p <0.001). Between 1 – 3 months there was no significant change in fatigue (p = 0.24) and further pain improvement (mean difference -0.62 95% CI -0.04 - -1.19). 6MWT distance improved from baseline to 1 month (mean difference 27m, 95% CI 18 – 36m, p<0.001), plateauing between 1 to 3 months (mean difference 7m, 95% CI -2 – 16m, p=0.14). 7/52 children (13%) reported minor adverse events (discomfort, skin irritation).

Conclusion A custom-made foot orthotic intervention for children and adolescents with symptomatic joint hypermobility is well tolerated, and demonstrates positive improvements within one month of commencement of wear.

- Pain, fatigue and function improve one month post custom-made orthotic fitting.
- Pain, but not fatigue or function, continues improvements up to 3 months.
- Education on minor adverse events is required.



# Exercise for managing Postural Orthostatic Tachycardia Syndrome in adolescents and young adults with symptomatic joint hypermobility: a scoping review

#### Peebles K<sup>1</sup>

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Paediatric 3B, P 6, October 5, 2023, 1:40 PM - 2:25 PM

Aim: To explore the current literature on exercise-based management for Postural Orthostatic Tachycardia Syndrome (POTS), with a focus on individuals with symptomatic joint hypermobility.

Design: Scoping review.

Methods: A systematic search, to December 2022, of Medline, EMBASE, AMED, CINAHL and the Cochrane library was conducted. Studies that reported on adolescents and adults who had been diagnosed with POTS using standard criteria and underwent an exercise-based training intervention were included.

Results: Following full-text screening, 10 articles were identified (2 randomised control trials, 4 comparative studies and 4 case reports). One comparative study reported a small subset of participants with joint hypermobility; the remainder investigated a wider POTS population. Overall, 3 months of endurance followed by resistance exercise, graduating from the horizontal-to-upright position reduced POTS symptoms and improved quality-of-life.

Conclusions: The findings highlight a paucity of higher-level studies documenting exercise for POTS management in people with symptomatic joint hypermobility. Results from the wider POTS population demonstrate exercise is safe and effective. However, there is a critical need for clinical studies exploring exercise for POTS management adapting to meet the complex musculoskeletal and non-musculoskeletal features of symptomatic joint hypermobility.

- The principle of combining endurance and resistance exercises and graduating from horizontal-toupright activities as tolerated is applicable for individuals with symptomatic joint hypermobility.
- To tailor exercise to this group, exercise should start at lower intensity and progress more slowly. Specific modifications should be guided by the presence and intensity of orthostatic intolerance and other co-morbid conditions including pain and fatigue.



### An intensive splinting intervention to prevent palmar burn scar contracture in young children and parent experiences of implementing intervention

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Paediatric 5, P 9, October 6, 2023, 10:35 AM - 11:20 AM

Aim: To describe outcomes and parent experiences of intensive splinting in young children with palmar burn injury.

Design: Mixed methods with longitudinal outcomes and qualitative interviews.

Method: 75 children aged <5 years were consecutively recruited, 14-60 days post palmar burn. Children received intensive splinting as routine care. Scar, range of motion (ROM), quality of life and developmental outcomes were assessed at 3-6 and 9-18 months post burn. One-to-one interviews with 13 parents were conducted post intervention. Inductive thematic analysis identified themes for triangulation with quantitative data.

Results: Children were splinted 21 hours/day for a mean of 94 days (SD 45) post burn. The mean time to transition to overnight splinting was 158 days (SD 75) and splint cessation was 264 days (SD 97) post burn. Fourteen hands developed early signs of scar contracture: 12 hands had full ROM restored post conservative management, 2 hands progressed to contracture. Hands that developed early signs of contracture had greater healing time (p=0.002) and scar distribution involving first webspace (p=0.002). Two interview themes were identified: impact of splinting is greater on parents than children and parents perceive outcomes to be more important than burden. Parents described importance of routine and therapeutic relationships.

Conclusion: Prophylactic, intensive splinting post palmar burn demonstrated excellent ROM outcomes with burden of care perceived manageable considering outcomes.

- Prophylactic splinting has excellent ROM outcomes post palmar burn.
- Need to monitor burns involving first webspace closely.
- Important to support parents throughout splinting both practically and emotionally.



# The experiences of child survivors of posterior fossa brain tumours and their caregivers in a goal-directed therapeutic exercise program

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Paediatric 5, P 9, October 6, 2023, 10:35 AM - 11:20 AM

Aim: To explore the experiences of participating in a goal-directed exercise intervention among paediatric posterior fossa brain tumours survivors and their caregivers, and to identify features of the program that influenced program adherence and acceptability.

Design: Inductive content analysis of semi-structured interviews.

Method: Posterior fossa brain tumour survivors (n= 9, mean age=  $10.9 \pm 3.8$  years; 77% male) who participated in weekly goal-directed exercise program for 12 weeks, and a parent, completed semistructured interviews to discuss their experience of the program. Interviews were transcribed, imported into NVivo and independently coded by two reviewers. Code and content categories were iteratively discussed and refined.

Results: Five content categories are described: perceived improvements; program duration, frequency, and location; activity selection; connection with the therapist; and technology options. All participants valued the tailored exercise program and described improvements in movement competence. Children and their parents discussed preferring home- and community-based locations and favoured face-to-face delivery. Occasionally participants had difficulty completing the home program due to motivation or time restrictions. Multiple families suggested an interactive digital application would be an effective delivery channel for the supplemental home-based program.

Conclusion: A goal-directed exercise program delivered at home and community-based locations was considered valuable and helpful for improving movement competence in paediatric survivors of posterior fossa brain tumour.

- Participants perceive improvements in movement competence following goal-directed exercise training.
- Home- and community-based exercise settings were convenient for participants.
- An exercise app to supplement the home program may be useful for some children.



## Associations between motor development at 2 years and physical activity at 4-5-years in children born very preterm

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Paediatric 6, Great Hall 4, October 6, 2023, 11:25 AM – 12:10 PM

Aim: To describe the effect of motor impairment at 2 years' corrected age (CA) on physical activity (PA) at 4-5 years' CA in children born very preterm (VP).

Design: Longitudinal cohort study

Method: Infants born <30 weeks' gestation were recruited at birth and assessed at 2 years using the Bayley Scales of Infant and Toddler Development, 3<sup>rd</sup> edition (Bayley-III). Motor impairment was defined as Bayley-III motor composite scores ≤1SD relative to term-born controls. At 4-5 years, PA was measured using a triaxial accelerometer and a parent-completed diary. Linear regression models were used to estimate the effect of motor impairment at 2 years of age on PA at 4-5-years.

Results: 25% (32/130) of 2-year-old children had motor impairment. 88% (75/85) of children failed to meet the Australian 24-hour Movement Guidelines at 4-5-years. Children with motor impairment completed less structured PA per day than children without motor impairment (mean difference [95% CI] 17 minutes [-32, -2]; p=0.026). All 2-year-old children with motor impairment failed to meet the Australian 24-hour Movement Guidelines at 4-5 years.

Conclusion: Motor impairment at 2 years is associated with lower physical activity levels in children born VP at 4-5 years.

- Preschool-aged children born VP with early motor impairment may be more vulnerable to physical inactivity.
- Enhanced PA surveillance in early childhood is important for children born VP, especially those with motor impairment.
- Physiotherapists have a key role in educating families of young children about 24-hour Movement Guidelines and benefits of childhood PA.



# Interventions to improve physical function in cerebral palsy: development of a fidelity measure for clinicians

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Paediatric 7, P 8, October 6, 2023, 2:15 PM - 3:00 PM

Aim: To develop a fidelity measure to support clinicians and organisations implement recommendations from the recently published International Clinical Practice Guidelines for Interventions to Improve Physical Function in Children with Cerebral Palsy.

Design: An action research approach scaffolded the five-step fidelity measure development process and mixed-methods evaluation.

Method: The five-step fidelity development process included (1) reviewing previous measures, (2) analysing intervention components, (3) developing checklist and coding guidelines, (4) obtaining feedback, and (5) piloting the fidelity measure. An action research approach was used to pilot the fidelity measure with a mixed method evaluation (focus groups, interviews, and acceptability questionnaire) investigating clinical feasibility and acceptability.

Results: A fidelity measure consisting of 21 key elements has been developed, and is supported by a guidance document that details the assessment of each element. The 21 elements reflect the guideline recommendations and are measured on a four-point scale, reflecting the quality of demonstration of each element within clinical practice. Evaluation of feasibility and acceptability informed measure refinement for future psychometric testing and implementation.

Conclusion: A fidelity measure regarding interventions to improve function in cerebral palsy can be used to explore how clinician practice aligns with the guidelines, and identify areas for improvement. Future testing of validity and reliability may strengthen the measure.

- The measure can be used in practice by clinicians and supervisors to support the translation of evidence into practice
- The measure is a supportive tool, that details how to demonstrate high-quality implementation of the guidelines



### A feasibility study of 'CanMOVE' to promote positive physical activity behaviours in children and adolescents undergoing acute cancer treatment

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Paediatric 7, P 8, October 6, 2023, 2:15 PM - 3:00 PM

Aim: Assess the feasibility of CanMOVE, a 10-week complex, behaviour change intervention to promote physical activity for children/adolescents undergoing cancer treatment.

Design: An ethically approved feasibility study using a single-group, repeated measures, mixed methods design.

Method: Participants completed CanMOVE, including provision of Fitbit (child/carer) and structured support from a physiotherapist. Feasibility domains demand, acceptability, implementation, practicality, limited efficacy, and integration were evaluated. Data sources included service level data, objective assessment of physical activity, physical function, and health-related quality of life; and qualitative data collected via semi-structured interviews (participants) and focus groups (staff).

Results: Twenty children/adolescents (median age 13yrs, range 5-16) with a mix of cancer diagnoses, 20 parents, and 16 clinicians participated. There was high demand with 95% enrolment rate. CanMOVE was acceptable for participants. All feasibility thresholds set for implementation were met. Under practicality, there were no serious adverse events related to the intervention. Limited efficacy data indicated CanMOVE showed positive estimates of effect in influencing child and adolescent physical activity behaviour, physical function, and quality of life. Positive impacts were also seen in parent and staff attitudes towards physical activity promotion. To improve integration into the clinical setting, it was suggested the duration and scope of CanMOVE could be expanded.

Conclusion: CanMOVE was feasible to implement in a paediatric cancer setting and is appropriate for testing in a large-scale trial.

- CanMOVE shows promise in influencing the physical activity behaviour of children with cancer
- CanMOVE is feasible and appropriate for testing in large-scale trial



### Telehealth-preferred outpatient physiotherapy is equivalent to in-person physiotherapy for children with cystic fibrosis: a randomised controlled non-inferiority trial

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Paediatric 7, P 8, October 6, 2023, 2:15 PM – 3:00 PM Aim: Compare novel telehealth-based outpatient physiotherapy to existing in-person-based physiotherapy for children with cystic fibrosis.

Design: Randomised, controlled, non-inferiority trial.

Method: Participants were 87 children with cystic fibrosis (8-18 years, mean 11.65 years, 54% males) accessing tertiary/quaternary healthcare, utilizatio to 12 months of telehealth-based or in-person-based outpatient physiotherapy. Blinded assessment occurred at baseline, six and 12 months for: health-related quality of life (Cystic Fibrosis Questionnaire Revised (CFQ-R): Physical Functioning, Treatment Burden and Respiratory Symptoms); exercise capacity (Modified Shuttle Test), participation (Children's Assessment of Participation and Enjoyment), parent satisfaction (Measure of Processes of Care) and healthcare utilization. Between-group outcomes were compared using intention-to-treat analysis with a priori inferiority margins. Non-inferiority was assessed using minimal-clinically importance different of proposed outcome measures.

Results: No treatment-by-time interaction was found for any CFQ-R domain (all p > 0.05). Non-inferiority was confirmed for physical functioning (0-6 months: p = 0.837; 0-12 months: p = 0.051) and treatment burden (0-6 months: p = 0.559; 0-12 months: p = 0.275). Between-group differences favoured telehealth-based physiotherapy for physical functioning at both timepoints and treatment burden at 12 months (95%CI -2.38 to 18.49). Secondary outcome comparisons were non-significant at all timepoints.

Conclusion: Telehealth-based outpatient physiotherapy is not inferior to in-person-based outpatient physiotherapy over 12 months for children with cystic fibrosis.

- Telehealth increases access to outpatient physiotherapy for children with cystic fibrosis.
- Telehealth-based and in-person-based physiotherapy are suitable for children with cystic fibrosis.
- Telehealth-based physiotherapy does not reduce quality of life or healthcare satisfaction.



### Are falls in pre-adolescent girls related to balance or adiposity?

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Paediatric 9, P 1, October 7, 2023, 10:35 AM - 11:35 AM

Aim: Falls are common in childhood, but scant research has examined relationships with balance and weight status in children. Thus, the current study aimed to examine associations between falls, balance and adiposity in girls.

Design: Cross-sectional, observational

Method: Forty-seven girls aged 8-10 years were recruited using advertisements/flyers. Parent-proxy reported falls frequency (prior 3 months) was assessed on a 5-point Likert scale. Balance in tandem stance was assessed with eyes open and closed, leading with the dominant and non-dominant feet while standing on an AMTI force platform to evaluate centre of pressure postural sway. Adiposity was assessed using body mass index percentile. Linear regression analysis was applied to examine relationships between adiposity and falls, and postural sway and falls (adjusted for adiposity).

Results: There was a non-significant relationship between body mass index percentile and falls (r = 0.27, p = 0.07). Significant relationships with falls were found for two of the four postural sway outcomes (r  $\ge$  0.40 p  $\le$  0.003, unadjusted/adjusted analyses).

Conclusion: Results suggest that a higher falls frequency in girls may be related to postural instability. Although not supported here, we are hesitant to rule out a relationship between overweight/obesity and falls.

- There is a current evidence-practice gap, with minimal prior research to support the widely held premise that balance is important for falls prevention in children
- This study provides preliminary support for a link between reduced balance and falls in girls, which may be useful for clinicians needing to justify intervention approaches



### What is the contribution of hypotonia to motor activity capacity in schoolaged children?

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Paediatric 9, P 1, October 7, 2023, 10:35 AM - 11:35 AM

Aim: Determine the contribution of hypotonia to motor activity capacity in school-aged children.

Design: Cross-sectional study

Method: Participants included 21 children with mild hypotonia (mean  $9.1 \pm 2.3$  years, 14 male) and 41 with typical tone (mean  $9.7 \pm 1.9$  years, 21 male). Motor activity capacity was assessed using the Bruininks-Oseretsky Test Second Edition (BOT-2) and Timed Up and Go (TUG). Motor activity capacity was examined for explanatory effects of (i) muscle tone (resistance to passive movement, passive range of motion, and shear modulus of rectus femoris, biceps femoris, tibialis anterior and gastrocnemius measured using ultrasound shear wave elastography); (ii) musculoskeletal characteristics (muscle strength dynamometry and BMI); and (iii) personal factors (age, gestational age, sex) using correlation and regression analyses.

Results: Lower muscle tone (higher passive range of motion) was correlated with lower shear modulus for all muscles when examined under stretch (p<0.05). Lower motor activity capacity on TUG time and BOT-2 Bilateral Coordination and Balance subscales was explained by weaker lower limb strength (dynamometry) and higher BMI (p<0.01). Lower capacity on BOT-2 Running Speed and Agility and Strength subscales was explained by weaker strength (dynamometry), higher BMI and lower tone (resistance to passive movement) (p<0.05).

Conclusion: In school-aged children, motor activity capacity is significantly impacted by lower limb muscle strength, BMI and muscle tone.

- Clinical muscle tone assessment using passive ROM is correlated with muscle shear modulus using ultrasound.
- Children with motor function difficulties need assessment and management of muscle strength, BMI and muscle tone.



# Chronic musculoskeletal pain of the lower limb in children and adolescents: a scoping review of health conditions

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Paediatric 9, P 1, October 7, 2023, 10:35 AM – 11:35 AM

Aim: To identify health conditions resulting in chronic lower limb musculoskeletal pain (CLLMP) in children, and determine availability of current diagnostic or treatment guidelines.

**Design: Scoping review** 

Methods: Five databases were searched until May 2022. Included studies were available in English and sampled a paediatric population who reported CLLMP from a specific health condition. Studies reporting dermatological conditions, work-related or neuropathic pain, and published trial protocols or reviews were excluded. Titles and abstracts were independently screened by two reviewers. One of four reviewers screened full-texts, independently extracted data and determined International Classification of Diseases (ICD-11) coding for each condition. Data was summarized descriptively and network analysis enabled representation of each ICD-11 code and interconnections between sub-codes and manifestations codes. Extensive searching for diagnostic and treatment guidelines was performed by authors and expert clinicians.

Results:10586 studies were screened. 400 studies met eligibility criteria, representing 125 health conditions resulting in CLLMP, mapping to 18 unique ICD-11 codes. Juvenile idiopathic arthritis (25 studies) and chronic widespread musculoskeletal pain (21 studies) were the most commonly presented health conditions. CLLMP was acknowledged in 82 clinical guidelines for assessment or management of included health conditions.

Conclusion: CLLMP is associated with a large variety of health conditions in children. Current ICD-11 coding and available clinical guidelines under-represent CLLMP associated with health conditions.

- Assessment and management of CLLMP is warranted in children with a range of health conditions.
- Further consideration of CLLMP in diagnostic and treatment guidelines are needed to support clinicians.



### Outcomes of Abduction Dorsiflexion Mechanism brace in children with congenital talipes equinovarus

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Paediatric 10A, P 1, October 7, 2023, 11:40 AM - 12:40 PM

Aim: Congenital Talipes Equinovarus (CTEV) is commonly managed using the Ponseti technique. Following initial correction, feet are braced in boots and bar to maintain correction. The Abduction Dorsiflexion Mechanism (ADM) brace is an alternative to boots and bar, utilised at The Children's Hospital at Westmead (CHW) since 2014. The aim of this study was to explore outcomes of those who have solely utilised ADM's.

Design: Retrospective chart audit

Methods: Children with idiopathic CTEV who attended CHW between 2014 and 2022 and utilised ADM's for bracing. The primary outcome measure was recurrence.

Results: Twenty-five participants (25 feet, 76% male, 96% unilateral) were identified. Baseline Pirani median score was 6 (3.5-6). Management commenced at median age of 22 days (9-79) and achieved with median of 6 (4-8) casts and 72% rate of tenotomy. There was a median follow-up period of 1.68 years (0.23-4.04). Twelve (48%) participants were reported as compliant with 24% not compliant and 28% reported as unsure. First recurrence occurred in 6/25 (24%) participants at median age of 15.5 months (3.6-19.3) with three participants experiencing four further recurrences. All recurrences except one were managed with repeat Ponseti casting with one recurrence requiring a tenotomy to achieve full correction. Two recurrences (20%) required one cast to achieve correction. Seven participants (28%) experienced minor adverse events.

Conclusion: ADM's present as a viable alternative to boots and bar, particularly in those with unilateral CTEV.

- ADM's may have higher rates of recurrence, however correct faster
- ADM's present with minimal adverse events



# Tendoachilles tenotomy rate and timing in infants with idiopathic congenital talipes equinovarus in a quaternary children's health service

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Paediatric 10A, P 1, October 7, 2023, 11:40 AM - 12:40 PM

Aim: Quantify tendoachilles tenotomy rate and timing in infants with idiopathic congenital talipes equinovarus (CTEV), in relation to CTEV severity.

Design: Retrospective observational cohort study.

Methods: Clinical data was audited for 203 sequential infants with idiopathic CTEV (295 feet) receiving intervention between 2014 and 2021. Severity of CTEV was quantified by initial Pirani score, and Relative Reduction Ratio (RRR) (relative change (%) in Pirani Total between baseline and first cast conclusion). Outcomes were tenotomy percentage and timing within the first year of life (No tenotomy; Early-before brace commencement; Delayed-after brace commencement). Logistic regressions were calculated.

Results: Tenotomy percentage was 53.5% (No=137, Early=119, Delayed=39). Compared to the no tenotomy group, the tenotomy group showed higher initial Pirani Total scores (p<0.001), and higher item scores (p<0.001 to 0.003) except curvature of the lateral border. Initial Pirani scores were not different between early and delayed subgroups. Initial empty heel (EH) and lateral head of talus (LHT) scores together explained 26.6% of the variance in tenotomy requirement, with a one point increase in initial EH or LHT scores resulting in 158.2 or 3.1 times higher odds of requiring tenotomy respectively. The RRR was lower in the tenotomy (40.8%) versus no tenotomy group (50%)(p<0.001), but not different between early and delayed subgroups.

Conclusion: Initial Pirani scores and RRR can identify infants needing tenotomy. Many factors might influence tenotomy timing.

Key Practice Points: To identify these infants, use:

- Pirani score to measure baseline severity, focusing on EH and LHT items.
- RRR to indicate responsiveness to intervention.



# Can hypotonia in children be quantified using resting shear modulus collected using ultrasound Shear Wave Elastography?

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Paediatric 10A, P 1, October 7, 2023, 11:40 AM - 12:40 PM

Aim: Compare shear modulus of lower limb muscles between children with hypotonia versus typical development or developmental disorders.

Design: Cross sectional study and scoping review

Method: Nineteen children (mean 9.4±2.3 years, 13 male) with mild hypotonia on neurological assessment completed examination of resting shear modulus of rectus femoris, biceps femoris, tibialis anterior and gastrocnemius at short and long lengths(stretch) using ultrasound shearwave elastography. Data was compared with data from a scoping review of shear modulus values for typically developing children and children with developmental disorders. Data were collated according to degree of muscle length/stretch. Effects were examined according to sex, age and BMI.

Results: In children with hypotonia, shear modulus was: higher at longer versus shorter muscle lengths (all p<0.01); correlated with age (biceps femoris-short: r = 0.60, p<0.03, gastrocnemius-short: r = -0.54, p<0.03), and BMI (biceps femoris-short: r = 0.71, p<0.05); and not different between sexes (all p>0.05). Shear modulus values for children with mild hypotonia were lower than values for children with Duchenne muscular dystrophy (DMD) (tibialis anterior-neutral), or cerebral palsy (gastrocnemius-neutral), but not typically developing children (all four muscles).

Conclusion: Shear modulus increases with longer muscle length (stretch) in hypotonic children and their shear modulus values are lower than children with hypertonia or DMD.

- Ultrasound shearwave elastography can be used to estimate shear modulus in mildly hypotonic children.
- Shear modulus is lower in mildly hypotonic children than children with DMD or hypertonia.
- Shear modulus was not different between mildly hypotonic and typically developing children.



### The Ponseti method for management of clubfoot results in poor outcomes in the NT

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Paediatric 10A, P 1, October 7, 2023, 11:40 AM - 12:40 PM

Aim: The aim of this study was to investigate clubfoot in the Northern Territory and outcomes of the Ponseti method for management of clubfoot.

Design: A retrospective cohort study of children born with clubfoot in the Northern Territory 2009-2022 was conducted. Population characteristics and factors associated with adherence to bracing, and relapse, were determined.

Results: Ninety-one children (133 feet) with idiopathic clubfoot were identified to-date, of which 65 (71%) were male and 34 (37%) had family history of clubfoot. Sixty-one (67%) were Indigenous children, and 56 (61%) lived remotely including 50 (82%) Indigenous children with clubfoot. Overall, adherence to bracing was low (30%) and relapse was high (80%). Factors associated with adherence were non-Indigenous status (p < 0.001) and urban dwelling (p < 0.001). Adherence was not associated with providing education to family. Relapse was associated with Indigenous status (p < 0.001), living remotely (p = 0.005) and non-adherence to bracing (p < 0.001).

Conclusion: Aboriginal and Torres Strait Islander children living remotely comprise the largest clubfoot cohort in the NT, and experience poor outcomes. Hence the needs of this population must be closely considered when managing clubfoot. Additionally, research is required to explore local family-led solutions to improve outcomes.

- The Ponseti method of clubfoot management is not successful for Indigenous families in the NT, despite being the gold standard method. Adaptations may be warranted.
- Routine education to families does not appear to ensure adherence or prevent relapse.



#### Development of a patient decision aid for children and adolescents following anterior cruciate ligament rupture: an international mixedmethods study

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Paediatric 10A, P 1, October 7, 2023, 11:40 AM - 12:40 PM

Aim: To develop and test the usability of an evidence-based patient decision aid comparing management options for children and adolescents following anterior cruciate ligament (ACL) rupture.

Design: Mixed-methods study describing the development of a patient decision aid.

Methods: A draft decision aid was developed using guidance from a multidisciplinary steering group and existing patient decision aids. Children and adolescents who previously ruptured their ACL when <18 yearsold, but are now >18 years of age, parents and health professionals managing ACL ruptures were recruited through social media for a semi-structured interview. The decision aid was updated following interviews and feedback was analysed using reflexive thematic analysis. Questionnaire data were analysed descriptively.

Results: A total of 32 interviews were completed; 16 people who had ruptured their ACL (7 children, 9 adults), 8 parents and 16 health professionals (12 physiotherapists, 4 orthopaedic surgeons). Most participants agreed on the content and rated the aid's acceptability as good or excellent. There was some disagreement from health professionals on the evidence for non-surgical management.

Conclusion: Our patient decision aid is an acceptable tool and mostly aligns with the views of key stakeholders.

- The patient decision aid is an acceptable resource to facilitate shared decision making between children and adolescents, their parents and health professionals following ACL rupture.
- Equitable access to simple evidence-based information is valued by children, adults, and their parents.
- Psychological and social support, and positive language despite uncertainty was identified as important by children, adults, and their parents.



#### Baseline characteristics of 250 paediatric patients with anterior cruciate ligament injuries: examination of data from a multidisciplinary longitudinal prospective registry

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Paediatric 10A, P 1, October 7, 2023, 11:40 AM - 12:40 PM

Aim: To examine demographic and injury characteristics of children and adolescents presenting to Queensland Children's Hospital with anterior cruciate ligament (ACL) injuries.

Design: Longitudinal multidisciplinary prospective paediatric ACL Registry.

Method: Data extraction from 250 consecutive Registry enrolments, with application of descriptive statistics to summarize the cohort.

Results: Median age at injury was 14.3 years (IQR 13.0, 15.3) (range 6 - 17.3) with minimal difference between sexes. 56.4% were males, with an even higher proportion (73.8%) of males noted in children under the age of 12. 81.9% of participants had a sporting cause of injury, with a non-contact mechanism reported for 59.8% of these. The Maori and Pacific Islander community was over-represented at 19.8% of total enrolments. Both this group and indigenous patients had a predominance of females and a higher incidence of a sporting cause. The rugby codes (league and union) were the main causal sports, followed by soccer, netball, AFL, touch football, basketball, and athletics. Sub-analysis for sex and ethnicity demonstrated that rugby remained the most causative sport.

Conclusion: Analysis of a population of paediatric patients with ACL injuries suggests relative heterogeneity and reveals preliminary trends in demographic and injury traits. Further longitudinal research will leverage this baseline information to determine independent and combined predictors of injury, and musculoskeletal health into adulthood.

- Primary and high-school aged patients can present with ACL injuries from both sporting and nonsporting causes
- Prevention and management strategies should be specifically targeted to age, sex, ethnicity, sport, and injury mechanism



## Initial validation of the Ignite Challenge assessment for autistic children and youth

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Paediatric 10B, P 10, October 7, 2023, 11:40 AM - 12:40 PM

Aim: Evaluate the reliability and clinical utility of the Ignite Challenge, a 13-item advanced motor skills measure to assess movement skills of autistic children.

Study Design: Measurement study.

Methods: Convenience sample of 47 children with ASD (ACSF-SC Levels I/II for social communication; 6–14 years [mean 9.34 years]; 10 females). Children completed the Ignite Challenge twice, 1-3 weeks apart. Study assessors were physiotherapists (PTs), experienced working with autistic children and trained to use the Ignite Challenge.

Reliability analyses included ICCs with 95% CI for inter-rater reliability and test/retest scores (%) and Bland-Altman plots.

Outcome measures: In addition to the Ignite Challenge, PTs rated ease of administration and child engagement (/10 visual analogue scales), and PTs and children commented on user experience.

Results: All children completed the Ignite Challenge (mean time 46.1 minutes [SD=10.1]). Mean scores were 69.2% (SD=17.1) and 69.5% (SD=16.6) at baseline and retest with excellent inter-rater (n=47) and test-retest (n=45) reliability (ICC= 0.97 [95% CI=0.93, 0.99] and ICC=0.91 [95% CI=0.84, 0.95] respectively). Ease of administration and child engagement were 6.3/10 (SD 2.3) and 6.6/10 (SD=2.2). PTs and children's comments reflected an engaging testing experience overall regardless of child's age and ACSF:FC level.

Conclusions: Ignite Challenge can reliably identify movement strengths and challenges of autistic children.

Key Practice Points:

• The dynamic Ignite Challenge assessment builds indivdualised support and fun into the testing process, allowing children to be pushed to their skill limits and guiding child centered goal setting towards a physical activity they will enjoy and want to do.



# Effect of physical activity interventions on cognitive, academic and physical performance outcomes in children with Neurodevelopmental Disorders: a systematic review

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Paediatric 10B, P 10, October 7, 2023, 11:40 AM - 12:40 PM

Aim: To i) identify, critically appraise, and synthesise the findings of studies examining the effects of physical activity interventions on cognition, academic and physical performance outcomes in school-aged children with Neurodevelopmental Disorders, and ii) summarise the characteristics and context of physical activity interventions.

Design: Systematic review with meta-analysis of randomised controlled trials.

Method: A systematic search across five databases (PubMed, PsycINFO, SPORTDiscus, ERIC and CINAHL) was conducted in November 2021. Studies were eligible for inclusion where they examined the effect of physical activity on cognitive, academic and physical performance variables and included children aged four to 12 years with a formal neurodevelopmental disorder diagnosis. A descriptive synthesis was undertaken followed by meta-analyses when sufficient results were available.

Results: The search yielded 17 randomised controlled trials of fair to good methodological quality. Physical activity interventions had a moderate effect on all subsets of executive function including inhibitory control, working memory and cognitive flexibility (SMD -0.45; 95% CI 0.55 to -0.35; p<0.001; l<sup>2</sup>=41%). Physical activity interventions had a moderate effect on all motor outcomes (SMD 0.5; 95% CI 0.33 to 0.66; p<0.001; l<sup>2</sup>=0%). High variability existed regarding the type and parameters of physical activity interventions.

Conclusion: Physical activity interventions improve executive function and physical performance outcomes in children with Neurodevelopmental Disorders. Further research is indicated to explore effects of physical activity on specific Neurodevelopmental diagnostic types and academic outcomes.

**Key Practice Point:** 

• Physiotherapists have a role of enhancing executive function in children with neurodevelopmental disorders through physical activity.



# How to identify mild developmental delay in children using a new screening tool

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Paediatric 10B, P 10, October 7, 2023, 11:40 AM - 12:40 PM

Background: Early identification of developmental concerns prior to children commencing formal education may enable early intervention. The Targeted Motor Control (TMC) screening tool is a valid performancebased tool that can be used to identify mild developmental delay in 4-year-old children. The TMC takes 15-20 minutes to administer, requires minimal equipment and can be used by health and non-health professionals. Participants attending this session should have an understanding of typical childhood development and experience working with children.

Aims/objectives: This session will present and demonstrate how to use the TMC. On completion, participants will be able to:

- 1. Explain the purpose of the TMC,
- 2. Discuss when and how to apply the TMC,
- 3. Score and interpret a TMC assessment.

Approach: After a brief background on mild developmental delay, a video of the TMC being administered on a child will be presented. An interactive pause-and-discuss approach will be used to demonstrate the TMC item-by-item, enabling participants to gain an adequate understanding of how each item is performed and scored. Finally, participants will be shown how to score and interpret the TMC based on the video presented. There will be opportunities for group discussion and questions throughout the session.

- Participants will learn about a validated performance-based screening tool that they can use clinically in 4-year-old children to identify developmental concerns.
- Additionally, participants will develop a clear understanding of how to interpret the results of the TMC including when to conduct further developmental assessments and/or refer children on for comprehensive testing.



### Is the Targeted Motor Control screening tool a valid neurosensory measure for 4-year-old children?

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Paediatric 10B, P 10, October 7, 2023, 11:40 AM - 12:40 PM

Aim: Determine the concurrent validity of the Targeted Motor Control (TMC) screening tool with the Neurosensory Motor Developmental Assessment (NSMDA) in 4-year-old children.

Design: Single cohort observational study.

Method: Children, aged 3 years 9 months to 4 years 5 months, underwent the TMC and NSMDA in a randomised order. Physiotherapists performed the assessments independently and were blind to the results of the other assessment. Concurrent validity was determined using correlation (r) with a p-value of <0.05 demonstrating significance. The optimal cut-off score for the TMC was determined using receiver operating characteristic curve analysis.

Results: Assessment of 76 children (mean age (SD) 4 years 2 months (2.5 months), n = 35 boys) showed that all correlations were moderate and significant between item totals on the NSMDA and TMC (r = 0.40 to 0.61) and between functional grades of each domain on the NSMDA and corresponding domains on the TMC (r = 0.47 to 0.67). There was a low but significant correlation between the sensorimotor functional grade of the NSMDA and sensory domain of the TMC (r = 0.35). The optimal cut-off score for detecting atypical development on the TMC was <9/11 (sensitivity/specificity = 82.4%/66.7%).

Conclusion: The TMC is valid in identifying delay in 4-year-old children with a score of <9/11 being the optimal cut-off score warranting further developmental assessment.

- The TMC screening tool has concurrent validity with the NSMDA.
- A score of <9/11 on the TMC warrants developmental assessment.



# To identify clinical measures of postural control for children with developmental coordination disorder (DCD) and their psychometric and clinical properties

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Paediatric 10B, P 10, October 7, 2023, 11:40 AM - 12:40 PM

Aim: To identify clinical measures of postural control reported for children with Developmental Coordination Disorder (DCD) and examine their psychometric and clinical properties.

Design: A systematic review using PRISMA methodology.

Method: Databases searched included: PubMed, CINAHL, Embase and SPORTdiscus. Search terms represented: DCD or dyspraxia and postural control or balance. Quality and psychometric evidence were rated using the COnsensus-based Standards for the selection of health Measurement INstruments (COSMIN) checklist.

Results: Searches yielded 604 papers. 101 were included. From these, six measures included a postural control subscale with between 1-8 items: Movement Assessment Battery for Children First (MABC) and Second (MABC-2) editions, Bruininks-Oseretsky Test of Motor Proficiency First (BOTMP) and Second editions (BOT-2), Peabody Developmental Motor Scales Second Edition (PDMS-2) and the Lower-Quarter Y-Balance Test (YBT). Psychometric evidence was strongest for the BOT-2 (validity), MABC (reliability) and MABC-2 (responsiveness). The MABC and MABC-2 had the most positive evidence. The BOTMP had limited, negative evidence. At most, two of seven Systems Theory domains of postural control were assessed by a single measure.

Conclusion: Five measures have postural control subscales with evidence to support use with children with DCD. Collectively, these screen three of seven Systems Theory domains. More comprehensive assessment is needed to guide intervention for children with DCD.

- For comprehensive assessment of postural control in children with DCD, clinicians must currently combine multiple outcome measures.
- While the volume of evidence between assessment tools varies, most published evidence suggests the included measures are valid and reliable.



#### Physiotherapists have a key role in movement assessment in autism

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Paediatric 10B, P 10, October 7, 2023, 11:40 AM - 12:40 PM

Aim: To investigate the clinical practice of physiotherapy assessment of movement difficulties in young autistic children in Australia, this research aimed to determine: 1) what assessments are used, and 2) what movement difficulties are identified, by physiotherapists clinically.

Design: Quantitative study using a cross-sectional national online survey

Method: 85 physiotherapists with more than one-year experience completed an online questionnaire, reporting on clinical assessment of movement difficulties in autistic children in Australia.

Results: Paediatric physiotherapists provide substantial services for autistic children in Australia, including assessment of movement difficulties. Regardless of involvement in multidisciplinary teams, physiotherapists use a range of strategies including standardised assessments in autism, with parental concerns, movement observations and analysis primarily used. Of standardised assessments used, Alberta Infant Motor Scale (AIMS) was most frequently used, 50% of the time, by 69% of physiotherapists. The full gamut of movement difficulties was identified by the physiotherapists in this study.

Conclusions: Movement difficulties are under-recognised in autism diagnosis in Australia, yet physiotherapists play a key role in autism identifying and assessing movement difficulties in young autistic children, using specialised skills in movement assessment. Further physiotherapists likely initially assess movement difficulties in very young children, under 18 months of age, potentially prior to suspicion or diagnosis of autism.

- Physiotherapists need to be aware of the prevalence, heterogeneity, complexity and specificity of movement difficulties in autism. In lieu of gold standard movement assessments
- Further research is required on the effectiveness and validity of physiotherapy assessment in autism.



# Development of gross motor function of preterm born children according to gestational age at birth: a systematic review

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Paediatric 10B, P 10, October 7, 2023, 11:40 AM - 12:40 PM

Aim: To identify studies of gross motor outcomes for children born preterm, when re-assessed at 0-18 years and to map the gross motor scores, from standardized tools, according to gestational age at birth.

Design: Systematic review

Method: Four databases were searched in July-August 2022 from date of inception. Eligible studies included: (i) original follow-up gross motor data; (ii) for children born preterm (<37 weeks); (iii) published in English between 1990-2022; (iv) in prospective or retrospective cohort studies, clinical trials or cross-sectional studies. Methodological quality was assessed using the Newcastle-Ottawa Scale for cohort/case-controlled studies and the Pedro Scale for randomised controlled trials. Outcomes were examined according to gestational age group.

Results: Searches yielded 4,132 papers, including 27 follow-up motor assessments. The seven most common tools were: Alberta Infant Motor Scale, Bayleys Scale-II/III, Bruininks-Osteretsky Test, Gesell Developmental Schedules-2, Neurological Sensory Motor Developmental Assessment, Movement Assessment Battery for Children-2 and Peabody Developmental Motor Scale. Most common assessment ages were 8-15m and 5y. Trends were seen for lower gross motor scores with lower gestational age at birth (e.g., AIMS) or higher assessment age (e.g., Movement ABC-2). High consistency across studies was noted at certain ages (e.g., 8-11m AIMS; 5y Movement ABC-2).

Conclusion: Gross motor scores for preterm-born children are dependent on gestational age at birth, assessment age and assessment tool used. Synthesized data tables are now available to enable interpretation of scores at key ages.

- Gross motor scores are dependent on:
  - o gestational age
  - o assessment age
  - o assessment tool used



### Using participatory approaches in healthcare research – enabling the child's voice to be heard

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Paediatric 11, P 3 & 4, October 7, 2023, 1:40 PM - 2:25 PM

Aim: To provide evidence-based guidance on methods and approaches used to enable children, adolescents, and families to be involved in participatory research in the development of a healthcare intervention or resource.

Design: Systematic review with a critical narrative approach used to synthesise findings.

Method: Key databases were searched for peer reviewed studies, using key words and subject headings. Assessments of methodological quality and sufficiency of reporting of the participatory approach were conducted.

Results: 26 studies were eligible for inclusion, including one Australian study. Most studies (88%, n=23) involved children or adolescents- predominantly healthy and neurotypical- as co-researchers and were of low to moderate quality. Six stages in which co-researchers participated in the development of an intervention or resource were identified: refining (n=21, 81%), ideating (n=20, 77%), creating (n=18, 69%), implementing (n=3, 12%), sharing (n=3, 12%) and evaluating (n=1, 4%). Seven different methods were identified as forming part of the participatory approach: focus groups (n=15, 58%), interviews (n=10, 38%), photovoice (n=9, 35%), design workshops (n=8, 31%), surveys (n=6, 23%), community consultations (n=3, 11%) and videovoice (n=1, 4%).

Conclusion: This review provides practical insights into how researchers are using a participatory approach with children and adolescents, and their families.

- The stages and methods of engagement can be used to plan and assess the level of participation of co-researchers throughout the development of a health resource or intervention.
- Engagement with children or adolescents in the development of health interventions or resources has focused upon predominantly healthy and neurotypical children.



#### What does sports participation look like? Identifying indicators of sport and physical recreation participation for children with disabilities: an e-Delphi

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Paediatric 12, P 3 & 4, October 7, 2023, 2:30 PM – 3:15 PM

Aim: To define sport and physical recreation and identify indicators of leisure-time physical activity participation for children with disabilities.

Design: E-delphi

Method: Participants completed surveys related to definitions, constructs, and indicators of participation in sport and physical recreation. Questions were scored on a Likert scale and descriptive statistics and basic proportional analysis were conducted to determine agreement (>70%).

Results: Forty-seven people with disabilities or their family members and rehabilitation and sports professionals participated. Respondents defined sport as including physical exertion, tactics, competition, rules and physical skill, and physical recreation as physical exertion and fun. Attendance was agreed to mean frequency, consistency and duration. Respondents agreed that having a go at physical activities, communicating, working cooperatively, being motivated, using self-control and enjoying the activity may indicate involvement. The SPORTS participation framework was agreed to describe level of participation for sport but not physical recreation. Further evaluation of level, environment, and the category of sport/physical recreation is needed.

Conclusion: Respondents identified differences between definitions of sport and physical recreation. While involvement is an internal experience, participants identified indicators of involvement which may be useful in assessing leisure-time physical activity participation for children with disability.

- Both sport and physical recreation include physical exertion, but physical recreation includes fun, whereas sport includes tactics, competition, rules and physical skill.
- Attendance includes frequency, consistency and duration.
- Involvement may be indicated when children have a go at physical activities, communicate and work cooperatively, are motivated, use self-control and enjoy activities.



# Feasibility and characteristics of long-term, community-based physical activity monitoring for children with cystic fibrosis using consumer grade devices

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Paediatric 12, P 3 & 4, October 7, 2023, 2:30 PM - 3:15 PM

Aim: Determine the long-term physical activity characteristics and feasibility of consumer-grade device monitoring for children with cystic fibrosis.

Design: Cohort in randomised trial

Method: Participants were 42 children with cystic fibrosis (8-17 years, mean 12 2.3 years). Physical activity was monitored using the Garmin Vivosmart3 smartwatch. Feasibility outcomes included: adherence (days worn/not worn), attrition (days) and device breakage. Activity outcomes included: hourly step count and daily intensity minutes (device algorithm for moderate-vigorous physical activity) compared by weekday/weekend, school/holidays, community/hospital and sex.

Results: Commitment to ongoing wear of activity monitors varied (4 to 547 days). At six months, 28 of 42 participants (67%) were still wearing their devices. Only child wore their device for the full 18 months. Children averaged 7,819(1,750) daily steps, taking more on weekdays (p<0.001), school days (p<0.001) and in the community (p = 0.032). Mean daily MVPA averaged 44 min, higher for boys (p<0.01), weekdays (p<0.01) and school days (p<0.01), but not community versus hospital.

Conclusion: Children with cystic fibrosis are less active compared to data for healthy peers. Communitybased, consumer-grade monitoring captures physical activity patterns well, however high attrition supports short-term sampling rather than long-term monitoring.

- Consumer-grade physical activity monitors provide clinically useful physical activity profile data for children with cystic fibrosis.
- School day activities are a key promoter of physical activity for children with cystic fibrosis.
- Periodic rather than long-term monitoring is recommended for wearable technology for children in this age group.



Differential structural brain changes between responders and nonresponders after physical exercise therapy for chronic nonspecific neck pain

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Pain 2, P 9, October 5, 2023, 11:55 AM - 12:40 PM

Aim: To investigate changes in structural brain characteristics after physical exercise therapy for people with chronic nonspecific neck pain. Secondary aims were (1) to investigate baseline differences in structural brain characteristics between responders and non-responders to exercise therapy, and (2) to investigate differential brain changes after exercise therapy between responders and non-responders.

Design: Prospective longitudinal cohort study.

Method: Twenty-four participants (18 female, mean age 39.7 years) with chronic nonspecific neck pain were included. The 8-week exercise intervention was delivered by a physiotherapist. Participants were identified as responders if they reported ≥20% improvement in pain-related disability (Neck Disability Index). Structural MRI was conducted before and after the intervention. Freesurfer cluster-wise analyses, supplemented with analysis of pain-specific brain regions of interest, were undertaken to assess pre-post changes and between-group differences in brain characteristics.

Results: Changes in grey matter were found after the intervention, for example frontal cortex volume decreased (cluster-wise corrected p-value [CWP]=0.0002, 95% CI: 0.0000-0.0004). We found numerous differences between responders and non-responders, most notably, after the exercise intervention insular volume decreased in responders, but increased in non-responders (CWP≤0.0002).

Conclusion: The brain changes found in this study may underpin clinically observed differential effects between responders and non-responders to exercise therapy for people with chronic neck pain.

- Exercise therapy has differential effects across people with chronic nonspecific neck pain.
- Identification of the association between clinical effects and brain characteristics is an important step towards targeted medicine approaches, potentially providing a pathway for personalised treatment prescription.



# Effectiveness of physiotherapist-delivered psychological treatments for neck pain: a systematic review with meta-analysis

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Pain 2, P 9, October 5, 2023, 11:55 AM - 12:40 PM

Aim: We assessed effects of physiotherapist-delivered psychological treatments on pain and disability in neck pain. We evaluated quality of intervention reporting.

Design: Systematic review with meta-analysis.

Method: We searched databases for RCTs on acute or chronic whiplash-associated disorder (WAD) or nontraumatic neck pain (NTNP), comparing physiotherapist-delivered psychological treatments to standard care or no treatment. Standardised mean difference (SMD) was calculated by random effects meta-analysis. We evaluated certainty of evidence (GRADE) and intervention reporting (TIDieR).

Results: Fourteen RCTs were included comprising 2,028 patients. Trials examined acute WAD (N=4), subacute/mixed NTNP (N=3), chronic WAD (N=2) and chronic NTNP (N=5). In chronic NTNP, effects on pain favoured psychological treatments at short (SMD -0.40 [95% CI -0.73, -0.07]), medium (SMD -0.29 [95% CI - 0.57, 0.00]) and long (SMD -0.32 [95% CI -0.60, -0.05]) term follow-up. For disability, effects favoured psychological treatments in acute WAD at short term follow-up (SMD -0.39 [95% CI -0.72, -0.07]) and chronic NTNP at short (SMD -0.53 [95% CI -0.91, -0.15]), medium (SMD -0.49 [95% CI -0.77, -0.21]) and long (SMD - 0.60 [95% CI -0.94, -0.26]) term follow-up. GRADE ratings were typically moderate. Intervention reporting often lacked procedural descriptions and provision of trial materials.

Conclusion: Physiotherapist-delivered psychological treatments were more effective than standard physiotherapy for chronic NTNP and acute WAD (small-medium effects).

- Physiotherapist-delivered psychological treatments were more effective than standard physiotherapy for certain neck pain types.
- Such treatments show promise for clinical application.
- More detailed intervention reporting is needed to facilitate clinical translation.



# Diagnostic information has an immediate effect on pain with loading in people with Achilles tendinopathy: a randomized clinical experiment

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Pain 2, P 9, October 5, 2023, 11:55 AM - 12:40 PM

Aim: To investigate if diagnostic information influenced pain during function in people with Achilles tendinopathy.

Design: Prospectively registered, parallel, two-arm, randomised clinical experiment with concealed allocation, participant and assessor masking and intention-to-treat analyses.

Method: Fifty recreational runners with Achilles tendinopathy participated. To ensure blinding and control for demand characteristics, participants were unaware they were participating in a controlled experiment until after data collection. The experimental group received diagnostic information highlighting reversible changes in muscle function as the primary driver of the problem. For the control group, the explanation prioritised irreversible structural pathology within the tendon as causing the pain. The primary outcome measure was maximal pain intensity (visual analogue scale 0 - 100) experienced during a standardised hopping task. The between-group difference and 95% CI were estimated using regression models. Results: Immediately post-intervention, pain intensity in the experimental group was 25.4/100 (24.3) and 36.7/100 (28.1) in the control group . The mean difference was 12.3/100 (95% CI 3.2 to 21.5).

Conclusion: The content of diagnostic information influenced pain intensity during loading in people with Achilles tendinopathy. These data demonstrate the oft-hypothesised negative effect of certain types of diagnostic information on pain in a clinical population. The point estimate of the effect size suggests a moderate effect on pain intensity with confidence intervals ranging from values that may represent a large or substantial clinical effect to values that are unlikely to be clinically meaningful.

Key Practice Points:

• Mind your words - they can have an immediate and negative effect on pain



# The effect of pain education combined with virtual reality on pain and kinesiophobia in individuals with persistent low back pain

**Window P**<sup>1,2</sup>, McGrath M<sup>1,2</sup>, Harvie D<sup>3</sup>, Smits E<sup>4</sup>, Johnston V<sup>5,6</sup>, Murdoch M<sup>1,7</sup>, Russell T<sup>4</sup> <sup>1</sup>Physiotherapy Department, Royal Brisbane and Women's Hospital, <sup>2</sup>STARS Education and Research Alliance, Surgical Treatment and Rehabilitation Service, The University of Queensland and Metro North Health, <sup>3</sup>School of Allied Health and Human Performance, University of South Australia, <sup>4</sup>RECOVER Injury Research Centre, University of Queensland, <sup>5</sup>School of Health and Rehabilitation Sciences, The University of Queensland, <sup>6</sup>School of Health and Medical Sciences, University of Southern Queensland, <sup>7</sup>Tess Cramond Pain and Research Centre, Surgical Treatment and Rehabilitation Service

Pain 2, P 9, October 5, 2023, 11:55 AM - 12:40 PM Aim: To evaluate the effect of pain education combined with a cognitive behavioural therapy informed virtual reality intervention on pain intensity, pain-related fear of movement, and trunk movement, in individuals with persistent low back pain.

Design: Repeated measures study.

Method: Thirty-seven participants were recruited. Pain intensity (11-point numerical rating scale), painrelated fear of movement (Tampa Scale of Kinesiophobia), and trunk kinematics (amplitude, velocity) during functional movements were measured across three, weekly sessions. A standardised pain education intervention (Session 1), and virtual reality intervention incorporating video feedback of performance (Session 2), were completed. Repeated Measures ANOVAs evaluated change in outcomes from baseline to completion. Post-hoc contrasts evaluated effect sizes for education and virtual reality, on pain intensity and kinesiophobia.

Results: Thirty-four participants completed all sessions. Significant (p<0.001) reductions were observed in mean(SD) pain intensity (baseline 5.9(1.5); completion 4.3(2.1)) and kinesiophobia (baseline 42.6(6.4); completion 34.3(7.4)). Large effect sizes (partial  $\eta^2$ ) were observed for education (pain intensity 0.39; kinesiophobia 0.54) while virtual reality demonstrated small and moderate effect sizes (pain intensity 0.05; kinesiophobia 0.09). Peak trunk velocity, but not amplitude, increased significantly (p<0.05) across functional movement tasks.

Conclusion: Pain education combined with a virtual reality intervention significantly improved pain, painrelated fear of movement, and trunk kinematics. Further research should explore the benefit of increased virtual reality dosage and the mechanisms underlying improvement.

**Key Practice Points:** 

• Virtual reality should be considered as an adjunct intervention to complement pain education concepts (e.g., impact of context, distraction) relating to pain and pain-related fear of movement.



# The effect of health coaching on physical activity participation in adults with chronic non-cancer pain: a systematic review and meta-analysis

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Pain 4, P 11, October 5, 2023, 2:30 PM - 3:15 PM

Aim: To investigate the effect of health coaching on physical activity, disability, pain, and quality of life in adults with chronic non-cancer pain.

Design: Systematic review and meta-analysis of randomised controlled trials.

Method: Six databases were searched from inception to November 2022. We included randomised controlled trials involving (1) adults with chronic non-cancer pain; (2) health coaching to increase physical activity; (3) non-active control or no intervention; and (4) measures of physical activity, disability, pain, or quality of life. Evidence was synthesised as standardised mean differences with 95% confidence intervals using random-effects models. Risk of bias was assessed using the Revised Cochrane risk of bias tool. GRADE was used to determine evidence certainty.

Results: Twenty-three trials were included. Trials had moderate to high risk of bias. Health coaching had a small effect on increasing physical activity (15 trials; SMD 0.17, 95% CI 0.02 to 0.32; low-certainty), decreasing disability (18 trials; SMD 0.25, 95% CI 0.18 to 0.33; moderate-certainty) and decreasing pain (17 trials; SMD 0.26, 95% CI 0.19 to 0.33; moderate-certainty) compared to control. We found no evidence of an effect on quality of life (three trials; SMD 0.09, 95% CI -0.14 to 0.31; low-certainty).

Conclusion: Health coaching promotes small improvements in physical activity, disability, and pain in adults with chronic non-cancer pain. The effect of health coaching on quality of life is unclear.

Key Practice Points:

• Coaching is a promising intervention for improving physical activity, disability, and pain in adults with chronic Health non-cancer pain.



## Kindness, listening, and connection: patient and clinician key requirements for emotional support in chronic and complex care

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Pain 4, P 11, October 5, 2023, 2:30 PM - 3:15 PM

Aim: Emotional support is: a cognitive understanding of patient needs; an affective imagination of what the patient values; and an altruistic action to alleviate the patient's suffering. Emotional support is complex but critical for safe, high-quality, and person-centered care. However, the literature evidences gaps in providing such support in current health services. So, 'patients' and 'clinicians' views were assessed as to how emotional support is experienced and to make recommendations for improving chronic and complex outpatient care.

Design: Translational research, an exploratory qualitative design.

Method: The method included three focus group discussions and two interviews with 7 clinicians and 13 patients and carers. Thematic analysis of the data was conducted.

Results: The following themes were found: deep listening as a core aspect of relationship building correlated with the patient's motivation; compassionate care was experienced by patients by receiving kindness and witnessing kind acts by staff; and social and community bonding where patients valued the relationship with the clinicians and sharing the lived experience of chronic illness.

Conclusion: The research highlighted the need for effective clinical group supervision using a narrative approach so that clinicians become capable to engage in emotional support through practices such as deep listening. Adequate resources and a supportive and flexible management style are prerequisites for effective narrative supervision.

Key Practice Points: Participants will have increased knowledge of:

- An understanding of how emotional support can improve outpatient rehabilitation treatment.
- How to embed deep listening in your clinical practice
- How to implement group narrative supervision.



#### Navigating patient distress in physiotherapy practice

#### McGrath R<sup>1,2,3</sup>, Shephard S<sup>1</sup>, Parnell T<sup>1</sup>, Verdon S<sup>1</sup>, Pope R<sup>1</sup>

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Pain 4, P 11, October 5, 2023, 2:30 PM - 3:15 PM

Background: It is well documented that physiotherapists from all areas of practice lack the confidence and self-reported competence to assess and manage clients experiencing psychological or suicidal distress. The presenter's PhD research shows that physiotherapists supporting people with persistent pain often encounter both pain- and non-pain-related psychological distress

Aims/objectives: To present a framework based on 'risk communication' and 'coping planning' approaches that will facilitate participants' assessment and management of people experiencing psychological and suicidal distress. While applicable to all areas of practice, this framework will be contextualised to persistent pain settings.

Approach: Drawing on anonymised case studies from the presenter's PhD research, the presenter will provide worked examples of how 'risk communication' and 'coping planning' approaches can be implemented in the context of physiotherapy. To orientate participants to these approaches, a brief overview of different perspectives on psychological and suicidal distress will be included. Worked examples will explore (i) how psychological questionnaires may be integrated into the 'busy' clinical setting, (ii) assessment and management outside the context of multidisciplinary teams such as private practice, and (iii) strategies to support people experiencing psychological or suicidal distress beyond referral to other professionals/services.

Key Practice Points: Participants will learn:

- Different perspectives on psychological distress, such as those offered by the Power Threat Meaning Framework and the Diagnostic and Statistical Manual of Mental Disorders.
- The principles of 'risk communication' and 'coping planning' approaches.
- How these approaches can be implemented in the context of physiotherapy practice



# Patient-related barriers and enablers to the implementation of high-value physiotherapy for chronic pain: a systematic review and meta-analyses

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Pain 5, P 8, October 6, 2023, 10:35 AM - 11:20 AM

Aim: To identify, and synthesise patient-related barriers and/or enablers to the implementation of highvalue physiotherapy (HVP) for chronic pain (CP). Further, to review what patient-related interventions have been used to facilitate the implementation of HVP for CP, and their efficacy.

Design: Systematic review and meta-analyses.

Method: We systematically searched APA PsycInfo, Embase, CINAHL, Medline, Scopus, and PEDro databases for peer-reviewed studies (published in English) regarding adults with CP. Themes were synthesised using the Theoretical Domains Framework of behaviour change. Outcomes from technology-based interventions (i.e. telehealth, 'apps', text-messaging) for exercise adherence were meta-analysed using fixed-effect models.

Results: Fourteen studies reported on barriers and enablers - eight related to exercise adherence. Themes common to barriers and enablers included: perceived efficacy of treatment, interrelationship with the physiotherapist, exercise burden, and patient's understanding of exercise benefits. Other barriers included fear of movement, fragmented care, and cost. Ten studies explored interventions - nine aimed to improve exercise adherence. From these, meta-analysis of pooled data from four randomised-controlled trials (n = 351) yielded a Hedges' g effect estimate of 0.60 (p < 0.001, 95% CI 0.38 to 0.81, I2 = 0.00%) favouring the interventions.

Conclusion: Patients with CP experience barriers to HVP from multiple behaviour changes domains. Technology-based interventions have demonstrated moderate effectiveness at increasing exercise adherence.

- Patients with CP experience barriers to HVP.
- Enablers of HVP include: rapport with their physiotherapist, achievable exercises (and an understanding of the benefits), and seamless cost-effective care.
- Technology-based interventions can enhance exercise adherence.



# Supporting effective implementation of a biopsychosocial approach to musculoskeletal pain care through the behavioural lens

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Pain 5, P 8, October 6, 2023, 10:35 AM - 11:20 AM

Aims: Achieving high quality biopsychosocial pain care is complex. We aimed to: (i). map barriers and enablers influencing healthcare professionals' adoption of a biopsychosocial approach to musculoskeletal pain against behavioural change frameworks; (ii). identify behavioural change techniques to support implementation of quality pain care.

Design/Method: A five-step process informed by the Behaviour Change Wheel:

(i). Barriers and enablers derived from our systematic review were mapped onto the Capability Opportunity Motivation-Behaviour model and Theoretical Domains Framework using "best fit" synthesis;
(ii). Multi-stakeholders were identified from a whole-of-health perspective as target audiences for behavioural interventions;

(iii). Interventions were considered based on established criteria;

- (iv). A conceptual model was synthesised to understand these behavioural determinants;
- (v). Behaviour change techniques were identified for multi-stakeholders.

Results: Barriers/enablers mapped onto 5/6 components of the Capability Opportunity Motivation-Behaviour model and 12/15 domains on the Theoretical Domains Framework. Identified multi-stakeholders included healthcare professionals, educators, workplace managers, guideline developers, researchers and policymakers. Derived behavioural interventions included education, training, environmental restructuring, modelling and enablement. To identify how to facilitate behaviour change to improve training and support for healthcare professionals, six techniques were identified from the Behaviour Change Technique Taxonomy (version1). Behavioural intervention priorities included building effective communication to strengthen therapeutic alliance (clinical-level); re-design of curricula to strengthen interdisciplinary pain competencies (service provision/health workforce training); and encouraging multi-sectoral partnerships (systems-level).

Conclusion Specific behavioural interventions may improve implementation of biopsychosocial musculoskeletal pain care.

**Key Practice Points:** 

• Behavioural interventions can be adopted to specifically target clinical training domains associated with quality pain care.



#### "It's complex" - the challenges and opportunities for physiotherapists who work with chronic pain patients

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Pain 5, P 8, October 6, 2023, 10:35 AM – 11:20 AM

Aim: The aim of this study was to explore the experiences of Australian physiotherapists who work with people who experience chronic pain and to outline the challenges, priorities and opportunities within a service delivery and consumer driven framework.

Design: A qualitative design using a thematic analysis.

Method: Participants were Australia physiotherapists, currently working or had worked in the previous 12 months with people who experience chronic pain. Participants were recruited via a convenience sample from a physiotherapy pain day held in Sydney. In small groups (≤10), participants completed a guided discussion based on four prompt questions relevant to the aims of the study. The data was analysed using a reflexive thematic analysis.

Results: 66 participants, 48 (73%) females, contributed to eight groups. The analysis revealed that: (1) The complexity of pain has profound effects on all aspects of management; (2) The specific themes (n=13) that were identified are all influenced by, and influence, three interconnecting and overarching constructs of: health systems, patients and clinicians.

Conclusion: Pain is complex and so are the experiences of Australian physiotherapists who work with people who experience chronic pain. The challenges, as a result of the complexity of pain, impact not just patients but also the physiotherapists who support them.

- The complexity of pain impacts all aspects of physiotherapy management.
- The challenges for managing people with chronic pain are complex and the solutions require an appreciation for the complexity and interrelated nature of the constructs that contribute to pain.



# Group facilitation skills: how to run group programs for people experiencing chronic pain

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Pain 11, P 1, October 7, 2023, 1:40 PM - 2:25 PM

Background: Biopsychosocial pain management programs are the gold standard treatment for people experiencing chronic pain. Due to the therapeutic benefit of the group process, as well as cost effectiveness, these programs are usually run in groups. However, facilitating groups is a separate skill to working on a one-to-one basis. Many physiotherapists report they lack knowledge, confidence and skills in this area.

Aims: The aim of this session is to highlight the skills used to successfully facilitate a group program for people experiencing chronic pain. Participants will acquire knowledge of group processes including optimising group composition, building cohesion, holding boundaries, enhancing peer-to-peer learning and maintaining fidelity. Participants will also learn to adapt communication skills to a group setting to enhance behaviour change, and build confidence to manage challenging scenarios.

Approach: This session will present a case series, following a group scenario, demonstrating the complexity and skills required to successfully facilitate group interventions. Real life examples and excerpts from manuals will highlight how these skills are used in practice. Participants will reflect upon the skills used, and video will illustrate how group processes operate in real time.

**Key Practice Points:** 

Participants will:

- Gain knowledge of the skills used to successfully facilitate groups and be ready to practice these skills
- Gain knowledge of the factors that contribute to the success of a group intervention
- Be confident to implement group programs for people experiencing chronic pain
- Be able to apply these skills to facilitating groups in other physiotherapy settings



### Effects of exercise on pain in people with Parkinson's disease: a systematic review

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Pain 11, P 1, October 7, 2023, 1:40 PM - 2:25 PM

Aim: To determine the effects of exercise on pain in people with Parkinson's disease.

Design: Systematic review and meta-analysis of randomised and quasi-randomised control trials. PROSPERO registration: CRD42019129154.

Method: Six databases were searched for studies that met the following inclusion criteria: participants with idiopathic Parkinson's disease; an experimental intervention where exercise was the focus; a measure of pain was reported. A preliminary meta-analysis comparing exercise and no intervention for the Parkinson's Disease Questionnaire-39 bodily discomfort subscore was conducted.

Results: Twenty-one trials (1,217 participants) were eligible. Pain was the primary outcome measure in four trials. The exercise modalities trialled included Tai Chi, Qigong, dance, yoga, exergaming, multidisciplinary rehabilitation, aerobic, strength, aerobic and agility exercise. A preliminary random effects meta-analysis (10 trials, 713 participants) showed no statistically significant difference between the exercise and no intervention group on pain (Hedges' g = -0.124, 95% Cl -0.371 to 0.123, p = 0.327; l2 = 46.5%, p = 0.024).

Conclusion: Further research of exercise designed to reduce pain is needed to determine the effects of exercise on pain and the optimal exercise regime for people with Parkinson's disease and pain.

- Exercise is important for people with Parkinson's disease as it has positive effects on mobility, strength, balance, quality of life and falls.
- Chronic pain is common in Parkinson's disease, however, the effect of exercise on pain is unknown.
- Exercise for people with Parkinson's disease and pain needs to be carefully prescribed and monitored to ensure pain is appropriately managed.



# Heightened pain sensitivity is associated with greater shoulder disability in people with musculoskeletal shoulder symptoms: a cross-sectional study

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Pain 12, P 1, October 7, 2023, 2:30 PM - 3:15 PM

Aim: Determine the association between pain sensitivity and shoulder disability whilst accounting for confounding factors. Determine the prevalence of pain sensitivity in those with musculoskeletal shoulder symptoms.

Design: Cross sectional design collecting data via an online survey. Participants with shoulder symptoms (symptoms in last week  $\geq$ 3/10) were recruited via social media and through flyer advertisement in Perth and Albany, Western Australia in 2021.

Methods: Pain sensitivity was measured using the Central Sensitivity Inventory and shoulder disability was measured using the Shoulder Pain and Disability Index. Confounding factors included sex, age, socioeconomic status, obesity, psychological distress, sleep quality, physical activity, smoking, ethnicity, and the symptoms of neuropathic pain. The association between pain sensitivity and shoulder disability was assessed by linear regression adjusting for confounding factors. Percentage of participants with pain sensitivity was determined.

Results: Pain sensitivity was positively associated with greater shoulder disability using pain sensitivity as a categorical (coefficient 5.51, 95% CI 0.07-10.94, p 0.047) or continuous variable (coefficient 0.28, 95% CI 0.07-0.50, p 0.010) when adjusted for confounding factors. In 249 participants with shoulder symptoms, 48.2% met the threshold for having heightened pain sensitivity.

Conclusion: Heightened pain sensitivity was positively associated with greater disability, even when accounting for multiple confounders. These findings highlight the importance of considering pain sensitivity in the clinical encounters of people with shoulder symptoms.

- Addressing pain sensitivity in those with shoulder pain may be important to alleviate disability.
- Screening for pain sensitivity should be considered in people who have shoulder pain.



# Peer patient examinations are feasible, authentic, and predict clinical performance in physiotherapy students

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Physiotherapy General 1, P 8, October 5, 2023, 11:05 AM - 11:50 AM

Aim: To investigated if using Peer Patient simulation, where students are trained to act as patients for their peers, during examinations was a feasible and predictive alternative to traditional practical examinations.

Design: A single-center, mixed-methods, feasibility and predictive study investigated Peer Patient simulation during practical examinations. The feasibility of these examinations was determined through the amount of time taken to train senior students and the consistency of their portrayal. Junior students' acceptance of the examinations and their experience were also investigated. Odds ratios were used to examine whether Peer Patient Examinations can predict work-integrated learning performance.

Results: 77 junior students (91%) consented to participate. Twelve senior students were trained as Peer Patients - they were highly consistent in their patient portrayal (4.5 out of 5, SD 0.3). The time impost on senior students for training was feasible, averaging 10 hours. Junior students rated the examinations as more acceptable than regular practical examinations. Themes that emerged included: examinations were authentic; assisted in the development of the students' professional identity; more practice time would have been beneficial. The odds of failing placement were 10.1 times higher in students who failed their Peer Patient Examination, than in students who passed.

Conclusions: Peer Patient examinations were feasible, acceptable, and predictive of future clinical performance.

- Peer Patient examinations have the potential to develop student professional identity.
- Students found them to be an authentic assessment tool.
- The examinations were predictive of work-integrated learning performance allowing academics to implement targeted remediation.



Use of common humanity scenarios to promote understanding of compassion and empathic distress in physiotherapy students – a pilot study

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Physiotherapy General 1, P 8, October 5, 2023, 11:05 AM - 11:50 AM

Aims: It is widely acknowledged that compassion in physiotherapy practice is important, but teaching approaches that enhance compassion have been little explored within this profession. This study aimed to determine whether compassion in physiotherapy students was promoted by using common humanity scenarios, and the usefulness of this approach.

Design: Pre-post evaluation.

Methods: Four groups of final year physiotherapy student groups participated in a seminar focused on common humanity and compassion in the context of physiotherapy clinical care. Common humanity videos were viewed and clinical scenarios discussed. Participants completed the Compassionate Love Scale for Humanity before and after the seminar, rated the overall usefulness and relevance of the seminar content to their practice, and preferences for the resources applied.

Results: Thirty-five participants (70% female) completed a pre-post evaluation. Ratings of compassion for humanity improved significantly post-seminar (median [IQR] 5.33 [5.11, 5.44] versus 4.33 [4.11, 4.78], p<0.001). Participants rated the seminar as very or extremely useful (80%); information on compassion as moderate to very important (100%); and preferred a mix of resources (common humanity videos 42%; clinical scenarios 14%)

Conclusion: Final year physiotherapy students reported feelings of increased compassion following participation in a single seminar which applied common humanity scenarios and perceived the seminar as useful to their practice.

- A single teaching activity focused on common humanity scenarios improves measures of compassion in physiotherapy students.
- Use of common humanity videos and clinical scenario discussions are useful teaching approaches in this context.



# Aligning inter-professional learning within allied health curricula to the discipline-specific professional competency standards and university interprofessional education accreditation requirements

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Physiotherapy General 1, P 8, October 5, 2023, 11:05 AM - 11:50 AM

Aim: To identify needs and opportunities for targeted development of embedded inter-professional education within School of Allied Health programs.

Design: An iterative, consultative and rigorous and systematic curricula mapping process was used by a collaborative interprofessional team within the School of Allied Health at a national university.

Method: A mapping tool was purpose designed to map current curricula interprofessional learning to the (a) Australian Catholic University Interprofessional Education Framework, (b) competency standards and (c) accreditation standards in each discipline.

Results: Disciplines varied in how their current curriculum met International Education Framework domains, competency standards, and accreditation requirements. All disciplines at least partially met relevant accreditation and professional competency standards. This project has provided a 'road map' to enable the school to plan and further develop interprofessional curricula and meet competency standards in each profession.

Conclusion: This information will enable the school to apply a rigorous and defensible approach to embedding further interprofessional education in our degree programs and allow students to reach entry-to practice interprofessional capabilities.

- This work will enable allied health students to develop knowledge and behaviours for collaborative inter-professional practice, making a positive difference to delivery of client-centred health care.
- Allied Health disciplines within the school will have clear information regarding interprofessional criteria for accrediting bodies in our entry-level degree programs.
- Learnings from this project will enable the University's Interprofessional Framework to be implemented across other disciplines and Universities, expanding interprofessional education activity more broadly.



## Addressing the "black boxes" phenomenon in online learning using a student partnership approach

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Physiotherapy General 1, P 8, October 5, 2023, 11:05 AM - 11:50 AM

Aims: Fostering a strong sense of belonging can be challenging. This study aims to partner with students to improve belonging in an online learning environment

Design: Mixed-methods

Methods: Allied health students, including physiotherapy, who had previous experience completing an online subject in 2021 were invited to participate in a two-round e-Delphi study. The questionnaire consisted of 33 recommendations on ways to strengthen sense of belonging, identified from the literature and a previous study. Students scored each recommendation using a 5-point Likert scale. A percentage of >80% was set as the agreement threshold. Following the two rounds, list of recommendations were then presented at two workshops where both students and academics co-designed ways to action these recommendations.

Results: A total of 71 participants, including 20 physiotherapy students and four physiotherapy academics, were recruited to the study. Four of the 33 recommendations met the 80% agreement threshold- i) feeling confident to seek assistance from staff (94.4%), ii) respectful and open learning environment (92.8%), iii) supported by peers within the course (82.4%) and iv) creation of a professional identity (81.6%). Practical ways to action these recommendations included engaging alumni in supporting students and the need to upskill students on use of technology and online learning engagement.

Conclusion: Creation of a safe online learning environment is a foundational step towards fostering a stronger sense of belonging.

- Students feel vulnerable in the online learning space.
- Students need support with use of technology.
- Need to develop a uniform approach towards fostering stronger belonging.



## What should all health professionals know about movement behavior change? An international Delphi-based consensus statement

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Physiotherapy General 8, P 8, October 6, 2023, 3:35 PM - 4:20 PM

Aim: To establish key competencies for all health professionals to support individuals to change their movement behaviours.

Design: Delphi study

Method: Consensus was obtained using a three-phase Delphi study. Participants with expertise in physical activity and sedentary behaviour were asked to report what knowledge, skills and attributes they believed health professionals should possess in relation to movement behaviour change. A series of proposed competencies were developed and rated for importance. Finally, participants were asked to indicate agreement for inclusion, with consensus defined as group level agreement of at least 80%.

Results: Participants from 11 countries, working in academic (55%), clinical (30%), or combined academic/clinical (13%) roles reached consensus across three rounds (n=40, n=36, n=34, respectively) on 11 competencies. Participants agreed that health professionals should recognise, take ownership of, and practice interprofessional collaboration in supporting movement behaviour change; support positive culture around these behaviours; communicate using person-centred approaches that consider determinants, barriers, and facilitators of movement behaviour; explain the important health impacts of these behaviours; and, recognise how their own behaviour influences movement behaviour change support.

Conclusion: Consensus on a set of key competencies was achieved; these competencies should be integrated into health professional training and professional accreditation standards to improve physical activity promotion in health care settings.

- Health professionals, including physiotherapists, require competency in movement behaviour change support in order to adequately service their patients
- Although all disciplines have a role in this support, physiotherapists are uniquely placed to champion the integration of these competencies.



# Changes in daily step count in new lower limb prosthetic users within the first three months after inpatient prosthetic rehabilitation

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Physiotherapy General 8, P 8, October 6, 2023, 3:35 PM - 4:20 PM

Aim: To measure changes in daily step count in new lower limb prosthetic users at discharge from inpatient rehabilitation and in the 12 weeks post-discharge.

Design: Prospective longitudinal cohort study.

Method: Participants were adults with a new major (transtibial or higher) unilateral lower limb amputation, prescribed their first prosthesis during inpatient rehabilitation. Participants wore an activPAL accelerometer to measure daily step count, for seven days prior to discharge home (T0). Participants returned at 2 (T1), 6 (T2), and 12 weeks (T3) post discharge for re-assessment. Repeated measures ANOVA was performed to track step count over time.

Results: Twelve participants (92% male, 75% trans-tibial amputation) completed the study. Mean (95% CI) steps per day increased from 923 (622, 1224) at T0, to 1307 (228, 2386) at T1, 1649 (52, 3247) at T2 and 2328 (509, 4148) at T3 (p=.20).

Conclusion: Participants increased their daily step count in the first three months post discharge from inpatient rehabilitation. However, there was a large range in step counts in the sample, and they also walked far less than recommended activity levels.

- New unilateral lower limb prosthetic users are not very active when they leave hospital post inpatient rehabilitation.
- Prosthetic walking gradually increases in the first three months back at home.
- Some patients may require more support and therapy to increase their prosthetic utilisation at home.



## Levels of physical activity and sedentary behaviour during and after hospitalisation: a systematic review

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Physiotherapy General 8, P 8, October 6, 2023, 3:35 PM - 4:20 PM

Aim: To systematically review and synthesise the evidence on physical activity and sedentary behaviour during and after hospitalisation.

Design: Systematic review

Methods: Electronic databases were searched from year 2000 to April 2020. Studies which continuously monitored physical activity and/or sedentary behaviour in hospitalised adults across two settings (i.e. without a break in measurement between settings). Monitoring could occur from an acute to a subacute/rehabilitation hospital, acute setting to home, or an subacute/rehabilitation setting to home.

Results: 15 of 5579 studies were included, and comprised of heterogenous patient populations. All studies monitored patients with either an accelerometer and/or pedometer, reporting a variety of measures including steps/day, sedentary time, and activity counts. The majority of studies (12/15) showed patients engaged in 1.3 to 5.9 times more physical activity and up to 67% less daily sedentary behaviour at home after discharge from acute or subacute settings.

Conclusions: Patients engaged in more physical activity and less sedentary behaviour at home compared to both the acute and subacute hospital settings. This may reflect the natural course of recovery or the impact of setting on activity levels. Enabling early discharge home through the implementation of home-hospitalisation models may result in increased patient physical activity and reduced sedentary behaviour. Further experimental studies are required investigating the impact of home-based models of care on physical activity and sedentary behaviour.

- Patients engaged in more activity at home compared to acute and subacute hospital settings
- Home-based models of care may result in increased physical activity following hospitalisation



# Effectiveness of physical activity interventions for improving depression, anxiety and distress

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Physiotherapy General 8, P 8, October 6, 2023, 3:35 PM - 4:20 PM

Aim: To synthesise evidence of the effects of physical activity (PA) on symptoms of depression, anxiety and psychological distress in adult populations.

Design: Meta-review

Method: Systematic review, of systematic reviews, of physical activity interventions for any adult population.

Results: Ninety seven reviews were eligible, covering 1039 RCTs and over 128,000 participants. A medium effect was found in favour of PA for reducing depression, depressive symptoms and anxiety. PA was effective for reducing depression across all clinical conditions, with the largest effects demonstrated in kidney disease, HIV, COPD, generally healthy adults and individuals diagnosed with depression. All modes of exercise (e.g. cardiovascular exercise, strength training, stretching) were effective, with the greatest effect size for higher intensity exercise. Programs that were moderate in frequency (4-5 times per week) and shorter in duration (12 weeks or less) were most effective.

Conclusion: PA is effective for improving depression and anxiety across a very wide range of populations. All PA modes are effective, and higher intensity is associated with greater benefit. PA programs including structured exercise interventions should be a mainstay approach for managing depression and anxiety.

- PA has an important role in the management of mild-to-moderate symptoms of depression, anxiety and psychological distress.
- Physical activity can be implemented by physiotherapists as part of 1:1, group and home programs for clients suffering symptoms of depression, anxiety and psychological distress
- Physiotherapists can enhance PA levels where injury, pain or illness impact an individual's ability to be physically active



## Designing physical activity interventions for women aged 50+: a qualitative study of participant perspectives

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Physiotherapy General 8, P 8, October 6, 2023, 3:35 PM - 4:20 PM

Aim: To analyse participants' perspectives on physical activity in general and the 'Active Women over 50' program, for optimising the design of physical activity programs for women 50+.

Design: Qualitative study, individual semi-structured one-on-one interviews.

Method: Twenty 'Active Women over 50' trial participants were purposively recruited. Interviews explored participants' perspectives on physical activity, program components and suggestions for future program iterations. Data were analysed thematically.

Results: An interplay of several factors shaped participants' capacity to be active. The analysis generated four main themes relating to physical activity in general and to the program: Age and gender matters, Physical activity is social, Strategising for physical activity, and the Self-responsibility discourse. Physical activity and program participation seemed challenged by personal, life-stage, cultural factors and the tension between those factors and a self-responsibility discourse. Social support and finding a suitable strategy for generating and sustaining motivation were deemed integral to being active. Future programs could facilitate social networks, accountability and positive framing to support women's agency in being active.

Conclusion: Challenges described by participants operate at individual, social and systemic levels. A range of strategies is key to supporting women over 50 to be more active. Resource-efficient suggestions are offered and could be incorporated into a scaled program.

- Promote physical activity as part of overall health and life.
- Offer flexible program strategies, options, and structural supports that address different circumstances and levels of agency.
- Use program framing to support and engage women to take responsibility without self-blame.



# Comparison of a novel hybrid and traditional clinical physiotherapy placement model

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Physiotherapy General 9A, P 7, October 7, 2023, 10:35 AM - 11:35 AM

Aim: to compare staff and student satisfaction, and placement outcomes for two different physiotherapy clinical placement models: Hybrid (half-onsite, half-remote) and Traditional (onsite) hospital placements.

Design: Mixed-methods observational

Method: All supervisors (n = 11) and students (n = 19) involved in either placement model were invited to undertake online surveys and semi-structured interviews. Final Assessment of Physiotherapy Practice (APP) scores for each placement were compared. Interview data were analysed (reflexive thematic analysis) and survey responses were collated.

Results: There was no significant difference between APP scores for both models (mean-difference = 0.6, p = 0.91). Survey response rates were 100% supervisors and 37% students. Students and supervisors reported similar levels of satisfaction for either model. Supervisors reported some reservations with the Hybrid model and higher workloads (2-4 hours/week increase). Interview themes (from 10 interviews) associated with satisfying placements in general included the value of structure, having explicit learning activities and ensuring psychological safety. Challenges associated with the Hybrid model include accessing patients, assessing learning, building rapport with staff and patients and exposure to the clinical setting.

Conclusion: The Hybrid model was largely acceptable and achieved comparable learning outcomes to the Traditional placement model. Use of remote structured learning of clinically applicable activities has potential to innovate and support sustainable clinical placements.

- Both Hybrid and Traditional clinical placement models were largely acceptable by supervisors and students and achieved comparable learning outcomes.
- For either model, structured placements, explicit learning goals and supportive relationships lead to satisfying placements.



# Predicting student failure in physiotherapy musculoskeletal clinical placements: a machine learning approach

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Physiotherapy General 9A, P 7, October 7, 2023, 10:35 AM - 11:35 AM

Aim: To determine predictors of failure in musculoskeletal (MSK) clinical placements.

Design: A retrospective longitudinal design.

Method: Data was sourced from records of students commencing clinical placements from 2009-2021. Demographic data included gender, postcode, ATAR, year. Academic data included outcomes of MSK unit assessments throughout their course. Clinical success was determined by attainment of >49% on the APP criteria. Data analysis used a train and test approach with an ensemble of 4 machine learners. Variables for modelling were ranked by Chi-squared analysis. Multivariate models were evaluated by Area Under Receiver Operator Curve (AUC), Classification Accuracy (CA), precision and recall.

Results: 1082 complete student records were included in the study. Placement Fail rates were 4% (45). To address the low percentage of fails, models were trained with a randomly selected sample of 90 pass, 30 fail students. Variables ranked most important (chisq >1) included 5 viva exams, 1 written assessment item. Variables less important (chisq <1) were ATAR, gender, postcode, placement location and year commenced. 3 out of 4 models performed well on the remaining data (AUC 0.89-0.97, CA 0.79-0.87) but all lacked precision.

Conclusion: The academic curriculum has significant value for identifying students at risk of failure, independent of demographic background or gender. Assessment design that uses viva-style exams to simulate clinical practice has particular value in preparing students to succeed in their clinical practice.

- Viva exams prepare students for physiotherapy MSK placements.
- Gender, demographic background and ATAR are poor predictors of clinical placement failure.



# An interactive clinical supervision training program may improve the effectiveness of clinical supervision of physiotherapists: a randomised controlled trial

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Physiotherapy General 9A, P 7, October 7, 2023, 10:35 AM - 11:35 AM

Aim: To determine whether adding an interactive clinical supervision training program to self-education can improve the effectiveness of clinical supervision of physiotherapists, and reduce burnout, intention to leave and increase participation in clinical supervision compared to self-education alone.

Design: Assessor-blinded, randomised controlled trial with concealed allocation and intention-to-treat analysis.

Method: Participants in both groups received a self-directed allied health clinical supervision training package (self-education). Experimental group participants also received interactive, physiotherapy-specific clinical supervision training consisting of three 90-minute workshops. The primary outcome measure was effectiveness of clinical supervision 4-months after training measured using the Manchester Clinical Supervision Scale (MCSS-26). Secondary outcomes were the Maslach Burnout Inventory, the Intention to Leave Scale, and participation in supervision.

Results: Fifty-eight physiotherapists working at a publicly-funded health service were allocated to either the experimental (n=30) or control group (n=28). The addition of interactive clinical supervision training improved effectiveness of clinical supervision with a between-group mean difference of 6.3 units (95% CI 0.3 to 12.3) on the MCSS-26. Physiotherapists in the experimental group reported significantly lower levels of depersonalisation (MD -3.0 units, 95% CI -4.6 to -1.3). There were no between-group differences in other burnout domains, intention to leave or participation in supervision.

Conclusion: Adding interactive clinical supervision training to self-education may lead to a small improvement in the effectiveness of clinical supervision of physiotherapists and small reductions in depersonalisation.

**Key Practice Points:** 

• To improve the effectiveness of clinical supervision of physiotherapists and reduce burnout, interactive, physiotherapy-specific training may out-perform self-education.



## Patient satisfaction associated with student-led physiotherapy health clinics

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Physiotherapy General 9A, P 7, October 7, 2023, 10:35 AM - 11:35 AM

Aim: To investigate patient satisfaction within student-led physiotherapy health clinics.

Design: Anonymous online mixed methods survey.

Method: Participants completed an online anonymous survey encompassing the Med-Risk Instrument and seven open-ended survey questions. The Med-Risk Instrument is a 20-item questionnaire used to quantitatively assess the quality of a musculoskeletal practice using a Likert scale (strongly agree: 5 to strongly disagree: 1). The Med-Risk was analysed using the mean (standard deviation [SD]) of each question and open-ended responses were analysed using thematic analysis undertaken within NVivo.

Results: Thirty participants (21 females, mean age 52, (13) years) across two clinics completed the survey. Patient satisfaction scores ranged between 4.07 (1.30) and 4.93 (0.25) (out of 5) for all categories within the Med-Risk Instrument. Thematic analysis identified five main themes: (1) patient-student-educator relationships (patients felt confident knowing a clinical educator was supervising their care), (2) student attributes (patients appreciated student knowledge and communication skills), (3) student education (patients enjoyed playing a role in student education), (4) quality physiotherapy care (most patients felt they received high-quality care), and (5) convenient, accessible, and affordable physiotherapy services.

Conclusion: Patients reported high satisfaction when considering the Med-Risk Instrument, with most openended responses also supporting high patient satisfaction for those attending student-led physiotherapy health clinics.

- Patients report feeling confident and comfortable having a clinical educator supervise their care.
- Patients value the opportunity to facilitate student learning within student-led physiotherapy clinics.
- Student-led physiotherapy clinics provide an affordable, accessible, and high-quality service option for patients.



# Exploring readiness to engage in telehealth among adults accessing physiotherapy outpatient services in the Greater Western Sydney region beyond COVID-19

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Physiotherapy General 9B, P 10, October 7, 2023, 10:35 AM - 11:35 AM

Aim: To evaluate i) the extent of readiness to engage in telehealth among adults using physiotherapy services residing in the Greater Western Sydney region, and ii) the differences in readiness between CALD and non-CALD groups.

Design: Prospective cross-sectional study

Method: Patients attending outpatient physiotherapy services from August 2022 to February 2023 were invited to complete a 32-item survey. Questions related to demographic characteristics, access to technology and willingness to engage in the use of telehealth. Survey was translated into four other languages. Results were first descriptively analysed. An odds-ratio calculation was used to evaluate the differences in odds with engagement in telehealth between CALD and non-CALD groups.

Results: A total of 202 patients with a mean age of 61(SD=17.7) years were recruited. 55.9%(n=113) selfidentified to be from a CALD background. Despite 77.2%(n=156) patients had access to technology, only 45.5%(n=92) patients were willing to engage in telehealth. Patients from CALD background had higher odds in engaging with telehealth as compared to people from non-CALD backgrounds (OR=2.2, 95% CI 1.2 to 3.9).

Conclusion: Willingness to engage in telehealth is poor even though access to technology is high. Contrary to the literature, people from CALD backgrounds may be more willing to engage in telehealth than people from non-CALD background.

- Majority of patients attending physiotherapy have access to technology.
- Factors apart from accessibility to technology is impacting on willingness to engage in telehealth.
- People from CALD group are more willing to engage in telehealth as compared to the non-CALD group.



# How to keep your patient information secure in a rapidly changing digital world

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<sup>1</sup>Cliniko

Physiotherapy General 9B, P 10, October 7, 2023, 10:35 AM - 11:35 AM

Background: As a practitioner, you are the custodian of sensitive and private patient health information. You are ethically and legally obligated to keep this information secure. You likely store this information digitally, but are you up to date on the latest advice on how to keep it secure?

The digital world is changing fast, there are hardware advancements that are rapidly making passwords obsolete, and already the rules have changed on what's a secure password. All is being adopted globally, but it has serious privacy implications you need to be aware of for your business.

In recent years, there have also been numerous high-profile data breaches, which have resulted in the exposure of millions of private records. These breaches have highlighted the need for stronger security measures and increased awareness of the importance of keeping patient information secure.

Aims / objectives: To improve the digital security of every participant. There will be simple actionable steps to take for everyone, that will significantly reduce the risk of exposing patient information. To ensure participants are aware of newer threats, and how to mitigate them.

Approach: The presenter will provide a lecture style presentation (25min) full of practical and easy to follow tips. There will also be Q&A (5min) to respond to any questions the audience has.

- Participants will understand and manage authentication securely.
- Participants will understand modern threats to privacy of information.
- Participants will be able to keep their digital devices secure.



# Attendance, adherence and satisfaction with telerehabilitation delivered physiotherapy: a systematic review and meta-analysis

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Physiotherapy General 9B, P 10, October 7, 2023, 10:35 AM - 11:35 AM

Aim: To compare the effect on attendance, treatment adherence, and patient satisfaction between physiotherapy delivered via telerehabilitation and via face-to-face.

Design: Systematic review with meta-analysis of randomized controlled trials.

Method: Five databases (PubMed, CINAHL, Embase, PEDro, and Cochrane) were systematically searched for randomised controlled trials of adults receiving either real-time video telerehabilitation or face-to-face physiotherapy. Random-effects meta-analyses were performed using the DerSimonian-Laird estimator.

Results: Seven studies were included for attendance, four studies for adherence, and six studies for satisfaction. Telerehabilitation resulted in attendance rates that were 8% higher (95% CI -2% to 18%) and rates of adherence to home exercise programs that were 9% higher (95% CI -3% to 21%), when compared to face-to-face physiotherapy. Satisfaction rates were similar for both modes of delivery, with a difference of only 1% (95% CI -3% to 5%) in favour of telerehabilitation.

Conclusion: Physiotherapy delivered via real-time video telerehabilitation results in rates of attendance, adherence and satisfaction that are at least similar to those of face-to-face delivery. Although the results are also consistent with telerehabilitation being superior for attendance and adherence, further studies are required to confirm these findings. Nevertheless, given the importance of attendance and adherence for successful physiotherapy outcomes, telerehabilitation represents a promising alternative mode of delivery.

- Telerehabilitation is a viable option for physiotherapy delivery, with similar or better attendance and exercise adherence rates compared to face-to-face.
- Physiotherapists should consider telerehabilitation as a viable alternative, especially for patients who face challenges attending in-person.



# Studies in leading physiotherapy journals commonly make inappropriate conclusions regarding treatment effect modifiers: a systematic review.

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Physiotherapy General 10, P 5, October 7, 2023, 11:40 AM - 12:40 PM

Aim: Characteristics that identify patients who respond differently to certain interventions are called treatment effect modifiers. Some studies inappropriately report the presence of treatment effect modifiers without adequate study designs. This study aimed to evaluate what proportion of single-group studies published in leading physiotherapy journals inappropriately report treatment effect modifiers, and to assess whether the proportion varies over time or between journals.

Design: Systematic review of single-group studies (e.g., cohort study or secondary analysis of treatment arm of a randomised controlled trial) published in eight leading physiotherapy journals since 2000.

Methods: Eligible studies investigated any condition, intervention, or outcome. Studies that suggested participants with certain baseline characteristics responded better to the intervention were considered to have reported inappropriately. The proportion of inappropriate reporting was compared over time and between journals.

Results: Of the 145 included studies, 73 (50.3%) were categorised as inappropriately reporting effect modification. The proportion of inappropriate reporting was highest in the most recent period, 2018 – 2022 (59.6%) and 2006 – 2011 (55.6%). The proportion of inappropriate reporting varied substantially between journals, from 0% (Journal of Physiotherapy) to 91.7% (Journal of Neurologic Physical Therapy).

Conclusion: A large proportion (50.3%) of single-arm studies in leading physiotherapy journals inappropriately report treatment effect modifiers. This inappropriate reporting risks misleading clinicians when selecting interventions for individual patients.

**Key Practice Points:** 

• Clinicians should be cautious of single-group studies reporting the presence of treatment effect modifiers and use care when integrating results to practice.



# Sluggish adoption of simple methods that reduce bias: a longitudinal analysis of 35,653 physiotherapy trials

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Physiotherapy General 10, P 5, October 7, 2023, 11:40 AM - 12:40 PM

Aim: What is the rate of improvement in the percentage of trials on the Physiotherapy Evidence Database (PEDro) that use concealed allocation and intention-to-treat analysis?

Design: Longitudinal analysis of trials indexed on PEDro.

Method: For randomised trials indexed on PEDro, publication year and methodological quality scores (11item PEDro scale) were extracted. The percentage of trials achieving each of the two PEDro Scale criteria of interest was regressed over time from 1980 to 2019. Data were binned by decade and the rate of improvement was measured.

Results: Data for 35,653 trials published between 1980 and 2019 with completed PEDro ratings were analysed. In the 2010s, 32% of trials used concealed allocation and 33% of trials used intention-to-treat analysis. This was an increase of ~9% and ~10% per decade, respectively.

Conclusion: Despite being readily achievable, concealed allocation and intention-to-treat analysis are still used by a minority of trials indexed on PEDro. At the current rate of improvement, complete uptake of these simple methods to reduce bias in trials of physiotherapy interventions will not be achieved until the 2090s for concealed allocation and the 2080s for intention-to-treat analysis.

- Uptake of these simple methods would avoid decades of physiotherapy trials being exposed to important biases.
- Clinical trialists must routinely use concealed allocation throughout the recruitment and participant allocation period.
- Clinical trialists should ensure they understand the recommended definitions of intention-to-treat analysis.
- Clinical trialists should ensure that their trial procedures permit the achievement of the intention-totreat analysis criterion.



#### How to search PEDro to answer clinical questions

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Physiotherapy General 10, P 5, October 7, 2023, 11:40 AM - 12:40 PM

Background: Evidence-based practice starts with asking a clinical question then navigating the large volume of published articles to acquire high-quality clinical research that answers the question. Unfortunately, clinicians exhibit difficulty with both of these steps. An analysis of 1.3 million PEDro searches indicated that only 50% of searches specified two or more of the key elements of a clinical question (PICO elements: Population, Intervention, Comparator, Outcome), 4% used features that improve the efficiency of searching (e.g. truncation), and 13% contained errors (e.g. Boolean operators).

Aims: This session aims to facilitate evidence-based practice by developing participants' knowledge and skills in asking clinical questions and acquiring evidence using PEDro.

#### Objectives:

- 1. Devise a PICO question from a clinical scenario
- 2. Generate search terms for each element of the PICO question
- 3. Conduct a PEDro search to identify high-quality clinical research to answer the clinical question.

Approach: This session involves demonstrations and will promote audience engagement through:

- participants nominating clinical scenarios that will be used to generate PICO questions
- exploration of search terms for the elements of the PICO questions
- designing initial search strategies for PEDro
- refining the search strategies to identify high-quality clinical research to answer the questions.

- Following this session, participants will be confident in asking the 'right' clinical question, and designing and adapting a search strategy in PEDro to find the answer.
- These learning outcomes will contribute to physiotherapists' ability to apply strategies to systematically access high-quality clinical research.



# Evaluation of an integrated, interactive Aboriginal health curriculum to support physiotherapy students' experience and development of cultural capabilities

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Physiotherapy General 11A, P 11, October 7, 2023, 1:40 PM - 2:25 PM

Aim: To determine the impact of a new integrated, interactive Aboriginal health curriculum on physiotherapy students' cultural capabilities.

Design: A cross sectional descriptive design.

Method: Data were collected using an online survey incorporating the Cultural Capabilities Measurement Tool (CCMT). Surveys were sent to all UniSA Graduate Entry Masters of Physiotherapy students commencing in 2020 at four time points; prior to the new curriculum, after the completion of all new learning activities, at the end of the first academic year and at the completion of the program.

Results: All students (n=19) participated in the learning activities. Survey response rates ranged from 6 to 68 percent. Small positive changes were seen in CCMT scores, scored out of a maximum of 125, increasing from 106 (SD 9.2) to 114 (SD 7.2) following the curriculum delivery. Greatest changes in CCMT scores were seen for items, Advocation for improvement in Aboriginal and Torres Strait Islander Peoples health, Responsibility to challenge the ways things are done in health practice and Understanding impacts of Australia's colonial history Aboriginal and Torres Strait Islander Peoples health.

Conclusion: These findings provide the first insights into the cultural capabilities of Graduate Entry Masters Physiotherapy students. Positive changes in students' cultural capabilities were demonstrated following the introduction of an integrated, interactive Aboriginal health curriculum.

- This is the first study evaluating the cultural capabilities of physiotherapy students
- Small positive changes in cultural capabilities of Graduate Entry Masters of Physiotherapy students' were seen following a new Aboriginal health curriculum



Creating positive clinical placement experiences for Indigenous students completing the National Aboriginal and Torres Islander Health Academy program

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Physiotherapy General 11A, P 11, October 7, 2023, 1:40 PM - 2:25 PM

Aim: To create a positive clinical placement experience for students from the National Aboriginal and Torres Islander Health Academy program to further promote their interest in working in health.

Design: Qualitative exploration of students' perception of clinical placement experience and interest in a career in health.

Methods: Strategies identified to create a positive placement experience were: (1) providing supervisors with cultural responsiveness training; (2) regular communication with key stakeholders; (3) utilising experienced and flexible placement providers. Student experience was evaluated by interviews and questionnaires with all four students on placement.

Results: 100% of the students that attended clinical placements had a positive experience. 100% of students agreed this experience further increased or confirmed their interest in a career in health.

Conclusion: A positive clinical placement experience appears to be an important factor in increasing or confirming Indigenous students' interest in working in health. Identifying specific strategies with stakeholders helps create a positive placement experience. Further research with more students and in different settings is needed to further evaluate these relationships and strategies.

- Attracting and retaining more Indigenous people to work in health has been identified as an important strategy to improve health outcomes for Indigenous people.
- Positive placement experiences are critical in attracting and retaining more Indigenous students to study and work in the health sector.
- Cultural responsiveness training for supervisors, regular communication with key stakeholders, and experienced and flexible placement providers were identified as key strategies to create a positive placement experience for Indigenous students.



#### Design and delivery of cultural safety assessment in a First Nations context

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Physiotherapy General 11A, P 11, October 7, 2023, 1:40 PM - 2:25 PM

Background: With recent strengthened requirements for accreditation in physiotherapy education, the importance of cultural safety education and assessment is well understood. However, design and implementation of these assessments can be challenging. Incorporation of feedback from First Nations alumni regarding assessments relating to First Nations health is essential and should be underpinned by First Nations leadership and collaboration.

Aims/Objectives: The aim of this session is to present the process of developing an assessment relating to First Nations health and cultural safety in The University of Melbourne's Doctor of Physiotherapy program. We aim for participants to reflect on current teaching programs and assessments and seek opportunities to develop these through First Nations leadership and allyship.

Approach: This session will be facilitated by a First Nations academic and will explore the process and considerations to design a cultural safety assessment, that aims to be culturally safe for students and academics, including designers and assessors. The session will also guide audience self-reflection and the sharing of ideas and experiences with fellow participants.

#### Key Practice Points:

Following this session, it is expected that participants will understand:

- The value of critical reflection and innovative teaching/assessing in the context of cultural safety
- Why and how to use non-assuming and inclusive language
- The importance and scaffolding of First Nations leadership in physiotherapy education.



## 'A massive part of rehab is between the ears'; barriers and facilitators of anterior cruciate ligament rehabilitation: a focus-group analysis

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Sports & Exercise 3A, P 8, October 5, 2023, 1:40 PM - 2:25 PM

Aim: To investigate the patient-reported barriers to and facilitators of ACL reconstruction rehabilitation to identify targets to facilitate participation and adherence to rehabilitation.

Design: Qualitative focus group analysis.

Method: In this qualitative study three focus groups were conducted with individuals 1-20 years post anterior cruciate ligament reconstruction. Utilising a semi-structured interview guide, participants were asked about their experiences during anterior cruciate ligament reconstruction rehabilitation. Focus groups were recorded, transcribed, and coded using an inductive semantic thematic analysis methodology.

Results: Five organising themes were identified (consisting of 19 sub-themes): psychological, physiological, rehabilitation service, rehabilitation characteristics, and interaction with others. Each theme details aspects of rehabilitation, such as exercise delivery, informational support, frequency, and duration of care, kinesiophobia, weight management and interactions with teams and coaches, which present barriers or facilitators for patients to adhere to and participate in rehabilitation.

Conclusions: This qualitative investigation identified key aspects of a patient's rehabilitation in which they encounter a variety of barriers and facilitators of ACL reconstruction rehabilitation. These aspects, such as the rehabilitation characteristics, service delivery, psychological and physiological factors, and interactions with others, were consistently identified by this cohort as factors which affected their rehabilitation.

- The themes may provide targets for clinicians to improve rehabilitation and deliver patient-centred care.
- However, the themes must be evaluated in future trials to assess whether interventions to remove barriers or enhance facilitators improves subsequent outcomes such as return to sport and re-injury rates.



# Understanding fear after an anterior cruciate ligament injury: a qualitative thematic analysis using the common-sense model

#### Little C<sup>1</sup>

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Sports & Exercise 3A, P 8, October 5, 2023, 1:40 PM - 2:25 PM

Aim: This study explored the deeper contextual underpinnings of fear and how these fear beliefs develop in people following ACL injury.

Design: Qualitative interpretive study design.

Method: ACL-injured participants (n=18), aged 18-50 who scored above-average on a modified Tampa Scale of Kinesiophobia, were interviewed about their fear beliefs in relation to their injured knee. Interpretive description and thematic analysis were used to determine themes. The Common-Sense Model of Self-Regulation (CSM) was applied to the results of the thematic analysis to determine how these fear beliefs were formed.

Results: Common themes which contributed to fear were identified: 'External messages'; 'Difficulty of the ACL rehabilitation journey'; 'Threat to identity and independence'; 'Socioeconomic factors', and 'Ongoing psychological barriers'. A sixth theme, 'Positive coping strategies', provided insight into influences which reduced fear. The CSM provided a conceptual framework for the inter-related, emergent nature of the identified themes.

Conclusion: This paper gives support to the notion that an ACL injury is not purely a physical injury, rather it has more complex psycho-social componentry.

- Using the CSM to conceptualize the role of fear in conjunction with other biopsychosocial factors could assist clinicians to better identify and manage fear as part of a comprehensive treatment approach for some individuals.
- Managing an ACL injury, without considering the broader biopsychosocial context of the injury, might be detrimental to return to play outcomes.



## Online information about the management of anterior cruciate ligament ruptures in Australia: a content analysis

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Sports & Exercise 3A, P 8, October 5, 2023, 1:40 PM - 2:25 PM

Aim: Summarise the proportion of webpages on ACL rupture management that present evidence-based information.

Design: Content analysis.

Methods: We examined webpage information on ACL ruptures identified through (1) Google searches using terms synonymous with 'anterior cruciate ligament rupture' and searching 'knee surgeon' linked to each Australian capital city, and (2) websites of professional associations. The primary outcome was the proportion of webpages that suggest people can return to at least some form of sport with non-surgical management.

Results: Out of 115 webpages analysed, 48% suggested people can return to at least some form of sport with non-surgical management. Almost half of webpages suggested most people will return to some form of sport following ACLR (41%) and mentioned benefits of ACLR (43%). Fewer webpages mentioned benefits of non-surgical management (14%), approximately two in three people return to pre-injury level of sport following ACLR (4%), risk of re-injury following ACLR (23%), most people return to sport within 9 months of ACLR (27%), activity modification as a management approach (20%), and ACLR will reduce the risk of osteoarthritis (23%).

Conclusion: Most online information on ACL rupture management isn't aligned with the best available evidence.

- 48% of webpages analysed suggest people can return to at least some form of sport with nonsurgical management following ACL rupture.
- Online information on the risk of re-injury and the rate of return to pre-injury sport following ACL rupture can be misleading.
- Inaccurate webpage information could create unrealistic expectations for return to sport following ACL rupture.



## Knee osteoarthritis 25-years post anterior cruciate ligament reconstruction: a prospective study

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Sports & Exercise 4, P 9, October 5, 2023, 2:30 PM - 3:15 PM

Aim: Knee osteoarthritis is a complex, chronic, debilitating condition, and is a common sequela following anterior cruciate ligament reconstruction. This study investigates the prevalence of osteoarthritis 25 years post-reconstruction and factors that are related to progression over time.

Design: Prospective cohort study.

Method: Sixty-two patients with unilateral anterior cruciate ligament ruptures were enrolled prior to reconstruction. Patients received physiotherapy pre- and post-surgery. Fifty-six patients were assessed six years post-reconstruction and 40 have been assessed 25 years post-reconstruction. Assessment pre- and post-surgery included strength, stability, functional and subjective testing and radiology. Patellofemoral and tibiofemoral osteoarthritis were assessed using Kellgren-Lawrence scoring. Relationships between osteoarthritis severity and 15 modifiable and non-modifiable factors were explored using correlations. Factors included: time delay pre-surgery; graft site, muscle strength; meniscal/chondral damage; sports level and duration post-surgery; weight gain; subsequent injury; residual instability; graft failure.

Results: Six years post-reconstruction, 48% of patients had tibiofemoral osteoarthritis (36% mild; 12% moderate), and 36% had mild patellofemoral osteoarthritis. Twenty-five years post-reconstruction, 80% of patients had tibiofemoral osteoarthritis (37.5% mild, 27.5% moderate; 15% severe), and 65% had patellofemoral osteoarthritis (37.5% mild, 22.5% moderate; 5% severe). Three patients had undergone total knee replacement surgery (7.5%). Modifiable factors found to relate to long-term severity of osteoarthritis are reported.

Conclusion: Osteoarthritis prevalence is high 25 years post-reconstruction and the severity variable.

- There is need to ignite our commitment to reducing the prevalence and severity of knee osteoarthritis after anterior cruciate ligament reconstruction.
- Understanding how modifiable factors impact on osteoarthritis long-term may optimise outcomes.



## Factors associated with fear and distress when viewing videos depicting challenges to knee stability

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Sports & Exercise 4, P 9, October 5, 2023, 2:30 PM - 3:15 PM

Aim: This study investigated responses (fear and distress) to watching videos depicting increasing threat to knee stability (running, cut-and-pivot, feigned knee injury during cut-and-pivot, series of traumatic knee injuries). The influence of multiple biopsychosocial factors, as well as having or not having a prior anterior cruciate ligament injury, were assessed.

Design: Cross-sectional study.

Method: Participants (n=153) randomly viewed four videos depicting increasing threat to knee stability. Scores for each video were summed. Demographic data (including age, gender), biopsychosocial factors (including kinesiophobia, self-efficacy, depression, anxiety, sleep, social isolation) and having an anterior cruciate ligament injury (yes n=85) were collected. Multivariable regression modelling was used to understand what factors were associated with the total score for the videos (separate models for fear and distress).

Results: Participants reported escalating fear and distress as the threat to knee stability increased. The escalation was more pronounced in people who had an anterior cruciate ligament injury. In the multivariable model for fear, having an injury (4.9 (95%CI 1.6 to 8.1), p=.003), increase kinesiophobia (0.4 (95%CI 0.1 to 0.7), p=.018), lower self-efficacy related to future function (-0.8 (95%CI -1.6 to -0.03), p=.042) and increase social isolation (1.0 (95%CI 0.2 to 1.7), p=.014) were contributing to the total fear rating.

Conclusion: Viewing videos depicting increasing threat to knee stability may provide insight into lasting fear after an anterior cruciate ligament injury.

- Fear following anterior cruciate ligament injury should be considered in rehabilitation efforts.
- Video assessment may assist in understanding a person's fear.



## Exercise induced hypoalgesia in elite badminton athletes with and without knee pain

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Sports & Exercise 4, P 9, October 5, 2023, 2:30 PM - 3:15 PM

Aim: This study aimed to test the hypoalgesic effects of isometric exercise in a field environment in elite Badminton players with and without knee pain.

Design: Cohort study

Methods: Athletes (8 male, 6 female) competing at an international level in Badminton were tested on the sideline during an in-season training session. Participants completed questionnaires, single leg decline squat and ultrasound examination to evaluate functional impairment, intensity and location of knee pain and pathology of the patellar tendon. A blinded examiner measured pressure pain thresholds (PPT) over the quadriceps muscle before and after two conditions (3-minute rest and 3-minute isometric wall squat). Repeated measures ANOVA of PPT was performed, including time and condition as within-subject factors and the presence of knee pain during decline squat as a between-subject factor.

Results: 7 participants (50%) reported knee pain during decline squat and 4 participants had signs of patellar tendinopathy. Maximal rating of perceived exertion (RPE-CR10) during wall squat was  $8.4 \pm 1.7$ . For PPT, a significant time-by-condition interaction was observed (p<0.001), with increased PPT after wall squat (115.3kPa, 95% CI 70.5, 160.1, p<0.01) but not rest (15.0kPa, 95% CI -23.7 to 53.6, p=0.42). There was no effect of knee pain on results.

Conclusion: Exercise induced hypoalgesia was observed in badminton players with and without pain following a 3-minute wall squat during a typical training session.

- Endogenous analgesia may be assessed during training using measures previously used in a laboratory environment
- Elite athletes with and without knee pain experienced exercise-induced analgesia



### Investigation of the nature of fear within ACL-Injured subjects when exposed to provocative videos: a concurrent qualitative and quantitative study

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Sports & Exercise 4, P 9, October 5, 2023, 2:30 PM - 3:15 PM

Aim: This study assessed fear and distress qualitatively and quantitatively while watching videos of knee function within a high-fear ACL-injured population.

Design: Mixed methods study.

Method: An ACL-injured population (n=17) who reported high fear on the Tampa Scale of Kinesiophobia participated. Quantitatively, individuals self-reported their level of fear and distress when shown four videos displaying sequentially more provocative threats to the knee (running, a cut-and-pivot action, a cut and pivot + feigned knee injury, a short series of video clips of knee injuries). Qualitatively, participants were interviewed to explore the underlying nature of their fear and distress.

Results: Five themes were identified in response to the video stimuli: 1) Evoked physiological responses; 2) Deeper contextualisation of the meaning of an ACL injury influencing bodily confidence; 3) Recall of psychological difficulties; 4) Negative implications of re-injury, and 5) Perceived changes to athletic identity. Quantitatively, participants reported greater levels of fear and distress as the threat in the videos increased. Distress/fear increased most between the cut-and-pivot action and the cut and pivot + feigned knee injury videos.

Conclusion: This study supports the notion that an ACL injury is not just physical, rather it has a complex range of neurophysiological, psychological, and social characteristics which drive fear and distress.

- Using video exposure in the clinic may assist in identifying underlying psychological barriers to recovery, facilitating individualised person-centred care.
- The broader bio-psychosocial context of an ACL injury should be considered in clinical management.



### Returning to elite basketball following unicompartmental knee arthroplasty in a 41yo female: a criteria-based progression

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Sports & Exercise 4, P 9, October 5, 2023, 2:30 PM - 3:15 PM

Aim: To establish criteria for a 41-year-old female athlete to return to elite basketball following lateral unicompartmental knee arthroplasty.

Design: Case Report

Method: A forty-one-year-old female athlete (AB) retired (due to injury) in 2015. Following retirement, AB had a lateral unicompartmental knee hemiarthroplasty. Eleven months prior to the 2022 World Cup, AB, an untrained individual at the time, expressed a desire to return to basketball. At the time, there was no literature or criteria regarding return to elite sport following unicompartmental knee hemiarthroplasty. The Orthopaedic Surgeon indicated it was safe for AB's knee to return to elite basketball. Individualised criteria to return to the National Squad environment was established. The criteria included: minimal training requirements, strength measures, ForceDeck testing, fitness testing and cultural expectations.

Results: This athlete progressed through sport specific training, passed objective criteria to return to the National Squad and was selected in the National Team for the World Cup. AB was available to play every game of the World Cup and played an average of ten minutes/ game, scoring an average of nine points/ game.

Conclusion: This athlete was available for every game at the World Cup. Limitations of this case report include: supervision and close monitoring. These were not always possible in a decentralized training environment.

- Communication between key stakeholders is critical in the decentralized environment where multiple practitioners are involved
- Selection criteria for return to the National Squad was individualised and communicated to the athlete with all key stakeholders present



### Considering patient preferences, accountability strategies and healthcoaching to optimise adherence to an individualised and progressive walking program: a qualitative study

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Sports & Exercise 8, P 10, October 6, 2023, 3:35 PM - 4:20 PM

Aim: Physical inactivity is a public health concern requiring urgent action. Physiotherapists are well placed to address this, by encouraging a more physically active lifestyle to their patients. This study explored participants' motivations for participating in a walking program and identified elements facilitating the commencement and adherence to such programs.

Design: WalkBack is a randomised controlled trial examining the effectiveness of a six-month, progressive, and individualised walking program for low back pain prevention. This qualitative study was undertaken on a sample of WalkBack participants.

Methods: Semi-structured focus groups were conducted following completion of the walking program. Interview questions explored: primary motivations for starting a walking program; and the identification of elements useful in optimising adherence. Audio was transcribed, and thematic analysis followed.

Results: Three major themes were identified. Theme one identified that anticipated improvements to low back pain management, and the added general health benefits of an active lifestyle were motivation to engage in exercise. Theme two identified that fear of high-impact exercises led to avoidance; but walking was considered safe. Theme three identified accountability, enjoyment of exercise and felt health benefits, were critical to adherence.

Conclusion: Patients are likely to better adhere to exercises which align with their motivations and preferences. Physiotherapists can improve patient support through incorporating accountability and principles of health coaching in their clinical practice.

- Physiotherapists are well placed to encourage adherence to a walking program.
- Principles of accountability and health coaching, aid the commencement and long-term adherence to walking programs.



# The moderating role of kinesiophobia on the association between daily pain and physical activity in people with Achilles tendinopathy

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Sports & Exercise 8, P 10, October 6, 2023, 3:35 PM - 4:20 PM

Aim: To investigate within-person associations between pain and daily load proxies including physical activity measures in people with Achilles tendinopathy and to investigate the potential moderating effect of kinesiophobia on the within-person association of pain and physical activity.

#### Design: One-week longitudinal study

Method: Thirty participants with Achilles tendinopathy wore a six-axis inertial measurement unit (IMU) on the affected ankle for one week and completed questionnaires assessing kinesiophobia. Participants were contacted daily via text message to rate their worst pain intensity during that day. Daily proxies of load including physical activity, stride rate, peak shank angular velocity, and peak acceleration were calculated. Associations between pain and load proxies were explored with multilevel modelling.

Results: There was a positive within-person association between daily pain and daily physical activity (estimate=0.53, p<0.001) and daily load proxies. The association between daily pain and daily physical activity was moderated by kinesiophobia (estimate= -0.04, p=0.04), with participants scoring lower in kinesiophobia showing a stronger association.

Conclusion: Day-to-day changes in pain intensity and physical activity are positively associated in people with Achilles tendinopathy. The association is more pronounced in those with low kinesiophobia.

- Day-to-day changes in pain intensity and physical activity is moderated by kinesiophobia.
- People with high kinesiophobia may have different underlying causes of pain that extend beyond the amount of load imposed on the tendon during daily physical activities.
- Load management programs in people with high kinesiophobia may need to be combined with interventions targeting kinesiophobia.



### Hip dysplasia - tips for clinical assessment

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Sports & Exercise 10, P 2, October 7, 2023, 11:40 AM - 12:40 PM

Introduction: Hip Dysplasia is a leading cause of early hip osteoarthritis and is associated with pain, physical impairments, and poor quality of life. Misdiagnosis is common with the average patient waiting five years and seeing three clinicians before receiving a correct diagnosis. During this time, patients often experience inappropriate treatments which can worsen or delay improvement in their hip condition.

Aims: To increase attendees' knowledge regarding hip dysplasia and improve their ability to recognise and diagnose an athlete or patient who presents with dysplastic hip symptoms. Participants will learn how to interpret objective tests and radiographic images to assist in diagnosis and subsequent treatment.

Approach: The presenters will provide a short lecture outlining the current knowledge base and evidence surrounding hip dysplasia (10mins), outline the subjective and radiological clues for diagnosis (10mins) and perform a practical demonstration of useful clinical tests (10mins).

- Participants will learn what is hip dysplasia is.
- Participants will be able to better identify hip dysplasia in clinical practice.
- Participants will understand the importance and limitations of objective tests and radiographic images for hip dysplasia.



# Physiotherapy (cervical manual therapy, vestibular/ oculomotor therapy or exercise) improves outcomes following a concussion: a systematic review and meta-analysis

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Sports & Exercise 11B, M 1 & 2, October 7, 2023, 1:40 PM - 2:25 PM

Aim: To determine the effect of physiotherapy interventions (cervical therapy vestibular/oculomotor therapy and exercise), on symptom severity and return to sport/function, following concussion.

Design: Systematic review (SR) with meta-analysis of randomised controlled trials (RCTs) comparing cervical treatments, vestibular/oculomotor therapy or exercise in concussion management to control (treatment as usual). Outcomes were days to symptom resolution, medical clearance to return to sport and symptom severity scores.

Results: 12 RCTs were included,7 of good to excellent quality (PEDro). Seven RCTs assessed sub-threshold aerobic exercise,with 5 included in the meta-analysis. The results favoured exercise with a small to medium effect in reducing symptom scores (SMD 0.43, 95% CI 0.18 to 0.67,p=0.001, I2=0%). Separating these trials into acute ( $\leq 2$  weeks) and persistent (>2 weeks) presentations favoured exercise, with a small to medium effect for both acute (SMD 0.38,95% CI 0.01 to 0.74,p=0.04, I2=0%) and persistent symptoms (SMD 0.46, 95% CI 0.13 to 0.80,p=0.006, I2=0%). Three trials considered the effect of individually tailored multimodal therapy (cervical, vestibulo-oculomotor therapies) on outcomes post-concussion. Meta-analysis of two trials resulted in a risk ratio of 3.29 (95% CI 0.30 to 35.69, I2=83%) to return to sport by eight weeks. A significant moderate effect was found in reducing symptoms (SMD 0.63,95% CI 0.11 to 1.15, p=0.02, I2=0%).

Conclusion: Individually tailored interventions (cervical therapy, vestibular/oculomotor therapy and exercise) based on individual impairments improved symptom scores and reduced days to recovery post concussion.

- Tailored physiotherapy interventions should be included in the management of concussion.
- Individuals who received physiotherapy were 3 times more like to be cleared to return to sport.



# Effectiveness of pharmacological and non-pharmacological treatments for acute concussion symptoms in adults: a systematic review of randomised controlled trials

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Sports & Exercise 11B, M 1 & 2, October 7, 2023, 1:40 PM - 2:25 PM

Aim: To evaluate the effect of pharmacological and non-pharmacological interventions provided within two weeks of injury on symptoms of adults with concussion.

Design: Systematic review of randomised controlled trials.

Method: The study protocol was registered. We adhered to guidelines for systematic reviews and synthesis without meta-analysis. A comprehensive search strategy was performed of four databases in consultation with a health science librarian. Study selection, data extraction and risk of bias were performed independently and in duplicate by two reviewers.

Results: The database search identified 7531 articles, 11 trials met eligibility criteria and were included. Five of the trials were rated as high-risk of bias and six rated with some concerns. Trials were international (82% North America, 18% Europe) and were in emergency departments (72%) or outpatient healthcare settings (28%). Two trials reported significant improvement in concussion-related symptoms following the intervention compared to controls. These interventions included manual therapy with short-term benefits and telephone counselling with benefits at six months.

Conclusion: Of the eleven trials included in this systematic review, two trials that delivered interventions within two weeks of injury, reported significant improvement in concussion symptoms compared to controls. Further rigorous research is needed to validate these interventions before implementation into clinical practice.

- Clinicians should implement international guideline-based care for acute concussion.
- In the absence of superseding evidence, graduated functional and symptomatic management defines current best practice as described in the international guidelines.



## The effect of physical interventions on the intrinsic foot muscles: a systematic review and meta-analysis

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Sports & Exercise 12, M 1 & 2, October 7, 2023, 2:30 PM - 3:15 PM

Aim: To conduct a systematic review and meta-analysis investigating the effects of physical interventions on intrinsic foot muscle morphology, strength, activation, and motor performance.

Design: Systematic review and meta-analysis.

Method: PubMed, EMBASE, CINAHL, SPORTDiscus, Web of Science and Cochrane Library were searched to April 2022, including randomised clinical trials investigating the effects of physical interventions (nonsurgical, non-pharmacological) on any measurement of intrinsic foot muscles. Two reviewers independently screened results, assessed risk of bias (Cochrane Risk of Bias 2 tool) and extracted data. Standardised mean differences were calculated and pooled when studies were sufficiently homogenous.

Results: Thirty studies were included. They investigated interventions such as exercise, minimalist footwear, foot orthoses and electrical stimulation. Sample size ranged from 8 to 118 participants (≤30 participants in 53% of studies) and the majority (77%) of studies included asymptomatic adults. All studies had at least some concerns over risk of bias. Forty-seven outcome measures were reported. Meta-analysis was conducted for effects of foot exercises and minimalist footwear on muscle morphology and strength, though there were few studies, small point estimates and relatively large confidence intervals.

Conclusion: Due to heterogeneity of existing studies, there is a low level of certainty of the effect of physical interventions on intrinsic foot muscle morphology, strength, activation and motor performance.

Key Practice Points:

• Based on current evidence there is no clear first line intervention to target intrinsic foot muscle size and strength



### Pelvic floor symptom trends in women attending virtual group physiotherapy from early to late pregnancy: considerations for early intervention

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Women's, Men's & Pelvic Health 1, M 1 & 2, October 5, 2023, 11:05 AM – 11:50 AM

Aim: To examine pelvic floor symptom trends in women attending virtual group physiotherapy during pregnancy and possible opportunities for early intervention.

Design: A cross-sectional observational study of women who completed online surveys by text message invitation to attend virtual group physiotherapy.

Method: All women registered for antenatal care at a level 6 maternity service between July 2022 and March 2023 were invited to attend virtual physiotherapy and online survey responses were assessed. Health-related quality of life, obstetric, medical and exercise history, pregnancy, pelvic floor, and musculoskeletal symptoms were reported as pre-existing and/or pregnancy-onset.

Results: Nearly 50% of the 754 women completing surveys were aged over 35. Sixty-nine percent of women presenting with stress urinary incontinence in the first trimester reported pre-existing incontinence. Sixty-five percent of women reporting vaginal heaviness were nulliparous, with symptoms predominantly reported between 19-28 weeks gestation and with co-morbid low back pain. Women with sexual pain mostly reported as pregnancy onset with co-morbid low back pain and stress urinary incontinence in 62% and 53% respectively. Most reports of urgency urinary incontinence appeared in the second trimester, 50% with co-morbid constipation.

Conclusions: Gestational trends in pelvic floor symptoms provide clinical and service insights that could be used to inform treatment pathways

- Women with musculoskeletal pain during pregnancy should be screened for comorbid sexual pain
- Pre-existing stress urinary incontinence predicts most early pregnancy incontinence
- The experience of vaginal heaviness in the second trimester by mainly nulliparous women with comorbid musculoskeletal pain is curious



### "It can be managed quite well with physiotherapy": perceptions and experiences of Australian healthcare professionals towards pregnancyrelated pelvic girdle pain

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Women's, Men's & Pelvic Health 2, M 3, October 5, 2023, 11:55 AM - 12:40 PM

Aim: To determine healthcare professionals' beliefs and experiences caring for women with PPGP.

Design: A qualitative research design.

Method: Individual, semi-structured interviews of 27 healthcare professionals (doctors, midwives and physiotherapists) providing antenatal care in a metropolitan hospital were conducted following purposive sampling. The majority of participants were female (22/27) with a range of experience. Interviews were transcribed, coded, sorted into meaningful categories and synthesised into broad themes.

Results: Four themes were identified 1. What PPGP looks like; 2. What works well in caring for women with PPGP; 3. What gets in the way of caring for women with PPGP; 4. The need for an interdisciplinary and integrated approach. Healthcare professionals identified PPGP as a common and disabling condition. Stepped-level care, including education and physiotherapy intervention, was viewed as helpful and perceived of benefit. However, barriers to the provision of care were the absence of routine screening for PPGP and a lack of physiotherapists working in the antenatal clinic.

Conclusion: There was a consistent view by healthcare workers that women with PPGP require an integrated and multidisciplinary approach. In particular, physiotherapy care was seen as an important addition to the ante-natal care team which has historically included midwives and obstetricians.

- Healthcare professionals acknowledge the importance of early physiotherapy intervention to help women manage pain.
- Embedding physiotherapy as an integral part of the multidisciplinary team would reduce unnecessary delays.
- Physiotherapy is essential to build self-efficacy and empower women to being able to better cope with PPGP.



### Physical activity in Australian women during pregnancy

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Women's, Men's & Pelvic Health 3, P 9, October 5, 2023, 1:40 PM - 2:25 PM

Aim: To determine physical activity levels, sedentary behaviours, and associated factors in Australian pregnant women.

Design: A cross-sectional study using block-randomised sampling of pregnant women attending a metropolitan tertiary hospital.

Methods: Pregnant women (n = 780) completed a questionnaire to determine their weekly physical activity and self-reported time in sedentary behaviours. The association between physical activity, sociodemographic characteristics and country of birth were analysed using logistic regression.

Results: Approximately one third (34%) of women were classified as 'active', however, only 7% of women performed the recommended amount of physical activity according to Australian guidelines. Women reported (mean (95% Cl)) sitting for 8 (7.8, 8.2) hours and lying down during the day for 0.5 (0.5, 0.6) hours whilst pregnant. Being university educated (OR [95% Cl]) (2.87 [1.6, 4.9]), in paid employment (2.12 [1.14, 3.94]) and having a lower BMI (0.91 [0.87, 0.95]) were factors associated with being active.

Conclusion: Most Australian women perform low levels of physical activity and spend extended periods of time in sedentary behaviours during pregnancy. Knowledge of associated factors could be used to better support women to be more active during pregnancy.

- The lack of physical activity during pregnancy has the potential to increase the risk of poorer health outcomes and maternal complications.
- Health promotion strategies need to target women at risk of being insufficiently active during pregnancy in the Australian context.
- Physiotherapists are well placed to promote the benefits of physical activity during pregnancy as part of routine ante-natal care.



# A consumer co-created infographic improves knowledge about physical activity and self-efficacy to exercise in women with GDM: a randomised trial

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Women's, Men's & Pelvic Health 3, P 9, October 5, 2023, 1:40 PM – 2:25 PM

Aim: To determine whether the addition of a consumer co-created infographic to usual education improves knowledge about physical activity and self-efficacy to exercise in women diagnosed with gestational diabetes mellitus.

Design: A randomised trial with concealed allocation, a blinded assessor and intention-to-treat analysis.

Method: An infographic about physical activity for women with gestational diabetes was co-created with 18 consumers before trial commencement. Participants in the trial were 69 women diagnosed with gestational diabetes mellitus. In addition to gestational diabetes education, the experimental group received a paper copy of the infographic. The control group received gestational diabetes education alone. Participants completed outcome measures at baseline and 1 week later. Knowledge of physical activity in a gestational diabetes mellitus pregnancy was assessed using a 19-item questionnaire modified to reflect current physical activity guidelines, with a total score from 0% (worst) to 100% (best). Self-efficacy was measured using the nine-item Self-Efficacy for Exercise Scale, with a total score from 0 (not confident) to 10 (very confident).

Results: Providing the infographic led to a clinically important between-group difference in knowledge (MD 12%, 95% Cl 10 to 15) and self-efficacy (MD 2.5 units, 95% Cl 1.9 to 3.0) favouring the experimental group.

Conclusion: Short-term knowledge about physical activity and self-efficacy to exercise were improved when usual education was supplemented with an infographic providing specific information about physical activity during a gestational diabetes mellitus pregnancy.

Key Practice Points:

• Collaborating with consumers to co-create an infographic about physical activity ensured it provided clear, simple, and specific information.



### Integrating physiotherapy within an existing gestational diabetes service through the design and delivery of personalized exercise interventions for women

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Women's, Men's & Pelvic Health 3, P 9, October 5, 2023, 1:40 PM - 2:25 PM

Background: Women diagnosed with gestational diabetes, defined as any degree of glucose intolerance with onset or first identification during pregnancy, experience diverse impacts from initial diagnosis to managing the condition and associated long-term health risks. The gestational diabetes model of care usually consists of endocrinologists, diabetes educators, and dietitians. Despite the established efficacy of exercise therapy for both control and prevention, especially when supervised, physiotherapists and exercise intervention are often missing. Findings from our personalised medicine approach to supervised exercise therapy for women diagnosed with gestational diabetes demonstrate both health service feasibility and maternal health outcomes that support routine inclusion of physiotherapy within the model of care.

Aims: To develop participants' knowledge, skills, and application of best practice in exercise prescription for the control and prevention of gestational diabetes. Participants will be introduced to screening tools, outcome measures, and prescription principles necessary for delivery of an effective exercise intervention within a tertiary service model of care.

Approach: The presenters will provide a lecture-style background introduction (10mins) followed by video and case demonstrations of exercise programming and outcome measurement (10mins). Participants will then apply screening and outcome measurement to design programs (10mins). The manual includes patient pathways, screening tools, outcome measures, and exercise programs.

#### Key Practice Points:

Participants will learn:

- How to embed physiotherapy within their existing gestational diabetes service
- Strategies to identify women that would benefit from supervised exercise
- To design and implement effective exercise programs that improve glucose control and health outcomes



# Co-designing a Physiotherapy led intervention to improve the mental health of postnatal women

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Women's, Men's & Pelvic Health 4, October 5, 2023, 2:30 PM - 3:15 PM

Background: Perinatal mental illness is a significant issue in Australia. Physiotherapists have unique skills in: central nervous system modulation (through movement, breathing, relaxation, physical activity, and touch), postnatal physical recovery, and infant developmental play. Successful intervention design and implementation is enhanced through consumer co-design.

Aim: To co-design a perinatal mental health focused physiotherapy intervention with key stakeholders.

Design: Collaborative, multi-method, case control health service research.

Method: A 6-week physiotherapy-led group program for postpartum mothers and their baby was codesigned with consumers, implemented, and evaluated using qualitative and quantitative methods. Interviews with intervention participants were thematically analysed and change in patient reported outcome measures of quality of life, mental health and maternal attachment compared to local population data sets were investigated. Underpinning this methodology is ongoing collaboration between researchers, clinicians, and consumers with lived experience of postnatal mental illness from research conception to dissemination.

Results: Preliminary findings resulting from collaborating with and listening to new mothers has directed the research process and intervention design to effectively support perinatal mental health, quality of life and maternal attachment.

Conclusion: Physiotherapists' have a role in supporting perinatal mental health. Collaboration in all aspects of a research project from design, implementation, evaluation, and dissemination improves health service research relevance in clinical practice. This provides mutual benefit to the researchers, clinicians and consumers involved.

- Physiotherapists have unique skills for supporting perinatal mental health.
- Intervention development is enhanced through co-design.
- Genuine co-design in research takes practice, time, and resources to implement.



# Comparing perceived heating effect and intensity of therapeutic ultrasound between breast tissue and calf muscle in lactating women: observational study

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Women's, Men's & Pelvic Health 4, October 5, 2023, 2:30 PM - 3:15 PM

Aim: To determine differences between lactating breast and calf muscle tissue for warmth perception from therapeutic ultrasound, and the range of intensities required to achieve warmth perception in healthy lactating women.

Design: Repeated measures descriptive observational study

Method: Fifty lactating mothers with exclusively breastfed infants aged 6 months or younger were recruited. Therapeutic ultrasound was sequentially applied to the breast and calf. The intensity at which participants reported first perceived warmth and then most tolerable warmth for the breast and the calf was recorded.

Results: First warmth was perceived at lower intensities in the breast (Z=-3.637, p<0.001), but there was no difference between locations for most tolerable warmth (Z=-1.165, p=0.244). Factors associated with perception of first warmth were antidepressant use ( $\beta$  0.369 [95%CI: 0.103-0.635], p=0.007) and location ( $\beta$  0.286 [95%CI: 0.055-0.516], p=0.015). Body mass index (BMI) was the only factor associated with perception of tolerable warmth ( $\beta$  0.024 [95%CI: 0.004-0.044], p=0.017). The range of intensities required to perceive warmth in the breast were 1-2.5Wcm2.

Conclusion: As perception of breast and calf warmth was different, therapeutic ultrasound parameters used to treat musculoskeletal conditions may not be appropriate for inflammatory conditions of the lactating breast. Screening for antidepressant use and BMI prior to therapeutic ultrasound intervention is advisable.

Key points:

- Lactating women who use antidepressants or have a high BMI are less likely to report warmth.
- As not all mothers in this study felt most tolerable warmth at the maximal machine intensity, producing therapeutic ultrasound machines with higher intensities should be considered.



### Supporting women and families in pregnancy, birth and beyond: a codesigned, evidence-based perinatal education program delivered via multiple formats

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Women's, Men's & Pelvic Health 4, October 5, 2023, 2:30 PM - 3:15 PM

Background: Physiotherapists have expertise to support expectant and new parents in pregnancy, birth, postnatal recovery, and parenting. Our health service research co-designed an effective perinatal intervention to meet participant's learning needs, facilitate health literacy, and achieve positive health behaviours to improve health and wellbeing.

Aim: To present the theory and research informed design and implementation of a co-designed, evidence based, woman and family centred perinatal education program.

This will be achieved through: understanding

i) the learning needs of expectant and new parents and the impact of co-design;

ii) how to effectively communicate and apply Health Behaviour pedagogy to meet needs;

iii) how facilitated groups (face to face, online) and digital media work together throughout the perinatal period; and

iv) how to deliver key elements of physiotherapy perinatal education.

Approach : The presenter will outline what expectant and new parents want from perinatal education and the contribution of Physiotherapy within a multidisciplinary program. This will be followed by active practice of group education techniques, examples of digital health education and a summary overview of the pedagogy for effective communication and positive health behaviours. Concluding with guidance for local implementation and evaluation.

- Understand how to meet the needs of expectant and new parents with the right education, delivered the right way at the right time.
- Gain practical insight into the physiotherapist role in effective perinatal education.
- Develop skills to adapt and adopt the program and essentials of evaluation for their local setting.



# Quality of life instruments and their psychometric properties for use in people with neurogenic overactive bladder: a systematic review

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Women's, Men's & Pelvic Health 5, P 11, October 6, 2023, 10:35 AM - 11:20 AM

Aim: To identify psychometrically robust outcome measures for evaluating the quality of life (QOL) of people with neurogenic overactive bladder (OAB).

Design: A systematic review of psychometric properties of QOL instruments

Methods: Multiple electronic English databases were searched from database inception to January 2023. Two independent reviewers conducted study screening, data extraction, and quality appraisal. Studies were included if they validated at least one psychometric property of a QOL instrument among people with neurogenic OAB. The COnsensus-based Standards for selecting health status Measurement INstruments (COSMIN) checklist and Grading of Recommendations, Assessment, Development, and Evaluation (GRADE) tool evaluated the methodological quality and quality of evidence, respectively.

Results: 47 studies totaling 19,994 participants evaluating psychometric properties were included and 15 QOL instruments were identified among people with stroke, spinal cord injury, Parkinson's disease, or multiple sclerosis. The Incontinence Quality of Life Questionnaire (I-QOL), King's Health Questionnaire, Overactive Bladder Questionnaire (OAB-q), and Qualiveen were the most validated instruments, with strong reliability, validity, and responsiveness. The I-QOL was the most robust, cross-culturally administered, and psychometrically strong instrument. The COSMIN checklist indicated sufficient methodological quality for 70% of instruments, and the modified-GRADE tool indicated the quality of evidence ranging from moderate (67%) to high (33%).

Conclusions: I-QOL is a culturally diverse instrument with robust reliability, validity, and responsiveness for assessing QOL among people with neurogenic OAB.

- I-QOL could be used for assessing the QOL of patients with neurogenic OAB.
- I-QOL has good methodological quality (COSMIN) and high-quality evidence (GRADE).



# Australian health care professionals' beliefs and attitudes towards the management of chronic pelvic pain syndromes: a cross-sectional survey

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Women's, Men's & Pelvic Health 5, P 11, October 6, 2023, 10:35 AM - 11:20 AM

Aim: To document the current beliefs and practice behaviours of Australian healthcare professionals in the management of chronic pelvic pain.

Design: Cross-sectional study.

Method: Participants (187 physiotherapists, 75 gynaecologists, 184 general practitioners) provided demographic data. Participants rated their agreement on statements regarding beliefs around chronic pelvic pain and the importance of contributing factors and assessment variables. Participants were provided a vignette of a patient with non-specific pelvic pain and were asked to select their top four management priorities.

Results: All three professions rated patient's beliefs (89.8%), nervous system sensitisation (85.7%), stress/anxiety/depression (91.9%), fear avoidance (83.3%), history of sexual/emotional/physical abuse (94.1%) and pelvic floor muscle overactivity (85.0%) as very/extremely important mechanisms underlying chronic pelvic pain. Most gynaecologists/urogynaecologists (71.0%) and GPs (70.2%) always referred for pelvic ultrasound when assessing chronic pelvic pain. Physiotherapists assessed goal setting (88.8%) and screened for patients' beliefs (80.9%) more often than gynaecologists/urogynaecologists (30.4%, 39.1%) and GPs (46.5%, 29.0%). In the vignette, all three professions focused on physiotherapy, pelvic floor muscle relaxation and sexual health counselling.

Conclusion: Most healthcare professionals surveyed had a good understanding of pain mechanisms, and followed guideline recommended care. Physiotherapy practice was more likely to include goal setting and assessment of beliefs as part of a biopsychosocial approach.

- Targeted education of healthcare professionals involved in the management of chronic pelvic pain may help ensure a biopsychosocial approach and multidisciplinary care is provided.
- Guideline-based knowledge and practice in the area of chronic pelvic pain needs to be translated to patient encounters.



### Beliefs and experiences of females with chronic pelvic pain

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Women's, Men's & Pelvic Health 5, P 11, October 6, 2023, 10:35 AM – 11:20 AM

Aim: To profile the beliefs and experiences of females with chronic pelvic pain and their healthcare management based on contemporary clinical management guidelines.

Design: A cross-sectional cohort study.

Methods: Development and implementation of a novel questionnaire informed by recommendations in clinical management guidelines.

The questionnaire was completed by 465 participants.

Data collection and analysis included descriptive data related to demographics including two validated tools (the Brief Pain Inventory and the Brief Illness Perception Questionnaire), beliefs and experiences related to diagnosis, health care practitioner interaction, assessment, and management of chronic pelvic pain.

Results: Of 465 participants, 64.3% experienced their pain before 18 years of age, but only 36.4% first sought help before 18 years of age. In those seen by a health care practitioner 42.9% felt their pain was not validated and 45.6% were not asked what their personal beliefs were for the cause of their pain. Of all participants, 80.4% believed they needed a diagnosis for their chronic pelvic pain, prior to participating in treatment, and two thirds (68.8%) believed they had been given a diagnosis. However, 38.5% believed that something 'worse' was happening to them that had not been diagnosed yet.

Conclusion: The results of our study show a disconnect between clinical management guidelines and patient experiences which are reflected in other studies.

Key Practice Points:

• Healthcare practitioners may need to validate a patient's pain experience to enable the patient to discuss their concerns as to the cause of their pain and trauma history.



## Screening for psychosocial factors in individuals with pelvic pain? An e-Delphi study

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Women's, Men's & Pelvic Health 5, P 11, October 6, 2023, 10:35 AM - 11:20 AM

Aim: Persistent pelvic pain is a complex condition often influenced by psychological factors. Currently there is no instrument to screen for multiple psychological factors in individuals with pelvic pain. The aim of this study was to firstly determine the relevant psychological factors that should be screened for and secondly, the most appropriate statements to represent these psychological factors.

Design: A focus group followed by an electronic-Delphi process

Methods: A focus group of eight experts determined the relevant psychological factors to screen for in individuals with pelvic pain. A panel of 14 pain experts conducted three rounds of electronic-Delphi online surveys and two teleconference discussions to establish consensus on the most appropriate statement to screen for each of the psychological factors.

Results: Thirteen relevant psychological factors were identified. Experts could suggest rewording or create new statements. Statements were assessed for consensus and stability and were eliminated as the rounds progressed if they met the exclusion criteria. At the completion of round three, 15 statements remained across the 13 psychological factors including; catastrophisation (helplessness, rumination, magnification), fear, avoidance, self-efficacy, depression, anxiety, hypervigilance, health anxiety, sexual assertiveness, stress and trauma.

Conclusion: The Pelvic Pain Psychological Screening Questionnaire (3PSQ) aims to assist clinicians in screening for psychological factors in individuals with pelvic pain as part of a bio-psychosocial approach to pain management.

- Screening allows practitioners to provide psychologically informed care
- Psychological screening tool specific for pelvic pain individuals
- Reduced therapist and client burden of completing multiple screening questionnaires



# Does group physiotherapy improve pain scores and reduce the impact of pelvic pain for women referred with persistent pelvic pain?

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Women's, Men's & Pelvic Health 6, P 11, October 6, 2023, 11:25 AM - 12:10 PM

Aim: To test the impact of evidence-based chronic pain management strategies in group-based formats on clinical outcomes for women referred to Physiotherapy with persistent pelvic pain (PPP), when compared to the existing model of care.

Design: A parallel study of three treatment arms – Treatment arm 1 (T1) usual physiotherapy care (individual consultations), Treatment arm 2 (T2) group pain education session followed by usual care and Treatment arm 3 (T3) group pain education, usual care and an 8-week exercise / education group program.

Method: Women referred with PPP present for more than 6 months completed intake questionnaires prior to their first appointment and on completion of their 5 physiotherapy sessions. Primary outcome measures were pain evaluation and pain impact. Secondary measures included Patient Global Impression of Improvement Scale (PGIIS) and analgesia use. Data was analysed using descriptive and inferential statistics. Sixty-six of the 90 recruited women completed their allocated treatment arm.

Results: Statistically significant gains (p < 0.05) in pain scores and pelvic pain impact scores were observed in all arms. 95% of women reported positive change (n = 63/66) on the PGIIS and reduced analgesia (opioid and non-opioid) use was observed.

Conclusion: This study shows that Physiotherapy improves self-reported pain and quality of life scores for women with PPP.

Key Points:

- The addition of group pain education to individual consultations has the potential to improve service efficiency.
- This study provides evidence to support a new physiotherapy model of care for women with PPP in tertiary care settings.



# Is the 3PSQ a good measure of the psychological risk profile in people with persistent pelvic pain?

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Women's, Men's & Pelvic Health 8, P 5, October 6, 2023, 3:35 PM - 4:20 PM

Aim: To investigate the psychometric properties of the Pelvic Pain Psychological Screening Questionnaire (3PSQ), a newly developed scale, to measure the psychological risk profile in people with persistent pelvic pain.

Design: Quantitative, observational, cross-sectional study

Methods: Participants with persistent pelvic pain completed the 3PSQ via an online survey. Rasch Analysis was used to evaluate the following scale properties: targeting, category ordering, unidimensionality, item fit, internal consistency, and item bias.

Results: Of the 789 respondents, the complete datasets of 761 participants were included in the analysis; the mean age of the sample was 39 years and 93% were female. The 3PSQ items targeted the sample well and the Likert scale categories were used as expected. A principal component analysis suggested the scale was unidimensional and no items demonstrated excessive misfit to the Rasch Model. The scale demonstrated good internal consistency and appeared appropriate for individual use. No items were biased by participants' gender, sexual history, or previous traumatic events. One item, related to participation in usual activities, was found easier to endorse by older participants and those who have experienced pain longer.

Conclusion: Overall, the 3PSQ showed a good fit to the Rasch model suggesting it could be logically considered an interval-level measure of the psychological risk profile for people with persistent pelvic pain.

- The 3PSQ can be implemented clinically as a screening tool for psychological risk factors in people with pelvic pain.
- The 3PSQ provides a valid measure of overall psychological risk in people with pelvic pain.



### Effectiveness of conservative therapies in women with endometriosisassociated pain: a systematic review

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Women's, Men's & Pelvic Health 8, P 5, October 6, 2023, 3:35 PM - 4:20 PM

Introduction: Conservative (non-surgical, non-pharmacological) therapies include a range of biological, psychological or social interventions and have a growing evidence base in the treatment of persistent pain conditions, yet are under-investigated in women with endometriosis-associated pain (EAP). A synthesis of existing evidence of conservative therapies to treat EAP is needed.

Aim: The aim of this review was to examine the evidence for the effectiveness of conservative therapies on self-reported pain, in women with EAP.

Methods: Five electronic databases were searched using a peer-reviewed search strategy. We included studies with a comparator arm evaluating the effectiveness of conservative therapies in women of reproductive age with a surgical or imaging diagnosis of endometriosis who experienced pain. Two reviewers independently performed screening, data extraction and risk of bias appraisal for each article. The protocol was prospectively registered.

Results: Fourteen studies evaluated a range of interventions: acupuncture (n=5), electrotherapies (n=4), mind-body treatments (n=2), exercise (n=1), a pelvic floor therapy (n=1) and a virtual reality treatment (n=1). Most studies had high risk of bias. Twelve of the 14 studies found greater improvement for at least one pain outcome for the treatment group compared to controls. Meta-analysis of the five acupuncture studies found a significantly greater reduction in pain (SMD -1.71, 95%CI -2.54, -0.88) for interventions than for controls.

- Conservative therapies may be helpful in the management of Endometriosis-associated pain (EAP)
- Conservative therapies uncovered in this SR were acupuncture, electrotherapy, mind-body interventions, exercise, pelvic floor therapy and virtual reality.



# The development and content validity of the fremantle perineal awareness questionnaire in people with persistent perineal pain

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Women's, Men's & Pelvic Health 8, P 5, October 6, 2023, 3:35 PM - 4:20 PM

Aim: Altered body perception is a common feature of persistent pain. The Fremantle Back Awareness Questionnaire (FreBAQ) was developed to facilitate the assessment of body perception changes in people with chronic low back pain. Currently, there is no assessment tool for use with people with persistent perineal pain. The aim of this study was to develop and assess the content validity of the Fremantle Perineal Awareness Questionnaire (FrePAQ), which can help identify changes in body perception in people with persistent perineal pain.

Design: Modified electronic Delphi survey and cross-sectional qualitative online survey.

Method: A focus group created a draft questionnaire based on the FreBAQ. Three Delphi rounds were completed by a panel of 14 experts, followed by anonymous voting on the new questionnaire wording. Researchers developed a qualitative survey to evaluate the comprehensiveness, comprehensibility and relevance of individual items of the new questionnaire. Demographic data were summarised descriptively, and text responses were thematically analysed.

Results: All panel participants completed the Delphi study, and consensus was achieved on a nine-item questionnaire. One hundred and thirty-five participants completed the content validity survey. The questionnaire showed good to moderate content validity. Changes were made to the introduction and seven of the nine items to improve clarity.

Conclusion: The Fremantle Perineal Awareness Questionnaire has been developed to assess changes in body perception in people with persistent perineal pain.

- FrePAQ is specific to the persistent perineal pain population
- Assessing for changes in body perception may allow for more targeted treatment



# Patient perspectives on missed opportunities and barriers during the diagnostic journey: a mixed method cross-sectional study on endometriosis in Australia

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Women's, Men's & Pelvic Health 8, P 5, October 6, 2023, 3:35 PM - 4:20 PM

Aim: To identify missed opportunities and barriers during the diagnostic journey for endometriosis in Australia from a patient perspective.

Design: Mixed methods cross-sectional study.

Method: Quantitative and qualitative data was collected via an online survey. Quantitative data was collected from 21 questions, using three broad categories: demographics, information regarding diagnosis, and care team. Qualitative findings were derived from nine questions with free-text boxes. Deductive and inductive analyses were used to derive key themes regarding missed opportunities and barriers in the period of time to diagnosis.

Results: 95 participants completed the survey. The quantitative data uncovered potential missed opportunities for earlier disease management through multidisciplinary care. After diagnosis, there was an increase in the number of participants seeing pelvic health physiotherapists (21.1%), psychologists (7.4%), pain specialists (7.4%) and naturopaths (3.1%), compared to before diagnosis. The qualitative analysis uncovered four key themes; i) patient invalidation, ii) poor understanding about endometriosis from healthcare professionals and the community, iii) missed opportunities for holistic early action in symptom management, and iv) the requirement for self-advocacy.

Conclusion: The findings represent potential targets to improve person-centred care through optimal communication, appropriate early referrals, and opportunities to enhance symptom management in people with confirmed or suspected endometriosis.

- Greater awareness within the community and amongst health care professionals around endometriosis is required.
- Early referral to other health care professionals during the diagnosis period can optimise symptom management.
- The validation of symptoms by health care professionals, the community and family provide significant value to the patients journey.



# Psychosocial impact of sexual dysfunction related to prostate cancer treatment in South African men

#### <u>**Roscher P**</u><sup>1,2</sup>, van Wyk J<sup>1,3</sup>

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Women's, Men's & Pelvic Health 9, M 3, October 7, 2023, 10:35 AM - 11:35 AM

Aim: To explore the psychosocial impact of sexual dysfunction on men in South Africa who have had prostate cancer treatment.

Design: A mixed methods survey study with phenomenological open-ended questions.

Methods: Participants were 51 English speaking men aged between 45-75 years old, who had received prostate cancer treatment in the last 1-5 years. Participants were asked to describe their experiences with prostate cancer treatment side effects related to sexual dysfunction, and to indicate whether they had sought any psychological help or support since their prostate cancer treatment commenced.

Results: Participants experienced major psychosocial events after their prostate cancer treatment that included distress, mourning the loss of sexual function, depression, frustration, anger and in some cases loss of intimacy and support from their partners. Half of our study population had engaged in support groups, but only a few had received helped from a psychologist.

Conclusion: Shared decision making between patient and doctor, partner support and comprehensive information about the physical and psychological aspects around sexual dysfunction suggested less treatment regret and outcome satisfaction amongst our study group.

- Sexual dysfunction after prostate cancer treatment is a major contributor to disability and affects the quality of life of affected men.
- Many men experience a major psychological disorder (depression) alongside their sexual dysfunction after prostate cancer treatment.
- Men need to be better informed about the psychosocial consequences that they may experience after their prostate cancer treatment, specifically the ones related to sexual dysfunction.



## Prepare heal perform: two year outcomes from a perioperative pelvic floor muscle training protocol for the prevention/management of postprostatectomy incontinence

### Cowley D<sup>1</sup>, Crow J, <u>Fitzgerald J</u> <sup>1</sup>Active Rehabilitation Physiotherapy

Women's, Men's & Pelvic Health 9, M 3, October 7, 2023, 10:35 AM – 11:35 AM

Aim: To determine whether a semi-standardised pre and post-operative pelvic floor muscle training protocol (Prepare-Heal-Perform) is effective for the treatment and/or prevention of post-prostatectomy incontinence based on principles of: transperineal ultrasound biofeedback, functional bracing and progressive overload, delivered across 2 outpatient private practices.

Design: A clinical audit of discharged patients seen for pre- and post-operative pelvic floor muscle training over the last 2 years.

Method: Clinical files were audited. Data for occasions of service, discharge status, time before/after training began and 24 hour pad weight data were extracted.

Results: Data were extracted from 286 files. On average, men seen before surgery were discharged 70 days after prostatectomy and 55% no longer used incontinence pads. When men first presented post-operatively, average time to discharge was 448 days after surgery and only 31% no longer wore pads. Symptom improvement was comparable whether training started before (95%) or after (92%) surgery. Outcomes were comparable between trained clinicians, irrespective of experience level.

Conclusions: Perioperative pelvic floor muscle training (using transperineal ultrasound biofeedback) is effective in the prevention and treatment of post-prostatectomy incontinence. Continence was achieved sooner, and in more men, when treatment was commenced before surgery. Large improvements were achieved whether training started before or after surgery.

- Perioperative pelvic floor muscle training protocols using transperineal ultrasound biofeedback can be effective at improving post-prostatectomy incontinence symptoms
- Outcomes were better when training commenced before surgery
- Clinician experience had minimal impact on outcomes



# How to embed physiotherapy within an existing tertiary hospital menopause clinic

Sharifi Nasab K<sup>1</sup>, <u>Graetz H</u><sup>1</sup> <sup>1</sup>The Royal Hospital For Women

Women's, Men's & Pelvic Health 10A, P 6, October 7, 2023, 11:40 AM - 12:40 PM

Background: Despite multisystem involvement and morbidity of menopause symptoms, many tertiary hospital menopause services remain biomedically focused. Physiotherapy has a significant contribution to make to clinical assessment, care planning, and management of multisystem morbidity experienced by women with complex and severe symptoms. The role and integration of physiotherapy within medical, interdisciplinary, or multidisciplinary models of care are poorly described. Our experience of an iterative and collaborative design and implementation process provides early lessons and reflections that could be used to inform the upcoming NSW Health Menopause Taskforce and other work seeking to embed physiotherapy within existing menopause clinics.

Aims: to develop participants' knowledge, skills, and application of woman-centred approaches to integrating conservative and lifestyle therapy in conjunction with medical management. Participants will build knowledge, skills, and know-how to embed physiotherapy within an existing medical model of care from intake to treatment planning.

Approach: By sharing reflections and lessons learned from implementation, the presenters will provide a pragmatic outline of service review and woman-centred intake (10min), followed by practical demonstration of physiotherapy assessment, outcome measures, and shared decision-making (10min). Participants will learn how to interpret findings and consider stratified treatment pathways. The manual outlines phases of design and implementation with clinical tools and case studies.

Key Practice Points:

Participants will learn:

- Service review process that could be used within their tertiary menopause clinic
- How to design and use woman-centred intake, assessment, outcome measures and shared decisionmaking
- How to consider treatment stratification to optimise value and acceptability of interventions



# Preliminary considerations for physiotherapy service provision within an existing medically led menopause clinic

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<sup>1</sup>The Royal Hospital for Women

Women's, Men's & Pelvic Health 10A, P 6, October 7, 2023, 11:40 AM - 12:40 PM

Aim: Identify the need for, acceptability and specific therapeutic requirements of physiotherapy intervention for women receiving medical management for severe symptoms of menopause.

Design: This sequential multiphase mixed methods study combined observational process and outcome data with qualitative survey using iterative principles to build on outcomes from previous phases.

Method: Set within the medically led, quaternary Menopause Clinic at The Royal Hospital for Women, the first two phases of a four-phase design involved a woman-centred exploration of care needs and the acceptability of physiotherapy interventions. Self-initiated and staff-prompted survey uptake methods were used. Observational process and outcome data was reviewed simultaneously with qualitative results at the end of each clinic using a "learn together" approach with women and medical staff and will inform third phase implementation of stratified treatment pathways.

Results: Waiting room survey was highest. All respondents indicated an impact of menopause on five or more health constructs with bladder and bowel control most impacted. Women with recent surgical menopause reported less symptom impact and were motivated for proactive physiotherapy review. Most preferred individual review over group programs. Qualitative findings focused on perceived benefits and expectations of physiotherapy on health.

Conclusion: Women attending the Menopause Clinic, who self-initiate symptom assessment, report a combination of menopause symptom impacts and are highly interested in physiotherapy.

- Waiting room survey is an effective method of assessing symptom impact in women with severe menopause symptoms.
- Women receiving medical management for their menopause symptoms are interested and report value in physiotherapy review.



## Feasibility of pelvic floor screening during the preadmission assessment within the gynae-oncology preadmission clinic at a quaternary Women's Hospital

**<u>Tytherleigh-Laity K</u>**<sup>1</sup>, Sharifi Nasab K<sup>1</sup> <sup>1</sup>*The Royal Hospital for Women* 

Women's, Men's & Pelvic Health 10A, P 6, October 7, 2023, 11:40 AM - 12:40 PM

Aim: To directly translate new evidence regarding the necessity of pelvic floor screening for women with gynaecological cancer.

Design: Multiphase mixed-method study combining observational process, outcome and qualitative data sequentially within an iterative health service improvement project.

Method: Patients attending the statewide gynae-oncology service were screened for pelvic floor symptoms during their routine preadmission assessment. Evidence translation and collaborative design principles informed the three-phases: acceptability of pelvic floor screening within the existing clinic flow, development of a screening process and pathways for pelvic health treatment and survivorship care planning.

Results: Between November 2022 to March 2023, 25 women aged between 17-76 years were offered and subsequently took-up pelvic floor screening. The majority had quaternary referrals and 40% travelled from rural areas. Staff experience themes were used iteratively to enhance implementation. Screening processes identified 20 women with pelvic floor symptoms and of these, more than half proceeded on pelvic health treatment pathways within our service, their local service or via telehealth. Patients with identified large mass preferred waiting until the post-operative period before considering treatment.

Conclusion: Translation of pelvic floor screening within a preadmission gynae-oncology service offers a meaningful opportunity for patients to discuss and access treatment for symptoms that would otherwise not be disclosed.

- Patients want to be asked about their pelvic floor symptoms preoperatively and provided with options for treatment.
- Telehealth treatment pathways are valued by patients.
- Women presenting with and without cancer experience pelvic floor symptoms, those with large mass prefer the watch-and-wait approach.



### Early intervention gynaecology service

<u>Worthing L<sup>1</sup></u>, Verhagen D<sup>1</sup>, Ooi A<sup>1</sup>, McCaffrey S<sup>1</sup>, Chalmers J<sup>2</sup> <sup>1</sup>Central Coast Local Health District, <sup>2</sup>University of South Australia

Women's, Men's & Pelvic Health 10A, P 6, October 7, 2023, 11:40 AM - 12:40 PM

Aim: To compare a traditional Gynaecology Model of Care (MOC) to an Advanced Practice Physiotherapy (APP) MOC.

Design: Due to clinical practice restraints, a retrospective clinical documentation audit and pilot study were conducted.

Methods: A six-month retrospective audit of the traditional MOC provided to all patients presenting with pelvic floor conditions was completed. Administrative and Gynaecology triage processes were redeveloped to establish an APP pathway. Physiotherapists underwent APP competency training with Gynaecologists. Post APP MOC implementation another retrospective audit was undertaken. Descriptive statistics were utilised to compare MOC.

Results: Within a six-month period, 317 patients presenting with pelvic floor conditions were accessing the traditional MOC. Average wait times from referral to first Gynaecology appointment was 164.27 days. Treatment provided was not in line with International Clinical Guidelines, as conservative treatment was not always provided prior to medical and surgical management1. Utilising an eligibility criterion from a Victorian APP MOC 73.4% of referrals (233 women) were deemed appropriate for an APP MOC2. Instead, treatment was delayed by waiting to be seen by a Gynaecologist first and only 46.7% of patients accessed physiotherapy.

Conclusions: An APP MOC appears feasible, more cost effective, and may reduce gynaecology waitlists. Care pathways are streamlined, with more timely evidence-based treatment offered, and patients experience improved clinical outcomes and QOL.

- Traditional Gynaecology MOC for patients presenting with pelvic floor conditions is inefficient and not evidence based
- Implementing an APP MOC may address these issues in the interests of better value care



# Women's and men's health physiotherapy in regional, rural and remote Australia

<u>McPherson K</u><sup>1,2</sup>, Nahon I<sup>2</sup>, Waddington G<sup>2</sup> <sup>1</sup>Charles Sturt University, <sup>2</sup> University Of Canberra

Women's, Men's & Pelvic Health 10B, M 3, October 7, 2023, 11:40 AM - 12:40 PM

Aim: To explore the self-reported clinical skills of physiotherapists, their access to professional development and service delivery including Telehealth and culturally responsive practice in women's and men's health physiotherapy (WMH) to people living in regional, rural and remote Australia.

Design: Online descriptive survey.

Method: The survey was distributed through social media via Facebook sites to physiotherapists who provide WMH physiotherapy to people living in regional, rural, and remote Australia, in August to December 2020. Responses were analysed using an inductive approach

Results: Fifty-four respondents. 22% self-reporting extensive clinical skills in women's health and 17% in men's health. Barriers to accessing professional development included the cost of registration, travel, accommodation, and time off work.

76% of respondents used Telehealth, but were limited by internet access and funding for services 18% of respondents stated that they feel they provide culturally responsive practice to Indigenous people. 69% of respondents stated that people living in regional, rural, and remote Australia do not have access to highly skilled WMH physiotherapists due to difficulties in physiotherapists developing clinical skills, employing experienced clinicians and funding for the services.

Conclusion: There are some physiotherapists with self-reported extensive clinical skills in WMH physiotherapy, but there are barriers to developing clinical skills and providing clinical services.

- WMH physiotherapists need to develop their understanding of how to provide culturally responsive WMH physiotherapy with Indigenous Australians
- Physiotherapists must establish links with rural physiotherapists to ensure all in Australia have access to highly skilled WMH physiotherapists



# Pelvic health care for Aboriginal and Torres Strait Islander men and women: barriers and opportunities

Wise E<sup>1</sup>, Morgan M<sup>2</sup>, Biggs E<sup>1</sup>, Ellis B<sup>1</sup>, <u>Joseph M</u><sup>1</sup>, Say M<sup>1</sup>, Yanitsas L<sup>1</sup>, Bullen J<sup>3,5</sup>, Conley B<sup>4</sup>, Lin I<sup>3,5</sup>, Ng L<sup>1</sup>, Beales D<sup>1</sup>

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Women's, Men's & Pelvic Health 10B, M 3, October 7, 2023, 11:40 AM - 12:40 PM

Aim: Pelvic health conditions amongst Aboriginal and Torres Strait Islander men and women are underrecognised. The aims of this narrative review were to (i) summarise the burden of pelvic health conditions amongst Aboriginal and Torres Strait Islander men and women, (ii) explore barriers and enablers for Aboriginal and Torres Strait Islander men and women in respect to access to pelvic health care, and (iii) to provide considerations on how to implement culturally safe pelvic healthcare for Aboriginal and Torres Strait Islander men and women.

Design: Narrative review.

Method: A systematic search was performed to inform a narrative review.

Results: Fourteen articles were found. Thirteen articles referenced women and four articles referenced men. Nine articles addressed the burden of pelvic health concerns for Aboriginal and Torres Strait Islander people. Four articles reported on enablers supporting access to pelvic healthcare and six reported on barriers to access to pelvic healthcare for Aboriginal and Torres Strait Islander peoples.

Conclusions: To date, there is only a small body of work in relation to burden and management of pelvic healthcare concerns for Aboriginal and Torres Strait Islander men and women. Considerations for pelvic healthcare models of care should come from a system level, a healthcare level, and a clinician level.

- Considerations for pelvic health care models should come from system, healthcare and clinician levels
- Consultation with Aboriginal and Torres Strait Islander men and women is essential
- Cultural training should be essential for the non-Aboriginal workforce



# From Forceps to FAB: evaluating how to provide best follow up care after birth

**<u>Casson G</u>**<sup>1</sup>, Holland S<sup>1</sup>, Graetz H<sup>1</sup> <sup>1</sup>The Royal Hospital for Women

Women's, Men's & Pelvic Health 11, P 9, October 7, 2023, 1:40 PM - 2:25 PM

Aim: To examine two methods for postpartum follow-up of women with pelvic floor symptoms after birth.

Design: This study used a pre- and post- intervention design to examine women's experience of pelvic floor symptoms and referral methods for postpartum follow-up.

Method: Both phases involved observational outcome and qualitative data collection. Pre-intervention, women were referred following forceps birth alone, post-intervention symptomatic women were referred. An eHealth strategy was designed to identify symptoms in all women who birthed at a Level 6 Maternity Service, implemented on the ward and via text.

Results: 229 women were referred by mode of birth for postpartum follow up, over a third were asymptomatic on review. Concerns about forceps were reported by women with more than one pelvic floor symptom and asymptomatic women reported iatrogenic concerns only.

Of 459 women screened using the e-health strategy, 60% were asymptomatic. Only symptomatic women were referred for follow up. The prevalence of urinary incontinence and vaginal symptoms was similar in pre- and post-study populations. Most symptomatic women had normal births.

Conclusion: A mode of birth pathway to postpartum follow up for pelvic floor symptoms is ineffective and inefficient.

- Mode of birth pathways to postpartum follow-up generate iatrogenic concern for asymptomatic women.
- Women want to be asked about pelvic floor symptoms and offered follow-up postpartum.
- An eHealth strategy is an effective method of identifying women who benefit from postpartum follow-up.



# Effect of (vertical loading) impact activities on measures of pelvic floor function/activity in adult females: a systematic review

Falzarano E<sup>1</sup>, O'Shea S<sup>1</sup>, O'Rourke O<sup>1</sup>, <u>McPherson K</u><sup>1</sup> <sup>1</sup>Charles Sturt University, <sup>2</sup>PHYZ X

Women's, Men's & Pelvic Health 11, P 9, October 7, 2023, 1:40 PM - 2:25 PM

Aim: To explore pattern(s) of pelvic floor muscle activation during impact activities, like running, and identify whether there are differences in sub-groups of women.

Design: A systematic review was chosen to provide a comprehensive appraisal and synthesis of primary research studies exploring female pelvic floor muscle activation.

Method: Using the keywords "female", "pelvic", "run" and "jump" primary studies were identified through electronic database searching and citation tracking. Study selection, quality appraisal and data extraction were conducted by two independent reviewers, and critical narrative synthesis used for data interpretation.

Results: A total of 21 reports with 14 different participant groups were included in the review (from 288). Intra-abdominal pressure and electromyography were predominantly used for measurement of pelvic floor muscle activity. Higher levels of physical effort were associated with proportional increases in pelvic floor muscle activity, but individual absolute measures of activity were highly variable between women. No differences were found between included sub-groups.

Conclusion: Female pelvic floor muscle activity demonstrated a graded response in relation to the level of physical effort required during impact activities. Whilst the muscle activation pattern was consistent, large variability existed in the magnitude of the individual pelvic floor muscle response.

- During impact activities, female pelvic floor muscle activity increases with the effort required.
- Large individual variation during loading suggests exercise prescription should be based on individual responses and symptoms.
- Further research is required in symptomatic women to confirm similarity in activation responses found in the review.



# Pelvic floor symptoms, physical activity and health-related quality-of-life after hysterectomy for gynaecological cancer

### Brennen R<sup>1</sup>, Lin K<sup>2</sup>, Denehy L<sup>1,3</sup>, Soh S<sup>4</sup>, Frawley H<sup>1,5,6</sup>

<sup>1</sup>University of Melbourne, <sup>2</sup>National Cheng Kung University, <sup>3</sup>Peter MacCallum Cancer Centre, <sup>4</sup>Monash University, <sup>5</sup>Royal Women's Hospital, <sup>6</sup>Mercy Hospital for Women

Women's, Men's & Pelvic Health 12, P 9, October 7, 2023, 2:30 PM - 3:15 PM

Aims: To examine associations between (1) treatment type or stage of cancer and pelvic floor symptoms, and (2) pelvic floor symptoms and both physical activity and health-related quality-of-life, after hysterectomy for gynaecological cancer.

Design: Longitudinal observational study.

Methods: Patients undergoing hysterectomy for gynaecological cancer were assessed before and threemonths after surgery using the Incontinence Severity Index, Pelvic Floor Distress Inventory short form (PFDI-20), International Physical Activity Questionnaire short form and European Organisation for Research and Treatment of Cancer Quality of Life Questionnaire (EORTC-QLQ C30). Associations were analysed using logistic regression models and analyses of variance.

Results: Of 277 eligible patients, 126 participated in this study. Participants who had adjuvant therapy were more likely to experience moderate-to-severe urinary incontinence 3-months after surgery than those who had surgery only (OR=4.98, 95%CI 1.63, 15.18). There was no association between treatment type and other pelvic floor symptoms, or stage of cancer and any pelvic floor symptoms. Pelvic floor symptoms were not associated with physical activity levels. Participants reporting pelvic floor symptoms on the PFDI-20 had lower quality-of-life scores on the EORTC-QLQ C30 compared to those who did not report pelvic floor symptoms (MD -9.59, 95%CI -17.8, -1.81).

Conclusions: Three-months after hysterectomy, adjuvant therapy was associated with moderate-to-severe urinary incontinence and pelvic floor symptoms were associated with lower health-related quality-of-life but not physical activity levels.

- Adjuvant therapy may increase the odds of developing moderate-to-severe urinary incontinence.
- Pelvic floor symptoms may have a negative impact on health-related quality-of-life after gynaecological cancer treatment.



# An innovative strategy to reduce abdominal girth in older men – a model for positive behavioural change?

#### Allingham C<sup>1,2</sup>, King I<sup>3</sup>

<sup>1</sup>Bond University, School of Health Science & Medicine , <sup>2</sup>Physio 4 Men, <sup>3</sup>University of the Sunshine Coast

Women's, Men's & Pelvic Health 12, P 9, October 7, 2023, 2:30 PM - 3:15 PM

Aim: This study used both internal and external agents of behavioural change to mitigate abdominal obesity and associated adverse health outcomes in older men.

Design: A community case study was conducted to evaluate an innovative approach utilising education, self-determination and peer support instead of a prescribed behavioural change.

Method: Sixty male volunteers aged ≥64 years from a Men's Shed were recruited. The group was given the collective goal of losing 100 cm over four months. Upon informed consent, each man was measured for abdominal girth before commencing the program. Participants were given six dietary strategies to lose waist girth (portion control, substituting less energy-dense foods, intermittent fasting, meal substitution shakes, spontaneous meal skipping and excluding/reducing high kilojoule/low nutrition foods). They were allowed to choose their own option(s) from this list.

Results: A total loss of 288cm of group girth (from 62.79 m to 60.51 m) exceeded the goal by 128%, suggesting older men can significantly reduce their girth by selecting their own strategy based on trustworthy information and motivation from their peers.

Conclusion: Setting collective goals, allowing autonomy in choice, and providing guidance from trusted resources in a supportive environment is a successful approach for men to adhere to health behaviour change interventions.

- Collective goal-setting and autonomy in choice are successful strategies for achieving a significant reduction in abdominal girth.
- Providing clients with options choose from and linking their outcome to a bigger challenge may improve compliance for behavioural change.



# Pessary management practices for pelvic organ prolapse among physiotherapists and health care practitioners in Australia: a cross-sectional study

**McEvoy K**<sup>1</sup>, Harris M<sup>1</sup>, Moger H<sup>1</sup>, Wright O<sup>1</sup>, Griffin R<sup>1</sup>, Nurkic I<sup>1</sup>, Thompson J<sup>1</sup>, Das R<sup>2</sup>, Neumann P<sup>2</sup> <sup>1</sup>Curtin University, <sup>2</sup>University of South Australia

Women's, Men's & Pelvic Health 12, P 9, October 7, 2023, 2:30 PM - 3:15 PM

Aim: Vaginal pessaries are an effective treatment for pelvic organ prolapse, traditionally provided by medical professionals. This study aimed to investigate the provision of pessary care in Australia and the role of physiotherapists.

Design: Cross sectional study surveying health care practitioners managing pessaries.

Methods: A self-reported electronic questionnaire was developed and distributed to Australian practitioners providing pessaries for prolapse. Purposive and snowball sampling targeted professional organisations, health care facilities and individual practitioners. Descriptive statistics reported pessary management regarding practitioner professional profile, services and location.

Results: Of 536 respondents, 324 (60%) were physiotherapists,148 (28%) specialists, 33 (6%) general practitioners and 31 (6%) nurses. Physiotherapists worked predominantly within metropolitan regions but were distributed across Australia, except remotely. The majority worked in private practice (n=293, 95.1%), providing pessary care either solo (n=140, 39.3%) or with others (n=153, 43.0%) and most without workplace competency standards (n=174, 57.4%). Physiotherapists reported variable pessary training, most (n=228, 75.2%) had less than 5 years' experience with pessaries, one third (n=105, 34.7%) received no mentoring or support and most (n=244, 80.5%) wanted further training.

Conclusions: Physiotherapists are new providers of pessary management, widely distributed across Australia, but with variable training and professional support. This study highlights the need for the development of accessible training opportunities to promote high standards of physiotherapy pessary management practice.

- Physiotherapists are key providers of pessary care across Australia
- Physiotherapy pessary training is variable, and ongoing training desired.
- Physiotherapists work predominantly in private practice without workplace competency standards.



### The feasibility of pelvic floor muscle training to treat urinary incontinence in women with breast cancer: a telehealth intervention trial

### **Colombage U**<sup>1</sup>, Soh S<sup>1</sup>, Lin K<sup>3</sup>, Kruger J<sup>4</sup>

<sup>1</sup>Monash University, <sup>2</sup>The University of Melbourne, <sup>3</sup>National Cheng Kung University, <sup>4</sup>The University of Auckland

Women's, Men's & Pelvic Health 12, P 9, October 7, 2023, 2:30 PM - 3:15 PM

Aim: To investigate the feasibility of recruiting into a pelvic floor muscle training (PFMT) program delivered via telehealth to treat urinary incontinence (UI) in women with breast cancer on aromatase inhibitors.

Design: Pre-post single cohort feasibility trial

Methods: 54 women with breast cancer underwent a 12-week PFMT program using an intra-vaginal pressure biofeedback device: femfit<sup>®</sup>. The primary feasibility outcome was consent rate. Secondary outcomes included prevalence and burden of UI, as well as pelvic floor muscle (PFM) strength measured as intravaginal squeeze pressure. Differences in secondary outcomes pre- and post-intervention were compared using McNemar's and paired t-tests.

Results: The mean age of participants was 50 years (SD±7.3). This study had a consent rate of 100% (n=55/55) and retention rate of 87% (n=48/55). The mean attendance rate of supervised sessions with the physiotherapist was 96% (SD±3) and the mean adherence rate to the home exercise program was 76% (SD±11). All participants reported that they felt the program was beneficial and tailored to their needs. A significant increase in PFM strength was observed post-intervention (mean intravaginal squeeze pressure change 4.8mmHg, 95% Cl 3.9, 5.5).

Conclusion: This study demonstrated that PFMT delivered via telehealth may be feasible and acceptable in women with breast cancer on aromatase inhibitors who experience UI. Further studies that are powered to detect differences in PF symptoms and PF muscle strength are required to confirm these results.

Key Practice point:

• Women with breast cancer on aromatase inhibitors who experience UI may benefit from being offered PFMT delivered via telehealth.



## **SECTION 5: Symposia**

### Measuring exertional breathlessness in cardiopulmonary disease

### Morris N<sup>1,2</sup>, Palmer T<sup>1,2,3</sup>, Aitken C<sup>1,2</sup>

<sup>1</sup>Griffith University, <sup>2</sup>The Prince Charles Hospital, <sup>3</sup>Central Queensland University

Cardiorespiratory 11B, P 2, October 7, 2023, 1:40 PM - 2:25 PM

Synopsis: Exertional breathlessness or dyspnoea (ED) is the key diagnostic symptom for people with cardiopulmonary disease and is defined as an individual's subjective experience of breathing discomfort that varies in intensity and occurs during exertional activities such as activities of daily living (ADLs) or exercise. Whilst many of our patients complain of this distressing symptom, a simple universally accepted, quantifiable, repeatable, clinical test that is sensitive to changes in ED, remains elusive. The first presentation (TP) will examine a systematic review of tests used to measure ED in cardiopulmonary populations. The second presentation (CA) will discuss the development of a 2-minute treadmill test (Dyspnoea Challenge) to measure ED in chronic obstructive pulmonary disease (COPD). The final presentation (NM) will examine the use of the Dyspnoea Challenge in individuals with chronic heart failure and COPD.

Abstract Number: 1 Presenting Author: Tanya Palmer

# Title: Fixed intensity exercise tests to measure exertional dyspnoea in chronic heart and lung populations: A systematic review.

Rationale: The aim of this review was to comprehensively describe and evaluate all types of fixed-intensity exercise tests used to assess exertional dyspnoea (ED) in chronic cardiopulmonary populations, and where possible report the reliability and responsiveness of the tests.

Method: A systematic search of five electronic databases identified papers that examined: i) fixed-intensity exercise tests and measured ED, ii) chronic cardiopulmonary populations, iii) exertional dyspnoea reported at isotime or at completion of fixed duration exercise test, iv) published in English.

Results: Searches identified 8785 papers. 123 papers were included, covering exercise tests using a variety of fixed-intensity protocols. Three modes were identified: (i) cycle (n=87), (ii) walking (n=31), and (iii) other [step test (n=8), arm exercise (n=2)]. Most studies (98%) were performed in chronic respiratory disease. Nearly all studies (88%) used an incremental exercise test. 34% of studies used a fixed duration for the exercise test, the remaining 66% using an exhaustion protocol recording exertional dyspnoea at isotime. ED was measured using the BORG scale (89%). 7% of studies reported reliability. Most studies (72%) examined the change in ED in response to different interventions.

Conclusion and Practice Points:

- Considerable methodological variety of fixed intensity exercise tests exists to assess ED, most test protocols require incremental exercise tests.
- There does not appear to be a simple, universal test for measuring exertional dyspnoea in the clinical setting.

Reference Palmer et al, 2023, Eur Resp Review (under review)



Abstract Number: 2 Presenting Author: Norman Morris

# Title: The Dyspnoea Challenge: the development of a test to measure exertional breathlessness in chronic lung disease

Rationale: In this study we examined the development of a two-minute inclined, treadmill test to measure exertional dyspnoea (ED), the Dyspnoea Challenge. End-exercise dyspnoea responses, generated during the Dyspnoea Challenge, were measured at different treadmill grades in individuals with Chronic Obstructive Pulmonary Disease (COPD). In addition, the relationship of a fixed intensity Dyspnoea Challenge (4% grade, 3 km.hr-1) ED to disease severity was determined.

Methods: Over three separate visits, participants (Forced Expired Volume in 1s[FEV1]:63.4±11.9%) completed two six-minute walk tests and six Dyspnoea Challenges at gradients of between 3-8% in random order. The Dyspnoea Challenge consisted of a two-minute walk on an inclined treadmill at 3km.hr-1. Dyspnoea was recorded at discrete intervals during the test and pulmonary gas exchange measured simultaneously (Metamax, Cortex BxB).

Results: Higher treadmill gradients generated stronger intensities of end-exercise ED (3%:2.6±1.8; 4%:2.8±2.2; 5%:3.2±2.2; 6%:3.4±2.2; 7%:3.7±1.8; 8%:4.0±2.1units). Statistical changes were observed in ED (e.g.,3vs.5%: P=.03) and a 4% variation in treadmill gradient corresponded to a rise in ED  $\geq$  1unit. During the fixed intensity Dyspnoea Challenge, end-exercise ED was not correlated to FEV1, but moderately correlated to six-minute walk distance (rs=-0.54,P<.01) and the breathing reserve (rs=0.46,P=.02).

**Conclusion and Practice Points:** 

- End-exercise ED generated during the Dyspnoea Challenge is sensitive to changes in treadmill grade and correlated to different parameters of disease severity.
- With further optimisation, the Dyspnoea Challenge could offer clinicians with a short, traightforward field-based test for monitoring ED in clinical populations.

### References

Aitken et al., Resp Physiol& Neurobiology. 2022;304:103915 Aitken et al., Resp Physiol& Neurobiology. 2022;304:103941

Abstract Number: 3 Presenting Author: Norman Morris

# Title: Exertional Dyspnoea responses to the Dyspnoea Challenge in heart failure: comparison to chronic obstructive pulmonary disease

Rationale: The aim of this study was to establish the reliability of the Dyspnoea Challenge to measure exertional dyspnoea (ED) in heart failure (HF) and to compare exercise responses to chronic obstructive pulmonary disease (COPD).

Methods: Participants attended on two occasions. On the first visit participants performed 2x6-min walk test (6MWT). The Dyspnoea Challenge was then set with treadmill speed at 80% 6MWT speed and gradient adjusted so that end-exercise ED was ≥4 Borg units. On the second visit participants completed two Dyspnoea Challenges. During one test pulmonary gas exchange (Metamax, Cortex BxB) and central



haemodynamics (Physioflow Enduro) were measured simultaneously. Outcome measures were: ED intensity; oxygen uptake(VO2); ventilation(VE); breathing reserve(VE/MVV); cardiac output(Q); stroke volume(SV); arteriovenous oxygen difference(C(a-v)O2), and inspiratory capacity(IC), heart rate(HR) and arterial oxygen saturation (SPO2).

Results: 21 HF (ejection fraction:45.3±6.1%; 6MWT distance (6MWD):520±97m) and 25 COPD (forced expiratory volume 1s:47.6±11.5%; 6MWD: 430±101m) participated. The Dyspnoea Challenge showed excellent reliability for both HF (Intraclass correlation coefficient[ICC]:0.94,P<.01) and COPD (ICC:0.95,P<.01). HF had higher VO2 (P<.01) and VE (P<.01). At end-exercise, groups attained similar ED (HF:4.3±0.5; COPD:4.5±0.5units, P=.60), Q (P=.98), SV (P=.97) and HR (P=.83). HF had a wider C(a-v)O2 (P<.01). COPD had greater decreases in IC (P=.03), SpO2 (P=.02) and VE/MVV (P<.01).

Conclusion and Practice Points:

- The Dyspnoea Challenge appears reliable in HF and COPD populations, and may provide an appropriate field-based measure of ED.
- Typical to their pathologies, HF seemed limited by an inadequate modulation of Q, and COPD by ventilatory constraints.

Reference Aitken et al., Heart Lung. 2023, 58:108-115



### Time to move: physical activity and older Australians

<u>Sherrington P</u><sup>1</sup>, <u>Said C</u><sup>2</sup>, <u>Batchelor F</u><sup>2</sup> <sup>1</sup>The University of Sydney,, <sup>2</sup>University of Melbourne

Gerontology 6B, M 1 & 2, October 6, 2023, 11:25 AM - 12:10 PM

Abstract Number: 1 Presenting Author: Cathie Sherrington

## Title: Effectiveness and cost-effectiveness of physical activity programs for older adults: overview of reviews

Aim: To systematically identify and summarise trials and cost-effectiveness studies on physical activity programs and services for older adults.

Design: Systematic reviews commissioned by the World Health Organization Physical Activity Unit.

#### Method: We extracted data from:

a) randomised controlled trials of physical activity programs and services for older adults included in reviews identified in our previous scoping review and additional searches;

b) trial-based and modelled studies of cost-effectiveness with a focus on exercise for falls prevention. Data were summarised graphically and in meta-analyses.

Results: We identified 1421 intervention studies from 8267 records (79% RCTs, 87% in high income countries) including 87 large, good quality RCTs with 26,861 participants. Overall activity promotion, structured exercise and recreation/sport had positive impacts (≥ 50% between-group comparisons positive) across all outcomes. We identified 31 economic evaluations of fall prevention exercise, most in community settings. There is moderate certainty evidence that fall prevention exercise programs are likely to be cost-effective. Evidence in care facilities is more limited but promising.

Conclusion: Evidence supporting physical activity for older adults is overwhelmingly positive.

Key Practice Points:

- Physiotherapists are very well placed to promote and advocate for physical activity for healthy ageing.
- Physiotherapists can use our findings to guide referral to physical activity programs and services for older adults, in the design and delivery of programs and services and in advocacy for funding of evidence-based programs.

Abstract Number: 2 Presenting Author: Catherine Said

#### Title: Bridging the gap: Working together to support physical activity in older Australians

Aim: To describe the evolution and usage of "Safe Exercise at Home", a website developed to provide low-cost, evidenced-based information to support older people with physical activity.

Design: Co-design action research.



Method: The website was developed during the COVID pandemic by academic and clinician physiotherapists and a communications expert with input from consumers.

It was launched in May 2020. The team meet regularly to review user feedback and content.

Results: The website attracted 31489 users in the first year and continues to attract approximately 600 users per month; 31% of users are aged 55+, 75% are from Australia. Content includes information on physical activity post-COVID, benefits of exercise and graded exercise options (print and videos). The booklet page, which links to free booklets in English and Brazilian Portuguese, has been accessed 4215 times. The booklet is being translated into additional languages, however accessibility is limited for people from culturally and linguistically diverse (CALD) communities. Updated resources for health professionals reflect current evidence.

Conclusion: Online resources are accessible for older people and professionals, however they must be updated to ensure currency and the needs of older people from CALD communities must be considered.

**Key Practice Points** 

- Online delivery is a low-cost method to provide resources to support physical activity
- Strategies to support older people from CALD communities are needed.
- Costs and resources to maintain online resources must be considered.
- The impact of these approaches on physical activity must be evaluated.

#### Abstract Number: 3 Presenting Author: Frances Batchelor

## Title: Looking beyond individual behaviour change: population approaches to increase physical activity in older people

Aim: To describe the evidence on population approaches that are effective in increasing physical activity

Design: Narrative synthesis of peer-reviewed and grey literature

#### Method: Rapid review

Results: Older adults are the least physically active of all age groups. While individual behaviour change interventions can been effective in increasing physical activity among older adults, population-level approaches may be more effective and sustainable. This presentation will synthesise the evidence on population approaches to increasing physical activity, focusing on changing the physical, social, and economic environments in which older adults live. For example, environmental changes could include the creation of more walkable communities, the installation of senior exercise parks, or the provision of safe, accessible transportation options for older adults.

Conclusion: Policy-level changes, environmental changes and community-based programs are examples of population-level approaches that can be used to increase physical activity among older adults. These should be considered as complementary to individual behaviour change approaches.

- Older people are the least physically active of all age groups
- Physiotherapy practice often focuses on individual behaviour change to increase physical activity
- Physical, social & economic environments play a role in supporting physical activity for older people
- Population-level approaches to increasing physical activity can complement individual behaviour change.



### Do labels and language shape people's beliefs about musculoskeletal pain?

### Xie Y<sup>1,2</sup>, Zadro J<sup>3</sup>, Lawford B<sup>4</sup>

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Musculoskeletal 6B, P 2, October 6, 2023, 11:25 AM - 12:10 PM

Summary and rationale of the symposium: Increased evidence indicates that labels and language health professionals use to describe musculoskeletal pain can shape patients' beliefs about managing their condition. In this symposium, we will explore how labels and language influence patients' beliefs and treatment preferences for traumatic onset of neck pain, rotator cuff-related shoulder pain, and osteoarthritis. Dr Xie will discuss whether the term 'whiplash' influences people's recovery expectations compared to other terms to describe neck pain after a road traffic crash. Dr Zadro will delve into the impact of different labels and advice for rotator cuff disease and how they influence people's perceived need for surgery. Finally, Dr Lawford will present on the effect of removing biomedical content/language from patient education resources on people's perceptions about management of osteoarthritis. By bringing together these different perspectives, this symposium aims to deepen the physiotherapy community's understanding of the impact of labels and languages on people's beliefs about musculoskeletal

Abstract Number: 1 Presenting Author: Yanfei Xie

conditions.

#### Title: The influence of 'labels' for neck pain after road traffic injury on recovery expectations: An onlinerandomised vignette-based experiment

Aim: To determine whether different labels for neck pain after road traffic injury influence recovery expectations.

Design: Five-arm online-randomised experiment with blinded participants.

Method: 2,229 participants (66% with previous or current neck pain) read a vignette describing a patient with neck pain after a road traffic injury, which had one of five labels: 'whiplash injury', 'whiplash-associated disorder', 'post-traumatic neck pain', 'neck pain', and 'neck strain'. Participants rated (0-10): recovery expectations (primary outcome), need for a second opinion, avoiding work and physical activity, intensive treatments; perceived injury seriousness, intention to make a compensation claim.

Results: Labels whiplash-associated disorder and neck pain led to lower recovery expectations than neck strain (adjusted mean difference [95%CI]: -0.5 [-0.9 to -0.1] for both comparisons). Labels whiplash-associated disorder and whiplash injury increased the perceived seriousness of the injury and willingness to make a claim compared with neck strain and decreased the need for a second opinion compared with neck pain. The label whiplash-associated disorder resulted in higher needs for avoiding physical activity than post-traumatic neck pain, neck pain, and neck strain. Effect sizes were small for all secondary outcomes.

Conclusion: Labels for neck pain after road traffic injury influence people's recovery expectations and management preferences, but the clinical relevance of the small differences is unclear.



Key Practice Points:

- Clinicians may consider the potential influence of different labels describing neck pain after road traffic injury when communicating with patients.
- It is uncertain whether re-labelling neck pain after road traffic injury is worthwhile, given the small differences between labels and unclear clinical relevance.

Abstract Number: 2 Presenting Author: Joshua Zadro

## Title: Diagnostic labels and advice for rotator cuff-related shoulder pain influence perceived need for shoulder surgery: An online-randomised experiment

Aim: To investigate the effects of diagnostic labels and advice, and interactions between labels and advice, on perceived need for shoulder surgery for rotator cuff-related shoulder pain.

#### Design: An online-randomised experiment

Method: 2,024 people with shoulder pain read a scenario describing a patient with rotator cuff-related shoulder pain and were randomised to bursitis label plus guideline-based advice, bursitis label plus treatment recommendation, rotator cuff tear label plus guideline-based advice, and rotator cuff tear label plus treatment recommendation. Guideline-based advice included encouragement to stay active and positive prognostic information. Treatment recommendation stressed treatment is needed for recovery. Outcomes included perceived need for surgery (primary outcome), imaging, an injection, and a second opinion.

Results: Labelling as bursitis (vs. rotator cuff tear) decreased perceived need for surgery (mean effect: -0.5 on a 0-10 scale, 98.3%CI -0.7 to -0.2), imaging and a second opinion. Guideline-based advice (vs. treatment recommendation) decreased perceived need for surgery (mean effect: -1.0, 98.3%CI -1.3 to -0.7), imaging, an injection, and a second opinion. There was little-to-no evidence of an advice-label interaction for any outcome.

Conclusion: Labels and advice influence management preferences in people with rotator cuff disease. The effect of advice is around two-three times stronger than labels for most outcomes.

**Key Practice Points:** 

- Avoiding inappropriate labels and advice is free of cost, risk, and effort, and could decrease patients desire for unnecessary care
- Labelling patients with a rotator cuff tear should be avoided
- Health professionals should provide encouragement to stay active and positive prognostic information

Abstract Number: 3 Presenting Author: Belinda Lawford

Title: Comparing effects of knee osteoarthritis educational information, with and without pathoanatomical content, on consumer management beliefs: An online randomised controlled trial.



Aim: Compare effects of osteoarthritis information, with and without pathoanatomical content, on management beliefs. Design: An online randomised trial.

Method: 556 people (≥45 years; 50% with knee pain) considered a hypothetical scenario where their doctor informed them they had knee osteoarthritis. Participants were randomised to: control (read standard osteoarthritis information pamphlet) or; experimental (read same pamphlet as control, but without any pathoanatomical content). Primary outcomes were beliefs about the necessity of x-ray for diagnosis and necessity of joint replacement surgery (rated 0="definitely unnecessary" to 10="definitely necessary"). Secondary outcomes included perceptions about exercise and medication (rated 0-10) and osteoarthritis knowledge (scale range 11-55).

Results: There were no differences in primary outcomes (x-ray: mean between-group difference -0.3 units [95% confidence interval: -0.9, 0.4]; surgery: -0.2 [-0.7, 0.2]). Experimental participants had lower perceptions that exercise would damage the knee (-0.4 [-0.8, 0.0]) and had better osteoarthritis knowledge (0.9 [0.0, 1.9]). Participants were equally satisfied with the information they received (86% satisfied in control; 88% in experimental).

Conclusion: Removing pathoanatomical content may not affect beliefs about x-ray and surgery, but may lead to lower perceptions that exercise is damaging and better osteoarthritis knowledge.

- Avoiding use of pathoanatomical content/language in written osteoarthritis information is a low cost intervention that may favourably shift patient beliefs
- Providing information without pathoanatomical content/language may lower perceptions that exercise is damaging and lead to better osteoarthritis knowledge
- Removing pathoanatomical content, and subsequently providing less information overall, does not adversely affect consumer satisfaction



# Beyond generalised and peripheral joint hypermobility: management of upper cervical spine instability in adults

### Chan C<sup>1</sup>, Hennessey S<sup>2</sup>

<sup>1</sup>Macquarie University, Faculty of Medicine, Health and Human Sciences, <sup>2</sup>Not Just Bendy Hypermobility Services

Musculoskeletal 8B, P 9, October 6, 2023, 3:35 PM - 4:20 PM

Summary & Rationale: Research around asymptomatic and symptomatic Generalised Joint Hypermobility has exponentially grown in the last decade. The classification and management of joint hypermobility being revolutionised by new, clinically useful tools, such as the Lower Limb Assessment Score and the Upper Limb Hypermobility Assessment Tool. Comparatively, little work or focus has been on hypermobility of the spine. Specifically, there is a paucity of evidence-base to guide management of the highly complex neuromusculoskeletal condition, Upper Cervical Spine Instability (UCI). The objectives of this symposium are to: i) describe and differentiate between cervical hypermobility and UCI, ii) describe clinical and radiological assessment of cervical hypermobility and UCI, and iii) to describe a recommended approach to addressing cervical hypermobility and a mild case of UCI as examples. The first two papers will cover the clinical relevance and presentation of cervical hypermobility and UCI, while the final paper will cover management of these two phenomena.

Abstract Number: 1 Presenting Author: Cliffton Chan

## Title: Is there a relationship between sagittal cervical spine mobility and generalised joint hypermobility? A cross-sectional study of 1000 healthy Australians.

Aim: To determine whether people with cervical hypermobility are likely also generally hypermobile. To establish cut-offs for sagittal range hypermobility across the lifespan of both sexes for clinical use when assessing cervical instability.

Design: Cross-sectional observational study.

Method: 1000 healthy individuals, aged 3–101 years were recruited. CROM was assessed using an inclinometer, presence and extent of GJH were assessed using the Beighton scoring system and age- and sex-specific criteria respectively. We utilised Spearman's rho to determine the relationship between presence and extent of GJH to CROM, age, sex and ethnicity. Hypermobile CROM was identified as the upper 5% of flexion and extension.

Results: CROM correlated positively with GJH (Beighton score as a continuous or dichotomous age- and sexspecific variable)(rho=0.12–0.50; p<.001) and negatively with age (rho=0.54; p<.001). Cut-offs for cervical hypermobility were calculated across the lifespan (each decade of life).

Conclusion: Increased sagittal CROM was observed in individuals identified with GJH. Extension CROM decreased with age more than flexion. The greatest loss of sagittal range was in the second and third decades of life.

- Those with GJH demonstrate greater sagittal cervical mobility.
- Other than in the 2nd and 3rd decades of life, sagittal plane mobility in the cervical spine is similar between males and females.



• Cervical range of motion screening is warranted for patients identified with GJH and for rehabilitation goal-setting.

Abstract Number: 2 Presenting Author: Cliffton Chan

## Title: Reference values of four measures of craniocervical stability using upright dynamic magnetic resonance imaging

Aim: To establish reference ranges for four most used diagnostic measures of craniocervical instability (CCI) in three cervical sagittal positions using upright, dynamic, magnetic resonance imaging (udMRI).

Design: Retrospective observational study.

Method: Deidentified udMRIs of 50 adults, referred for reasons other than CCI, were captured at maximal flexion, maximal extension and neutral. Images were analyzed, providing measures of basion-axial interval, basion-axial angle, basion-dens interval (BDI) and the Grabb–Oakes line (GOL) for all three positions (12 measures per participant). All measures were independently recorded by a radiologist and neurosurgeon to determine their reliability. Descriptive statistics, correlations, paired and independent t-tests were used. Mean (±2 SD) identified the reference range for all four measures at each craniocervical position.

Results: Inter-rater reliability indices were between 0.69–0.97 (moderate–excellent). Fifty adults' (50% male; mean age 41.2 years ( $\pm$ 9.7)) reference ranges for all twelve measures were reported. Except for the BDI and GOL when moving between neutral and full flexion, significant extents of movement were identified between the three craniocervical positions for all four measures (p≤.005).

Conclusion: This is the first study to provide a rigorous standardized protocol for four diagnostic measures of CCI. Reference ranges are established at mid and ends of sagittal cervical range corresponding to where exacerbations of signs and symptoms are commonly reported.

**Key Practice Points:** 

- CCI symptoms are often reported or exacerbated in various extents of cervical flexion or extension
- It is critical that both clinical tests and radiological investigations are performed in the patient's reporting provocation position/s
- Physiotherapists have a role in advocating for non-traditional dynamic imaging for the patients with suspected CCI.

Abstract Number: 3 Presenting Author: Sharon Hennessey

# Title: Presentation and physical therapy management of upper cervical instability in adults with symptomatic generalized joint hypermobility: International expert consensus recommendations

Aim: To compile expert opinions on screening, classification, and conservative management for adults with upper cervical instability (UCI) with symptomatic joint hypermobility.

Design: Seventeen physiotherapists with UCI expertise from UK, Australia and USA, with an average of 26.7 +/- 10.5 years of clinical experience, met via team meetings, asynchronous communication and several asynchronous Delphi-type processes.



Method: Teams identified key signs and symptoms, developed recommendations for screening and diagnosing patients with UCI to formulate a model to guide clinical decision-making.

Results: A detailed screening flow chart and a six-step process to guide assessment and management, including checking for yellow and red flags and categorising patients' levels of irritability, were formulated.

Conclusion: The final consensus flow chart of assessment and management guidelines should guide inexperienced therapists to increase confidence in both their management of UCI and indications for referral for further investigation or management. Despite the limitations of this nominal group method, it will be instrumental to direct future research.

- The flowchart to direct assessment and management will arm inexperienced clinicians to know what they can safely do and when to refer on for more specialised care.
- Before performing a physical examination, it is important to consider red and yellow flags and degree of irritability of UCI symptoms.
- Presence of UCI does not prevent the use of conservative physiotherapy management to provide clients with a clear path to improve or maintain their function.



# Pain in schools: Three very different evidence-based physiotherapy perspectives

### Pate J<sup>1</sup>, Fechner R<sup>1,3</sup>, Norton J<sup>1,2</sup>

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Paediatric 4, P 6, October 5, 2023, 2:30 PM - 3:15 PM

Summary/Rationale: Physiotherapy for children challenged by chronic pain is uniquely complex due to constantly evolving developmental, environmental, and social aspects of children's presentation, including school participation. The presenters will (1) outline impacts of paediatric chronic pain on school attendance and participation, (2) explore the complexity of conceptual change in this population, and (3) discuss inclusion for children with chronic pain at school. Physiotherapists play key roles in providing education about the complexity of pain to families, members of the multidisciplinary team, and school staff. We unravel the complexity of incorporating biopsychosocial care, share findings relating to the dynamic nature of how children conceptualise and learn about pain, and discuss how pain is modelled and communicated in schools. This symposium will include a discussion of physiotherapist's role in tackling the burdens of chronic pain in schools, and offer clear recommendations and guiding principles.

Key Practice Points:

- Attendees will learn about the prevalence of chronic pain in school and understand the impact of pain on absenteeism and presenteeism and the relevance for physiotherapists.
- Attendees will explore different physiotherapy assessment methods for conceptual change about pain, by working through a case example involving both surveys and interviews.
- Attendees will identify the strengths teachers have in the involvement in healthcare, and explore potential roles of physiotherapists in offering biopsychosocial management strategies to children challenged by pain.

Abstract Number: 1 Presenting Author: Jen Norton

# Title: Exploring the prevalence of paediatric chronic pain and school absenteeism for therapists working in schools: systematic review with meta-analysis.

Aim: To explore the prevalence of school absenteeism for children experiencing chronic pain, and to identify the characteristics of children with chronic pain who report school absenteeism.

Design: Systematic review of quantitative studies, including meta-analysis of mean days spent absent from school.

Method: Participants were children experiencing chronic pain, aged 5-18 years, attending school full-time. Studies were included if mean days absent from school was reported. Participant characteristics included gender, age, pain type, pain duration and data collection setting.

Results: 18 quantitative studies with moderate to high quality involving 2963 children with chronic pain were included. Participants were predominantly females (71.8%), aged 14.1 years (SD 2.32). Meta-analysis demonstrated 13.28 mean days were spent absent from school in a 60-day period (95% CI 10.21, 16.34) (p < 0.001). Most common pain type was combined headache/head pain (46.9%) and average duration was 32.5 months (SD 36.34).



Conclusion: Children with chronic pain aged 5-18 years are absent from school for approximately 22% of school, in a 60-day period.

**Key Practice Points:** 

- Children with chronic pain are absent from school for approximately 22% of learning time.
- Key characteristics of children who report absenteeism have been identified.
- School based and community therapists may play a key role in screening at risk students and providing early intervention.

Abstract Number: 2 Presenting Author: Dr. Joshua Pate

# Title: Targeting pain science education with a children's book: A Single Case Experimental Design (SCED) study with a sham comparison

Aim: Pain science education is underpinned by the theory of conceptual change. Therefore, it is important to establish how a child's concept of pain changes over time. The primary aim was to assess perceived conceptual changes about the relationship between pain and damage, and the influence of the brain on pain.

Design: 6-week Single Case Experimental Design (SCED) study of children aged 8-12 years with and without chronic pain. We compared reports from an interviewer, a child's verbal responses, and their survey responses.

Method: Children were blinded and received a sham educational children's book in week 2, followed by a pain science educational children's book in week 4. The Concept of Pain Inventory (COPI) was used to explore trends of reported conceptual change over time and in three specific items. Qualitative interviews were conducted at week 2 and week 4.

Results: We found discrepancies between interviews and survey responses in 15 of the 17 children. Highlighting discrepancies may be a useful conversation starter with children in a clinical setting to target pain science education.

Conclusion: Considering the wide variability observed in perceptions of conceptual change from different perspectives, a multipronged approach to assessment of a child's concept of pain could be useful and perhaps necessary.

**Key Practice Points:** 

- Using a survey or an interview exclusively to determine conceptual change may not be sufficient.
- SCED studies provide useful insights where a participant can act as their own control.
- Pain science education can be targeted and individualised.

Abstract Number: 3 Presenting Author: Rebecca Fechner

# Title: Do teacher's question the reality of pain in their students? A survey using the Concept of Pain Inventory-Proxy (COPI-Proxy)

Aim: Assessment of a teacher's concept of their student's pain could be useful to guide preventative and targeted school-based pain science education. We aimed to assess a teacher's own concept of pain against their concept of their student's pain and examine the psychometric properties of the tool.



Design: Teachers of 10–12-year-old children were invited to participate in an online survey via social media. We modified the Concept of Pain Inventory (COPI) by inserting a vignette (COPI-Proxy), and we included questions to explore teacher stigma.

Results: Overall, a sample of 233 teachers participated in the survey. COPI-Proxy scores showed that teachers can conceptualize their student's pain separately but are influenced by their own beliefs. Only 76% affirmed the pain in the vignette as real. Teachers used potentially stigmatizing language to describe pain in their survey responses. The COPI-Proxy had acceptable internal consistency (Cronbach's alpha = 0.72) and moderate convergent validity with the COPI (r = 0.56).

Conclusion: Results show the potential benefit of the COPI-Proxy for assessing someone's concept of another's pain, particularly for teachers who are important social influencers of children.

- Incorporating adult influencers into children's physiotherapy care is necessary and important.
- Assessing how adult influencers conceptualise their child/student's pain helps to individualise and target physiotherapy pain education and care.
- Stigma exists in schools and can negatively influence pain experiences; physiotherapists play a key role in identifying and addressing this through targeted pain science education.



# New guidelines, developmental trajectories and clinical pathways for people with whiplash.

### Rebbeck T<sup>1,3,4</sup>, Sterling M<sup>2,3</sup>, Papic C<sup>4,5</sup>

<sup>1</sup>Faculty of Medicine and Health, University of Sydney, <sup>2</sup>RECOVER Injury Research Centre, <sup>3</sup>NHMRC CRE: Better Health Outcomes for Compensable Injury, <sup>4</sup>John Walsh Centre for Rehabilitation Research, Kolling Institute, The University of Sydney, <sup>5</sup>School of Science and Technology, University of New England

Pain 9, P 2, October 7, 2023, 10:35 AM - 11:35 AM

Summary and Rationale: Whiplash associated disorders (whiplash) are the most common injury for Australians involved in non-catastrophic read collisions, and over half develop persistent pain and disability. This symposium will present three papers by clinical and research experts in whiplash that aim to solve this burden. First Dr Christopher Papic will present new national clinical guidelines for both acute and chronic whiplash highlighting the evidence for interventions (education, neck specific and psychologically informed exercise) that can be implemented by physiotherapists. Next Professor Michele Sterling will present new evidence on how clinical assessment of cold pain sensitivity is indicated to identify people with whiplash likely to develop chronic pain related disability. Finally, Professor Trudy Rebbeck will present the results of a multi-centre randomised controlled trial comparing usual care to a new clinical pathway of care. People randomised to the pathway received guideline-based care matched to risk stratification.

Abstract Number: 1 Presenting Author: Christopher Papic

### Title: New Australian treatment guidelines for managing people with acute or chronic whiplashassociated-disorders (whiplash).

Aim: To develop new multi-disciplinary national clinical guidelines for managing acute and chronic whiplash.

Design: Treatment recommendations were developed using the GRADE Evidence to Decision Framework and in accordance with NHMRC standards. This process ensures a robust and transparent framework for developing clinical recommendations.

Method: A multidisciplinary panel (n=18) was convened comprising key stakeholders including clinicians, government regulators and consumers. Randomised controlled trials for acute and chronic WAD were identified by systematic review and the previous Australian guidelines. The panel prioritised three critical outcomes (pain, disability, and psychological functioning) and 26 treatment clinical questions based on the extant literature and current practice. Studies were classified under these questions and the GRADE method was used to develop recommendations.

Results: 44 trials for acute and 19 trials for chronic WAD were included. Recommendations FOR included exercise and behavioural interventions (e.g., psychologically-informed exercise, neck-specific exercise, education, psychological). NEUTRAL recommendations with stringent implementation considerations included passive and manual treatments (e.g., immobilisation, massage). Recommendations AGAINST invasive and passive treatments (e.g., surgery, injections, manipulation, electrotherapy).

Conclusion: Exercise and behavioural interventions had the highest recommendations and many are able to be implemented by physiotherapists. Recommendations were primarily conditional or neutral, largely due to low-certainty evidence.



Key Practice Points:

- People who are low-risk require less input and it is important not to overtreat.
- Clinicians should consider earlier referral to a whiplash specialist and/or psychologist for people at med-high risk and implement recommended treatments.
- Multidisciplinary care with a focus on developing client self-efficacy is recommended for chronic WAD.

Abstract Number: 2 Presenting Author: Michele Sterling

## Title: Developmental trajectories of cold pain sensitivity but not mechanical pain sensitivity co-develop with disability following whiplash injury

Aim: (1) to identify discrete developmental trajectories of cold and mechanical pain sensitivity following whiplash injury, (2) to determine if pain sensitivity and disability trajectories co-develop.

Design: Prospective cohort study.

Method: 233 individuals with whiplash were assessed at <1, 3-, 6- and 12-months post injury. Cold pain thresholds (CPT) at the cervical spine, pressure pain thresholds (PPT) at C5, upper limb and Tibialis Anterior and the Neck Disability Index (NDI) were measured. Group-based trajectory modelling identified outcome profiles. Dual trajectory analyses explored probabilities of joint trajectory group membership.

Results: Three distinct trajectories were identified for CPT (low 50%, moderate 30.2%, high 19.7% pain sensitivity) and PPT Tibialis Anterior (low 24%, moderate 39.0%, high 36.8%). Two distinct trajectories were identified for PPT C5 (low 10.73%, high 89.3%) and PPT upper limb (low 18.6%, high 81.4%). CPT and PPT trajectories were stable over the 12 months. Three distinct NDI trajectories were identified (mild disability for 12 months 49%; moderate decreasing to mild disability 33%; and persisting moderate/severe disability 18%. There was good correspondence of trajectory group for CPT and disability but not for PPT and disability.

Conclusion: Cold pain sensitivity is associated with persisting moderate/severe disability after whiplash injury. Stable cold pain sensitivity trajectories may reflect a pronociceptive phenotype predisposing patients to developing chronic pain.

**Key Practice Points:** 

- Clinical assessment of cold pain sensitivity is indicated to identify patients likely to develop chronic pain related disability.
- Clinical assessment of mechanical (pressure) pain sensitivity is not useful in gauging recovery.

### Abstract Number: 3

Presenting Author: Trudy Rebbeck

# Title: Implementation of a risk- stratified, guideline-based clinical pathway of care to improve health outcomes for whiplash; a multi-centre randomised controlled trial.

Aim: To evaluate the effectiveness of implementation of a risk-stratified clinical pathway of care (CPC) compared to usual care (UC) in people with acute whiplash.

Design: Multi-centre two-arm parallel-randomised controlled trial conducted in primary care.



Method: 216 people with whiplash were stratified for risk of poor outcome then randomised to either the CPC or UC. CPC group received care matched to risk profile. Low risk – guideline based advice and exercise supported by online resource (www.mywhiplash.com.au). Medium/high risk - referred to a whiplash specialist who assessed modifiable risk factors, then determined further care. Primary outcomes assessed were Neck Disability Index (NDI) and Global Rating of Change (GRC). Secondary outcomes included pain self-efficacy. Health care received was collected in both arms.

Results: No difference between groups for the NDI (MD (95% CI) -2.34 (-7.44 to 2.76)) or GRC (MD 95% CI 0.08 (-0.55 to 0.70) at 3 months. There was a significant change in pain self-efficacy at 3 months (MD 95% CI 4.59 (0.25 to 8.94). Care received was similar between groups, however those at low risk in general received less imaging and referrals.

Conclusion: Implementation of this CPC in its current form did not improve neck disability or recovery, but had a minimal effect on pain self-efficacy. Modifications are required before widespread implementation.

- Minimal care for people at low risk of poor outcome is recommended.
- Modifications to the medium/high risk pathway are recommended (e.g. greater attention to training and engaging patients in referral decisions).



# Implementation and effectiveness of self-directed therapy for adults receiving inpatient rehabilitation: the 'My Therapy' stepped-wedge cluster randomised trial

### Brusco N<sup>1</sup>, Ekegren C<sup>1</sup>, Whittaker S<sup>1</sup>

<sup>1</sup>Rehabilitation, Ageing and Independent Living (RAIL) Research Centre, Monash University

Physiotherapy General 11B, P 5, October 7, 2023, 1:40 PM - 2:25 PM

Theme: In Australian rehabilitation hospitals, there is an evidence-practice gap, with adult inpatients receiving less than half the recommended dosage of physiotherapy and occupational therapy. The My Therapy program aimed to increase the dosage of inpatient rehabilitation by engaging patients in self-directed therapy activities, outside of supervised sessions. With NHMRC funding, the My Therapy program was implemented and evaluated across four Victorian health services in 2021-22 (n=2,536) via a stepped wedge cluster randomised trial.

Objectives: The overall aim of this symposium is to present the initial results of this landmark Australian rehabilitation trial, with the following specific objectives:

1. To assess implementation of the My Therapy program via a mixed-methods process evaluation (presentation 1);

2. To understand the barriers and enablers to participating in My Therapy from patients' and caregivers' perspectives via a descriptive qualitative study (presentation 2);

3. To investigate the clinical outcomes of the trial (presentation 3).

Abstract Number: 1 Presenting Author: Sara Whittaker

### Title: Implementation of the My Therapy program: A mixed-methods process evaluation

Aim: To assess the implementation of the My Therapy program by exploring adoption, fidelity to key program elements, and patient/clinician acceptability.

Design: A mixed-methods evaluation was conducted alongside the My Therapy trial.

Method: Ward/service audits and surveys for the 8 participating wards were undertaken at 9-time points during the stepped wedge trial. Patient surveys, an audit of compliance with My Therapy, and clinician surveys and focus groups were undertaken at 3-time points.

Results: Ward/service audits, consisting of a review of 1730 patient files and 72 service surveys, demonstrated that 68% of patients participated in a self-directed therapy program ('My Therapy') following crossover to intervention, compared to 2% of patients under control conditions. There was high fidelity to the My Therapy program with the 68% of patients participating in My Therapy adhering to all key elements. Patient surveys (n=60) indicated My Therapy programs were easy to complete, easy to follow, and tailored to patient needs. Clinician focus groups (n=22) indicated strong staff acceptability and a perception that participation in My Therapy was of benefit to patients.

Conclusion: The My Therapy trial was implemented as intended and led to an increase in participation in self-directed therapy activities within inpatient rehabilitation settings.



Key Practice Points:

- My Therapy was successfully implemented into inpatient rehabilitation settings.
- There was an increased opportunity for patients to participate in rehabilitation therapy through selfdirected activities.
- Collaboration between physiotherapists, occupational therapists, and patients facilitated program implementation.

Abstract Number: 2 Presenting Author: Dr Christina Ekegren

## Title: Patients' and caregivers' perceptions of participating in self-directed activity outside supervised therapy within inpatient rehabilitation settings: a qualitative study

Aim: To understand the barriers and enablers to participating in a self-directed therapy program within inpatient rehabilitation settings ('My Therapy') from patients' and their caregivers' perspectives

Design: Descriptive qualitative study

Method: Semi-structured interviews were undertaken with 16 patients and 3 caregivers from three Victorian rehabilitation hospitals following participation in a self-directed therapy program. A thematic analysis was performed using a framework approach.

Results: Themes identified included that patients have different motivators with regards to participating in self-directed therapy activities, that clinicians have important and varied roles to play in promoting self-directed therapy activities, that the environment can help or hinder participation, and that the way the program is delivered to patients has an impact on adherence.

Conclusion: While some patients were highly motivated to undertake self-directed therapy activities in the inpatient rehabilitation setting, others needed considerable supervision, encouragement and feedback from clinicians, as well as suitable space, equipment and external motivation strategies.

Key Practice Points:

- It is important to understand the unique motivators and capabilities of individual patients with respect to self-directed therapy activities.
- This knowledge can help clinicians tailor their delivery in promoting self-directed therapy activities for improved adherence.

Abstract Number: 3 Presenting Author: Natasha Brusco

## Title: Clinical effectiveness of self-directed therapy for adults receiving inpatient rehabilitation: the 'My Therapy' stepped wedge cluster randomised trial

Aim: To determine the clinical effectiveness of self-directed therapy activities ('My Therapy') in rehabilitation inpatients.

Design: Stepped-wedge cluster randomised trial.

Method: My Therapy was implemented across 8 rehabilitation wards (4 Victorian health services), over 54weeks, with patients aged 18+ years receiving rehabilitation for any diagnosis. A new ward transitioned from



usual care (control group) to intervention conditions (intervention group; usual care plus My Therapy) every 6 weeks. The primary outcome was the Functional Independence Measure (FIM), analysed via mixed-effects logistic and linear regression.

Results: From April 2021-April 2022, 2,536 participants (62% female) were included, with a mean (SD) age of 76.6 (12.7) years (n=1449 control; n=1087 intervention). Baseline group differences included lower admission FIM scores and fewer elective surgical patients in the intervention group. 35.5% of participants in the intervention group, compared to 30.5% in the control group, achieved a minimal clinically important difference (MCID) in FIM from admission to discharge, with an adjusted odds ratio (95% CI) of 1.00 (0.66,1.34). There was no difference between groups for the FIM change score (adjusted mean difference (95% CI): -0.2 (-2.6,2.2)).

Conclusion: While a higher proportion of participants achieved improvements in function under intervention versus control conditions, there was no difference between groups after adjusting for baseline characteristics. Baseline group differences related to the changing Victorian rehabilitation case-mix during the COVID-19 pandemic.

- Patient characteristics may impact effectiveness of self-directed therapy activities within rehabilitation settings
- Clinicians may need to target specific patients for the prescription of self-directed therapy



### Moving evidence-based high value care from policy to practice

### Gleadhill C<sup>1,2</sup>, Manvell N<sup>3</sup>, Hodgson S<sup>4</sup>, Dooley K<sup>5</sup>

<sup>1</sup>University of Newcastle, <sup>2</sup>Huter New England Population Health, <sup>3</sup>NuMoves Physiotherapy, <sup>4</sup>Hunter New England Local Health District, <sup>5</sup>Charles Sturt University

Physiotherapy General 12A, P 8, October 7, 2023, 2:30 PM - 3:15 PM

Summary: This symposium outlines a series of three studies stemming from an Australian practice-based research network of physiotherapists. We identified that it is difficult to understanding what policies around care value mean to the clinician, where evidence-based practice fits into care value, and how we can practically apply more evidence-based, high value care. We provide clinicians with key information to provide evidence-based high value care in practice.

Rationale: To address the growing musculoskeletal burden, there are increasing calls to provide care that is high value. Definitions of value-based care typically provide few tangible actions for individual clinicians or are not specific to physiotherapy care. Definitions have also lacked a number of perspectives, including from the people who are tasked with delivering it. Without input from clinicians about what high value care is and how it applies to practice, any intended impact on care delivery is unlikely to be realised.

Abstract Number: 1 Presenting Author: Nicole Manvell

#### Title: A rapid review of high value care definitions

Aim: 1. To describe the definitions currently used for a) high quality care and b) high value care in physiotherapy for musculoskeletal conditions. 2.To identify themes that are common across definitions of a) high quality care and b) high value care for musculoskeletal conditions.

Design: Rapid review (registered protocol here: https://osf.io/swdcg)

Method: We searched three databases and grey literature and independently screened records. We analysed data thematically and developed a conceptual model informed by categories and themes.

Results: Thirty-nine records were included in data extraction and synthesis. We found that high value care typically consists of four domains (patient values, cost effectiveness, reducing waste, and high-quality care), in which high-quality care consists of seven themes (safe, connected, consistent, patient-centred, evidence-based, equitable). We summarised the contributory domains and themes to provide definitions for high value and high-quality care. We produced a conceptual model to illustrate the relationship between domains and themes, alongside the key stakeholders in care provision.

Conclusion: High value care for musculoskeletal conditions delivers most value for the patient, and the clinical benefits outweigh the costs to the individual or system providing the care. High quality care is evidence-based and safe care that is patient-centred, consistent, timely, equitable and allows easy interaction with healthcare providers and healthcare systems.

- Evidence based care is a key component of high-quality care.
- High value care is a comprehensive construct consisting of high-quality care and additional aspects that relate to ensuring cost effective care while adhering to patient values.



Abstract Number: 2 Presenting Author: Connor Gleadhill

## Title: A consensus statement on the definition and application of high value care for musculoskeletal conditions

Aim: We aimed to develop a physiotherapist-led consensus definition for, and statements about, the provision of high value care for musculoskeletal conditions.

Design: Consensus process guided by Research And Development/University of California Los Angeles Appropriateness Method (RAND) methods.

Method: Participants were members of a practice-based research network of physiotherapists (n=33). Participants provided feedback and their views about the application of feedback on our rapid review on high value care through online surveys and individual semi-structured interviews. We thematically analysed data to make changes to the model and generate statements about high value care application.

Results: Online survey responses (n=26) and interviews (n=9) generated two additional high-quality care themes, a definition of low-value care, and 21 statements on the application of high value care. Consensus was reached for three working definitions (high value, high quality, and low value care), a final model of four high value care domains (high-quality care; patient values; cost effectiveness; reducing waste), nine high quality care themes (evidence-based, effective, safe, patient-centred, consistent, accountable, timely, connected, and equitable) and 15 statements on application.

Conclusion: This work highlights the perspective of clinicians in high value care for musculoskeletal conditions. Value care adheres to patient values, is cost-effective, reduces waste and is high quality. Evidence-based, effective, safe, patient-centred, consistent, timely, accountable and connected care are clinically important as part of high-quality care.

**Key Practice Points:** 

• The concepts effective care and accountable care were important to consider and may be important to consider.

Abstract Number: 3 Presenting Author: Connor Gleadhill

### Title: A mixed methods study on physiotherapists barriers and enablers to evidence-based care provision

Aim: Describe: i) opinions toward evidence; ii) how evidence is accessed; iii) factors influencing evidence access; iv) factors influencing evidence application, for physiotherapists working in regional areas.

Design: A mixed-methods study with online survey and focus groups.

Method: We invited regional physiotherapists to an online survey and focus groups. We used eight domains of the Transtheoretical Domains Framework to design survey questions. We analysed quantitative and qualitative data in parallel, then integrated both sources through by developing a matrix while considering the Transtheoretical Domains Framework domains to generate themes.

Results: 57 physiotherapists participated in the study. Evidence was important, but patient expectations, colleagues' treatment choices, and business demands were also important in clinical decision making.



Physiotherapists reported they access evidence on average 30 minutes or less per week. Competing demands like business administration tasks are barriers to accessing evidence. Patient expectations were a major barrier to applying evidence in practice. Environmental and systemic factors, like funding structures or incentives for evidence-based care, and social factors, like lacking or having a culture of accountability and mentorship, were reported as both barriers and enablers to evidence application.

Conclusion: Physiotherapists' provision of evidence-based care may be improved by enhancing structural support from workplaces to access and apply evidence and exploring discrepancies between physiotherapists' perceptions of patient expectations and actual patient expectations.

Key Practice Points:

• Providing paid in-clinic time to access and appraise evidence, and ensuring staff have access to upto-date mentors may enable better evidence-based practice in clinic.



# What roles do trunk muscles and neck strength play in sports-related concussion?

Leung F<sup>1</sup>, Hides J<sup>1</sup>, Brown D<sup>1</sup>

<sup>1</sup>Griffith University

Sports & Exercise 3B, P 11, October 5, 2023, 1:40 PM - 2:25 PM

Summary and rationale: Sports-related concussion is a major concern for athletes. While there are multiple systems that contribute to the complex nature of concussion injuries, there is emerging evidence of a relationship between trunk control and concussion. The trunk plays an important role in force dissipation during collision or high impact activities, however, little is known about how trunk function is related to concussions. Cervical spine characteristics have also been investigated in collision sport athletes with the aim of identifying injury risk reduction strategies. The objective of this symposium is to present how trunk muscle function and neck strength are related to concussion. The results of these prospective and retrospective studies suggest that the neck and lumbopelvic region should be considered together in the prevention and management of concussions.

Abstract Number: 1 Presenting Author: Julie Hides

## Title: Exploring associations between trunk muscle size/ function and concussion injuries in professional rugby league players

Aim: To examine for risk factors for concussion injuries related to trunk muscle size and function. Design: Prospective study.

Method: In a sample of 28 professional rugby league players, the size of the multifidus (MF) and quadratus lumborum (QL) and ability to contract the MF, transversus abdominis and oblique abdominal muscles were measured in the rugby league pre-season. Playing season concussion injuries were monitored by club personnel. A logistic regression was conducted to determine the adjusted odds ratios for trunk muscle measures as risk factors for concussion injuries.

Results: The adjusted odds ratio (OR) values indicated that if a player had increased contraction of the MF (contraction > 7.2%; p=0.006) and the abdominal muscles (>49.9%; p=0.02), the odds of sustaining a concussion were increased (OR MF 14.5; 95% CI 1.3 to 159; OR transversus abdominis 6.2; 95% CI = 0.8 to 48.6).

Conclusion: Previous studies have reported increased contraction of trunk muscles in the acute period following concussion. These findings post- concussion parallel results of the current investigation and may represent a strategy of splinting or over-holding.

- While this type of compensatory pattern may be appropriate in the acute situation, it may not represent an optimal long-term strategy.
- Increased co-contraction of trunk muscles may interfere with normal movement and may affect the ability of rugby league players to adequately distribute loads during high impact activities such as tackling.
- Intervention trials are required to examine if motor control training of trunk muscles could reduce the risk of concussion injuries.



Abstract Number: 2 Presenting Author: Felix Leung

#### Title: The relationship between trunk muscle size and neck strength in professional rugby league players

Aim: Examine the relationship between trunk muscle size and neck strength

#### Design: Observational study

Method: 31 professional rugby league players from one club were assessed during the preseason. The size of lumbar multifidus and quadratus lumborum muscles was measured using ultrasound imaging. Isometric neck strength was measured using a pull dynamometer. Correlations were used to examine the relationship between lumbar multifidus and quadratus lumborum muscle size and neck strength measures. Results: Trunk muscle size was positively correlated with strength of the neck muscles. Neck flexion strength was correlated with multifidus muscle size at the L4 and L5 vertebral levels (r = 0.38, p = 0.04; r = 0.48, p = 0.01 respectively). Left and right cervical lateral flexion strength was correlated with quadratus lumborum muscle size bilaterally (r = 0.33-0.57, p < 0.05). Neck extension strength was not correlated with trunk muscle size (p > 0.05).

Conclusion: While lumbar multifidus and quadratus lumborum muscle size has previously been shown to be related to upper extremity and concussion injuries, little is known about the mechanism of this relationship. A link between muscles that control the lumbopelvic region and strength of cervical spine muscles may help to explain why trunk muscles may be associated with concussions.

**Key Practice Points:** 

- Control of the lumbopelvic region may influence neck function
- The lumbopelvic region may be an important consideration when training and strengthening the neck region during concussion prevention strategies

Abstract Number: 3 Presenting Author: Daniel Brown

### Title: Neck strength and concussion history in combat sport athletes

Aim: To explore differences in isometric neck strength in combat sport athletes with and without a history of concussion.

Design: Cross-sectional observational study.

Method: Forty adult combat sport athletes were recruited from local clubs in Queensland, Australia. Athletes were separated by self-reported 12-month history of concussion (n = 19 with a history of concussion and 21 without a history of concussion). Isometric neck strength was assessed using a handheld dynamometer in the directions of flexion, extension, and left and right anterolateral flexion. Three trials were completed in each direction and the average force was recorded relative to body weight.

Results: Athletes with a history of concussion had lower isometric strength in the directions of flexion (effect size = 1.0; p = 0.01), extension (effect size = 1.4; p = 0.01), and right anterolateral flexion (effect size = 0.7; p = 0.03) of the cervical spine compared with those without a history of concussion. There were no differences in strength in the left anterolateral direction (p = 0.09), nor the flexion/extension ratio (p = 0.60).



Conclusion: Neck strength was reduced in athletes with a history of concussion. Athletes are required to produce adequate neck strength to withstand external acceleration forces sustained to the head during combat sport.

- Neck strength should be assessed in athletes with a history of concussion.
- Neck strength is a modifiable factor associated with concussion and these findings may warrant the use of strength training in athletes who report a concussion.



### Hip related pain in football players: an evidence update

Kemp J<sup>1</sup>, <u>O'Brien M</u><sup>1</sup>, <u>Heerey J</u><sup>1</sup>, <u>Scholes M</u><sup>1</sup> <sup>1</sup>La Trobe University

#### Sports & Exercise 12, M 1 & 2, October 7, 2023, 2:30 PM - 3:15 PM

Summary and rationale: Hip and groin pain is common in athletes participating in football codes. Hip-related conditions (e.g., FAI syndrome, hip dysplasia and labral tears) can cause hip and groin pain, lead to time loss injury and may expediate the development of hip osteoarthritis (OA). When present, hip-related conditions are difficult to diagnose and manage. This symposium will present current evidence on the management of hip-related conditions in football players through three presentations: (i) the relationship between hip imaging findings, symptoms and early hip OA features in elite male Australian Football League draftees (talk 1 - Dr Joshua Heerey) (ii) Running biomechanics in football players with and without hip-related pain and its relationship with symptom severity and cam morphology size (Dr Mark Scholes) and (iii) the relationship between muscle strength, muscle strength, functional performance and sport ability in football players with hip dysplasia (talk 2-Mr Mike O'Brien) . Each of the three themes will be presented as a 15-minute presentation, chaired by A/Prof Joanne Kemp

Abstract Number: 1 Presenting Author: Joshua Heerey

### Title: Are hip joint imaging findings, associated with symptoms, and early hip osteoarthritis features in elite male Australian Football League draftees?

Aims: 1) Describe the prevalence of cartilage defects, labral tears and bony morphology in elite male Australian Football League (AFL) draftees; 2) explore relationships between imaging findings and hip/groin symptoms/self-reported function; and 3) investigate relationships between bony morphology and labral tears.

#### Design: Cross-sectional study

Methods: 56 male AFL draftees underwent 3-tesla hip MRI. Alpha angle determined cam morphology and acetabular depth defined pincer morphology. For each hip, cartilage defects and labral tears were scored semi-quantitatively. All players completed the Copenhagen Hip and Groin Outcome Score (HAGOS) to determine hip/groin symptoms and sports function. Mann-Whitney U tests evaluated the difference in HAGOS subscale scores between football players with and without imaging findings. Logistic regression determined whether cam and pincer morphology were associated with labral tears.

Results: Cam and pincer morphology were evident in 20% and 19% of hips, respectively. Nearly half of hips (41%) had a labral tear, with only 14% having a cartilage defect. Hip imaging findings were not associated with lower (worse) HAGOS scores (all p > 0.05). Greater alpha angle was associated with the presence of labral tears (OR 1.14, 95%Cl 1.07 to 1.21, p < 0.001).

Conclusion: Hip joint imaging findings were common in male AFL draftees but not associated with worse pain, symptoms, or sport function. Cam morphology may contribute to the development of labral tears in AFL draftees.

**Key Practice Points** 

• Hip joint imaging findings were common and unrelated to hip/groin symptoms in elite male AFL draftees



• Cam morphology may affect chondrolabral structures in elite male AFL draftees. Abstract Number: 2 Presenting Author: Mark Scholes

## Title: Are running biomechanics associated with symptom severity or cam morphology size in male football players with FAI syndrome?

Aims: Investigate relationships between running biomechanics and 1) symptom severity (using the International Hip Outcome Tool-33 (iHOT-33) and the Copenhagen Hip and Groin Outcome Score (HAGOS)) and 2) cam morphology size, in male football players with FAI syndrome.

### Design: Cross-sectional

Methods: 49 male, sub-elite football (soccer or Australian football) players with FAI syndrome completed the HAGOS and iHOT-33. Cam morphology size (alpha angle) was measured on the Dunn 45° radiograph. Biomechanical data were collected during overground running (3-3.5m·s-1) using a 10-camera, 3D motion capture system and embedded force plate. Linear regression models investigated relationships between various discrete biomechanical variables (dependent variable) and independent variables.

Results: Hip joint angles during running were not associated with symptom severity. Lower (i.e., worse) HAGOS-Symptoms scores were weakly associated with a smaller transverse plane pelvis excursion (0.097 [95%CI 0.021 to 0.174], P=0.014). Larger cam morphology was associated with a smaller peak pelvic axial rotation angle at terminal stance (-0.059 [95%CI -0.166 to -0.002], P=0.042) and greater peak hip adduction angles at midstance (0.073 [95%CI 0.002 to 0.145], P=0.045).

Conclusion: Stance phase running biomechanics in football players with FAI syndrome were mostly unrelated to symptom severity or cam morphology size. Larger cam morphology was modestly associated with larger peak hip adduction angles and smaller peak pelvis axial rotation angles.

Key practice points:

- Hip joint pain during running is unlikely to be related to bony impingement in football players with FAI syndrome.
- Despite FAI syndrome being a motion-related condition, pronounced biomechanical changes during running might occur only with advancing hip disease.

Abstract Number: 3 Presenting Author: Michael O'Brien

## Title: The relationship between muscle strength, functional performance and sport ability in football players with symptomatic hip dysplasia: A cross-sectional study

Aims: To explore, in football players with symptomatic hip dysplasia (HD), the relationships between sport ability and (i) hip muscle strength, (ii) functional performance, and investigate if these relationships were modified by sex or cartilage defects.

Design: Cross-sectional study

Methods: Muscle strength and functional performance was assessed in football players with hip and/or groin pain and a lateral-centre-edge angle <250. Sport ability was quantified using subscales from the International Hip Outcome Tool-33 (iHOT-Sport) and the Copenhagen Hip and Groin Outcome Score



(HAGOS-Sport). Relationships were evaluated using regression models with sex and cartilage defects as potential effect modifiers.

Results: A positive linear relationship was found between the one-leg-rise test and iHOT-Sport ( $\beta$  0.61. 95% CI: 0.09 to 1.14). A polynomial (concave) relationship was found between eccentric adduction strength and the HAGOS-Sport ( $\beta$  -30.88. 95% CI: -57.78 to -3.99). Cartilage defects modified the relationship between isometric adduction strength and HAGOS-Sport, whereby those with cartilage defects had a polynomial (convex) relationship ( $\beta$  36.59. 95% CI: 12.74 to 60.45).

Conclusion: One-leg-rise performance and adduction strength may be associated with sport ability, indicating a possible relationship between physical function, hip joint structure and sport ability in football players with HD.

- Hip adduction strength and one leg rise performance appear to have a relationship with sport ability and requires further research.
- Improving one-leg-rise performance may be a target of rehabilitation in football players with HD.
- Prospective studies are warranted to understand the relationship of strength and functional performance on sport ability in footballers with HD.



### Section 6: E-Poster Presentations

### Dry needling in clinical practice: a survey of Australian physiotherapists

### Jenkins L<sup>1</sup>, Summers S<sup>2,3</sup>, Nasser A<sup>1</sup>, Verhagen A<sup>1</sup>

<sup>1</sup>University of Technology Sydney, Graduate School of Health, <sup>2</sup>School of Biomedical Sciences, Queensland University of Technology, <sup>3</sup>Brain Stimulation and Rehabilitation (BrainStAR) Lab, Western Sydney University

Poster Presentations Thursday Lunch, Exhibition Hall, October 5, 2023, 12:50 PM - 1:32 PM

Aim: Primary aim to enhance understanding of why Australian physiotherapists decide to use dry needling in clinical practice. Secondary aim to explore Australian physiotherapists experiences with adverse events caused by dry needling.

Design: Cross-sectional online survey.

Method: The survey was disseminated through email to physiotherapists from all states and territories in Australia. Email addresses were collected from the Australian Physiotherapy Association and the Collaborative Australian Physiotherapy Research Initiative. Participant demographics and responses were reported as frequencies and percentages due to the closed-ended nature of survey questions.

Results: We sent emails to 1000 Australian physiotherapists, of whom 198 (20%) responded. Most respondents working in private practice (83%, 164). Of the respondents, 64% (n=127) reported using dry needling as an intervention within the previous 12 months. Most of them (65%, n=80) reported using dry needling for 1-10 consultations per week. Physiotherapists typically used dry needling to decrease their patients pain intensity (85%, n=105) and reduce muscle tension (81%, n=100). Respondents commonly used dry needling because it was the patient's preference (63%, n=78). Some respondents reported experiencing major adverse events, these included prolonged aggravation of symptoms (8%, n=10) and patient syncope (13%, n=16).

Conclusion: Australian physiotherapists in private practice commonly use dry needling, usually to decrease patients pain intensity and muscle tension. Australian physiotherapists surveyed reported a frequency of major adverse events between 8-13%, consistent with earlier survey data.

Key practice points:

• Physiotherapists should consider if dry needling represents high-value care. Physiotherapists should acknowledge the potential risk of harm caused by dry needling.



# The acute tracheostomised neurological patient: A cohort study of the hospital-acquired pneumonia incident and the impact on decannulation and discharge

**Baker N**<sup>1,2,3</sup>, Baldwin C<sup>3</sup>, Van Den Berg M<sup>3</sup> <sup>1</sup>Melbourne Health, <sup>2</sup>LaTrobe University, <sup>3</sup>Flinders University

Poster Presentations Thursday Lunch, Exhibition Hall, October 5, 2023, 12:50 PM - 1:32 PM

Aim: To (1) identify the incidence of ward-based hospital-acquired pneumonia (HAP) within tracheostomised acute neurological patients at the Royal Melbourne Hospital (RMH), over a 3-year period; and (2) describe 'who was infected', along with the impact on length of stay (LOS) and time to tracheostomy decannulation (TD).

Design: A single site, retrospective, observational cohort study.

Methods: Data were extracted from electronic medical records and cohorted into 'ward-based HAP' or 'Noward HAP'. Patients: Adults with a tracheostomy admitted to an acute neurological ward. Main Measures: The incidence of HAP (yearly and total) and the descriptive data of who was diagnosed. The mean and between group analysis (days) of 'ward-based HAP' to 'No-ward HAP' for LOS and time to TD. Secondary outcomes were length of time to TD and associated infection(s).

Results: Thirty patients (44.1%) were diagnosed with a ward-based HAP over the three-year period, with the time to TD longer by 21.8 days from point of injury (p=<0.001; [95%CI 10.8 to 32.8]). An increased hospital LOS of 22.8 days (p=0.003; [95%CI 6.9 to 38.8]) and an increased ward LOS of 25.8 days (p=0.001; [95%CI 11.6 to 40.1]) occurred for the HAP cohort.

Conclusions: Almost 96% of the neurological tracheostomised population developed a HAP during their acute hospital admission. A ward-based HAP diagnosis significantly delayed decannulation and increased the acute hospital LOS.

Key Practice Points:

• Regardless of the injury or assessment findings, the neurological patient population admitted to the neurological ward with a tracheostomy develops an infection, the time for diagnosis varied.



### Promoting and improving early mobilisation culture in intensive care

### <u>Lade N</u><sup>1</sup>, Paton M<sup>1</sup>, Moorrees N<sup>1</sup>, Wei A<sup>1</sup>, Shenouda M<sup>1</sup> <sup> $^{1}$ </sup>Monash Health

Poster Presentations Thursday Lunch, Exhibition Hall, October 5, 2023, 12:50 PM - 1:32 PM

Aim: To promote an early mobilisation culture, improve patient outcome and align our service with best practice. To determine if a daily mobility round with the ICU bedside nurse, physiotherapist and medical team increased mobility levels for ICU patients

Design: An ABA design that involved three stages (baseline analysis, intervention implementation and post intervention review)

Method: The mobility level of all patients in our 14 bed ICU were audited over a one month period using the Intensive Care Mobility Scale (IMS). We implemented early mobilisation promotion and daily mobility goal setting with the multidisciplinary team and bedside nurse for the following month. This included determining if patients were appropriate for nursing led mobility or required physiotherapist input, the IMS level to be achieved, timing of the intervention and identifying and addressing any barriers to mobilisation. A one month re-audit of the IMS level achieved was then again performed.

Results: The average IMS score improved from 2.6 pre-intervention to 4.8 post-intervention indicating patients improved from performing in bed to out of bed activities. 70% of patients achieved their predicted IMS score with main barriers to mobility being patient refusal, instability or being interrupted for procedures.

Conclusion: Implementing daily mobility goals and identifying barriers to mobility early in the day resulted in higher mobility rates in ICU.

- Multidisciplinary communication and goal setting increases patients' mobility level in ICU.
- Planning mobility early in the day with the multidisciplinary team to identify and manage barriers improved the mobility achieved.



### Feasibility of VeMotion implementation in the acute setting

<u>Pearson S</u><sup>1</sup>, Paton M<sup>1</sup> <sup>1</sup>Monash Health

Poster Presentations Thursday Lunch, Exhibition Hall, October 5, 2023, 12:50 PM - 1:32 PM

Aim: To assess feasibility for the use of the VeMotion Robotic Early Mobilisation device in the acute hospital setting

Design: Feasibility study

Method: Audit of the utilisation of the device, implementation of therapy, staffing requirements, outcome parameters, treatment effect, patient and clinician perception was conducted over one month in February 2023

Results: In February 2023, a total of 11 treatments were completed using the VeMotion at Monash Medical Centre Clayton (six in ICU, five on acute wards) in both ventilated on non-ventilated patients and a variety of clinical cohorts (medical, surgical, neurological). Treatment time varied from 10 to 270 minutes (mean 57 minutes), with an average of 68 additional minutes for setup and cleaning of the device. Three clinicians were normally required for setup and intervention. Average step count achieved in the VeMotion was 332 steps. 91% of clinicians perceived that the VeMotion was effective and 82% considered it more beneficial than a tilt table. Identified issues included storage, patient discomfort, time for implementation, and mechanical considerations

Conclusion: The VeMotion requires considerable time and staffing to implement in the hospital setting. Clinicians considered the use effective, with some positive feedback from patients, however the issues identified in its use may pose a barrier for regular implementation

- Implementing new therapy devices in an acute hospital setting can be challenging
- The VeMotion device may prove to be more efficient as staff become familiar with its use



# What impact do nature-based interventions have on lower respiratory outcomes?

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Poster Presentations Thursday Lunch, Exhibition Hall, October 5, 2023, 12:50 PM - 1:32 PM

Aim: To determine the impact nature-based interventions have on lower respiratory outcomes.

#### Design: Systematic review

Results: Our review included seven trials, five compared walking in a greenspace with walking on busy urban streets, and one compared two-hour exposure to a highly polluted traffic hub with greenspace exposure, and another compared forest hiking with and without relationship coaching. For healthy populations, differences were reported in lung function between the groups, with greenspace exposure resulting in better outcomes in all bar one study, and respiratory symptoms were significantly less in healthy people exposed to greenspace compared to a busy urban street. The addition of coaching didn't influence the effect of hiking on lung function. One study of participants with mild and moderate asthma reported differences in lung function and inflammatory markers between groups, with greenspace exposure resulting in better outcomes, compared to urban streets. One study of people with chronic obstructive pulmonary disease reported better lung function and respiratory symptoms after greenspace exposure compared to an urban street.

Conclusion: Spending time in greenspace, as an intervention, may improve lung function and lessen respiratory symptoms for healthy populations and those with chronic lower respiratory diseases; and improve inflammatory markers for healthy people and those with asthma. These findings could guide both clinical practice and research.

- Physiotherapists should support research into the added benefits of nature-based interventions for people with chronic lower respiratory diseases.
- Physiotherapists may have a role in advocating for greenspaces that optimise human health.



# Quality of life, fatigue and physical function are reduced in people with Long-COVID: an observational study

<u>**King M**</u><sup>1</sup>, Mungovan S<sup>1</sup>, Tonga K<sup>2</sup>, Darley D<sup>2</sup>, Byrne A<sup>1</sup> <sup>1</sup>St Vincent's Private Hospital, <sup>2</sup>St Vincent's Hospital

Poster Presentations Thursday Lunch, Exhibition Hall, October 5, 2023, 12:50 PM - 1:32 PM

Aim: To compare differences in quality of life(QOL), symptoms, physical function and lung function in people with Long-COVID to people recovered from COVID-19.

Design: Prospective, observational study

Methods: Participants were recruited from within an existing longitudinal study. Long-COVID was defined as persistent dyspnoea, fatigue or chest pain beyond four months since SARS-CoV-2 infection. Long-COVID participants were gender and age-matched to those without persisting symptoms (control group). Measured outcomes included QOL, fatigue and physical function using the St Georges respiratory questionnaire (SGRQ), FACIT-fatigue, handgrip and five sit-to-stand test (5STS) respectively. Spirometry and oscillometry were measured pre and post bronchodilator.

Results: Forty-eight participants, mean(SD) age 53(14) years were included (25 Long-COVID and 23 controls, time since COVID-19 53(9) vs 57(8) weeks.) QOL and fatigue were significantly worse in the Long-COVID participants with mean(95% confidence interval) between group differences of 18.9 (11.5-26.4) and -13.6 (-17.6 to -9.5) on the SGRQ and FACIT-fatigue respectively. Handgrip and 5STS was also reduced in Long-COVID participants by 5.1kg (0.07-9.6) and 1.52 seconds (0.57-2.47). There were no significant between group differences for lung function nor oscillometry.

Conclusion: QOL, fatigue and physical function is reduced in people with Long-COVID up to one year after infection despite no measurable difference in lung function.

Key practice points:

- Adults with SARS-CoV-2 virus and symptoms beyond 4 months continue to suffer significantly more symptoms affecting quality of life and function for at least 1 year.
- Long-COVID participants had reduced skeletal muscle strength at 12 months but no difference in lung function.



# Evaluation of a new model of care for the tracheostomy review service at a tertiary teaching hospital in Victoria, Australia

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Poster Presentations Thursday Lunch, Exhibition Hall, October 5, 2023, 12:50 PM - 1:32 PM

Aim: To evaluate staff satisfaction and efficacy of the tracheostomy review service post implementation of a new model of care.

Design: Implementation and evaluation of change of practice

Method: The 2019 tracheostomy review service (TRS) consisted of an intensive care unit clinical nurse consultant, senior speech pathologist and senior physiotherapist who reviewed acute inpatient tracheostomy patients on twice-weekly ward rounds. Nursing, physiotherapy and speech pathology staff treating patients with tracheostomies received an email survey assessing the TRS. Based on staff feedback the model of care was expanded. In 2021 post-implementation change impact was re-evaluated by repeating the initial survey. Change in item responses were quantified.

Results: Overall 37 and 30 nursing, physiotherapy and speech pathology staff completed initial and repeat surveys respectively. The initial TRS was often cancelled, decisions were poorly documented and failed to add value for clinicians. Changes made to the TRS related to reducing frequency to once per week and enhancing the team to include specialty medical attendance from intensive care and ear nose and throat units. Following implementation of service changes staff reported both improved efficiency and communication. Medical representation introduced capacity to perform nasoendoscopy. Patient feedback, education of nurses rarely managing tracheostomies and impact on patient outcomes all require specific attention.

Conclusion: Identifying gaps in the efficacy of the tracheostomy review service in 2019, and implementing changes such as specialty medical attendance, increased staff satisfaction and capability of the service.

Key Practice Points:

• Inclusion of medical representation enhances staff satisfaction with a tracheostomy review service.



# The impact of chest wall binding on Exertional Dyspnea in healthy participants measured using two novel exercise tests

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Poster Presentations Thursday Lunch, Exhibition Hall, October 5, 2023, 12:50 PM - 1:32 PM

Aim: Chronic cardiorespiratory disease populations report the debilitating symptom of exertional dyspnea, which is reported as shortness of breath during exertional activities. Research indicates that chest wall binding simulates exertional dyspnea in healthy subjects which mimics that reported and seen in chronic cardiorespiratory disease populations. Two walking exercise tests, the 3-minute shuttle walk test (3MWST) and the dyspnea challenge are novel clinical exercise tests designed specifically to assess exertional dyspnea. The aim of this study is to identify whether chest wall binding increased exertional dyspnea in healthy participants during two exertional dyspnea specific exercise tests.

Methods: Healthy participants (18-75years) were recruited. Participants undertook a repeated measures study, with chest wall binding fitted during the 3MSWT and the dyspnea challenge. With chest wall binder in situ baseline Forced Vital Capacity (FVC) was reduced ~30%. Primary outcome of modified BORG to measure exertional dyspnea were recorded pre and post exercise tests.

Results: Thirty-one (n=31) healthy participants aged 21-71years ( $47 \pm 17$ ) completed all exercise testing. FVC was reduced by a range of 7-55%. With chest wall binding, there was a similar and significant increase in the end exercise ED (Borg 0.7) during both the dyspnoea challenge (p=<0.001) and the 3MWST (p=<0.001).

Conclusion: Chest wall binding is effective at eliciting an increase in peak ED in healthy individuals performing the dyspnoea challenge and the 3MSWT. These results suggest that these simple tests for measuring ED, the dyspnoea challenge and the 3MSWT are sensitive to changes in breathing mechanics elicited by chest wall binding.



# Patient perceptions of discharge: were they ready to go home and retrospective thoughts

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Poster Presentations Thursday Lunch, Exhibition Hall, October 5, 2023, 12:50 PM - 1:32 PM

Aim: To understand patients' perspectives of the discharge process from rehabilitation to home from two different time points (pre-discharge and post-discharge) and to determine whether patients' thoughts and feelings change once home in the community.

Design: A qualitative design using individual interviews was used to gain a deeper understanding of the patient experience during the discharge process and the first month at home post-discharge.

Method: Individual semi-structured interviews were performed with eight older adults who had completed inpatient rehabilitation for greater than three weeks, were aged 60 years and over, and were returning to live at home in the community with some level of functional mobility. Interviews were completed prior to discharge from rehabilitation and again at one-month post-discharge. Study data were collected with audio-video recording was interpreted using deductive thematic analysis.

Results: The majority of patients reported being ready for discharge at both time points. Physical function continued to improve, all questions had been answered to the patients' satisfaction, and all were receiving some level of support in the home either formally or informally. All reported to be coping well emotionally both pre- and post-discharge.

Conclusion: Older adults felt ready to go home and were pleased with support received during the discharge transition. Discharge destination and having family support on discharge may assist with feelings of readiness, emotional coping and overall quality of life.

- Older adults need to be part of discharge planning
- Returning to family and home improved quality of life reports



# An exploration of patient physical activity on a subacute inpatient ward impacted by changes due to the COVID-19 pandemic

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Poster Presentations Thursday Lunch, Exhibition Hall, October 5, 2023, 12:50 PM - 1:32 PM

Aim: The COVID-19 pandemic significantly changed activity on an inpatient subacute ward; limiting service provision and physical activity. Post COVID-19 lockdowns, we evaluated ward-based patient activity to guide intervention.

Design: Time-in-motion study and staff survey.

Method: Behavioural mapping was conducted on a weekday in 2023 from 8am to 4pm. Observations of patient activity on a 40-bed ward were conducted in 20 minute intervals by two physiotherapists who were trained in using a validated rating scale examining inpatient activity. Allied health, nursing and medical staff on the ward were invited to participate in a REDCap survey regarding perceived barriers and facilitators to patient activity.

Results: The median age of patients was 74 years (IQR 50.5 – 85) and 58.5% were male. Patients engaged in 31 occurrences of 'high' activity (3.5%), 55 occurrences of 'moderate' activity (6.3%) and 221 occasions (25.2%) of 'no' activity. Twenty-one clinicians completed the survey, identifying barriers of: 'staff factors' including lack of time, 'patient factors' including high care needs and impaired cognition and 'reduced opportunities and poor environment for engagement'. Facilitators comprised of: 'supports to encourage activity', 'patients with greater physical independence' and 'team collaboration'.

Conclusion: Patients were markedly less active than recommended in guidelines for hospital care for older people and post-stroke. Identifying barriers equipped the multidisciplinary team to implement strategies to increase patient activity. Change commenced with re-opening a clutter-free communal area to facilitate mobilisation and engagement.

Key Practice Point:

 Post COVID-19 restrictions, a multidisciplinary approach is required to mitigate barriers to inpatient activity.



# Exercise for improving lateral abdominal muscle impairments: a feasibility study protocol

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Poster Presentations Thursday Lunch, Exhibition Hall, October 5, 2023, 12:50 PM - 1:32 PM

Aim: To outline a research protocol to evaluate feasibility of an exercise framework designed to improve lateral abdominal muscle impairments.

Design: Feasibility study protocol developed from reviews, clinical practice guidelines, and a Delphi study consulting expert clinicians.

Method: Persistent lower back pain participants with lateral abdominal muscle impairments will be randomised to an intervention or active control group. Both groups will complete a clinically reasoned individualised 12-week exercise rehabilitation intervention. This will be prescribed by a physiotherapist based on a recently developed framework using a combined motor control, resistance, and cardiovascular focus. Additionally, the intervention group will incorporate individual participants' activity preferences into their prescription.

Results: The primary feasibility outcomes will consider recruitment rates, attrition, compliance and satisfaction with the program (using a survey and semi-structured interviews). Secondary outcomes will consider the program's effect on lateral abdominal muscle thickness and activation (ultrasound imaging, pressure biofeedback, deep muscle contraction scale, muscle endurance test battery), pain (numeric rating scale), disability (Roland Morris disability questionnaire), physical activity (International physical activity questionnaire short form), function (pain specific functional scale) and lumbar instability (lumbar instability questionnaire).

Conclusion: This study will provide preliminary insights into the effect of patient activity preference on prescribed physiotherapy and will inform the feasibility of conducting a large scale randomised controlled trial.

Key practice points:

- Current evidence indicates therapeutic exercise should incorporate patient preferences
- This study will test patient satisfaction and compliance with incorporating patient preferred exercise
- A protocol for individualising exercise for patients with lateral abdominal muscle is described



# Increased usage of mobile electronic devices during the COVID-19 pandemic and associated increases in musculoskeletal symptoms

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Poster Presentations Thursday Lunch, Exhibition Hall, October 5, 2023, 12:50 PM - 1:32 PM

Aim: To determine if there has been an increase in usage of mobile electronic devices (phones, laptops) and related symptoms during the COVID-19 pandemic among University staff and students.

Design: A two-stage (2016 and 2022) cross-sectional study.

Method: Self-reported data (Qualtrics surveys) was collected from University staff and students in 2016 and 2022. Questions included mobile device usage such as hours on devices, musculoskeletal symptoms including neck pain or headache and psychological symptoms including anxiety related to device use. Measures of central tendency, t-tests and chi square analysis were used.

Results: In 2016, 284 people responded (mean age 34 years), in 2022 973 responded (33 years). In 2022, 58% report headache, 57% report neck, 45% shoulder and 18% thumb pain. There was an increase from 2016 to 2022 of device usage from 3.5 to 7.3 hours/day (p<0.001), texts/day 20 to 38 (p<0.001), neck pain 47% to 57% (p = 0.007), upper back pain 49% to 59% (p = 0.005), and fatigue 37% to 62% (p < 0.001). There was no significant change in psychological symptoms.

Conclusion: University staff and students are spending large amounts of time on mobile devices. This has increased during the COVID-19 pandemic, with associated symptom increases.

- Physiotherapists should provide advice and education on how to reduce symptoms associated with mobile devices.
- Advise on better cervical positions: avoiding sitting slouched in prolonged cervical flexion and have devices supported.
- Advise on staying physically active, limiting time on devices and taking breaks.



# Maximum voluntary isometric contraction and rate of torque development is altered in men with insertional Achilles tendinopathy

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Poster Presentations Thursday Lunch, Exhibition Hall, October 5, 2023, 12:50 PM - 1:32 PM

Aim: To determine if plantarflexor maximum isometric voluntary contraction (MVIC) and rate of torque development (RTD) are altered in men with insertional Achilles tendinopathy (IAT), compared to matched asymptomatic controls and, secondarily, to determine if MVIC or RTD in the IAT group was associated with self-reported tendinopathy severity or psychological outcomes.

Design: Case-control.

Methods: Men with IAT, and asymptomatic males, were recruited to participate. Demographic (age, weight, height) and psychological data (catastrophising, kinesiophobia) was collected, before participants completed plantarflexor MVIC while seated on a custom-design apparatus, with the ankle in plantargrade and knee flexed to 50<sup>°</sup>. MVIC was quantified as the greatest torque (Nm) across recorded trials, and RTD as Nm/s in the steepest 50ms of the MVIC trial.

Results: Thirty-four men with IAT (age=43.7 [SD 10.0] yrs, weight=89.6 [SD 16.3] Kg) and 34 matched controls (age=42.8 [SD 8.9] yrs, weight=87.2 [9.7] Kg) were included. MVIC was 18.9% lower (p=0.006) in the IAT group (156.9 [SD 51.6] Nm) compared to controls (193.4 [SD 47.6] Nm), and RTD was 21.4% lower (p<0.001) in the IAT group (375.4 [SD 154.9] Nm/s) compared to controls (478.7 [SD 130.9] Nm/s). Tendinopathy severity (VISA-A) was weakly associated with RTD (r=0.37, p=0.04) in the IAT group.

Conclusion: This study demonstrates MVIC and RTD are altered in men with IAT, compared to matched controls.

- MVIC and RTD should be considered when assessing men with IAT
- Further research is indicated to determine valid and reliable methods to assess RTD in the clinical setting



### Is there a relationship between vestibulo-ocular function, and concussion and musculoskeletal injuries in adolescent rugby union players?

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Poster Presentations Thursday Lunch, Exhibition Hall, October 5, 2023, 12:50 PM - 1:32 PM

Aim: Deficits in vestibulo-ocular function have been reported in athletes following concussion and in normal developing adolescents, however, the effect of these deficits are unknown. The aim of this study was to determine the relationship between vestibulo-ocular function, and concussion and musculoskeletal injuries in adolescent rugby union players.

Design: Cross-sectional observational study

Method: Seventy-one male adolescent rugby union players were recruited from four schools in Queensland, Australia. Clinical assessments of oculomotor and vestibular function were conducted during preseason. Injuries were recorded during the season if a musculoskeletal complaint resulted in 'time-loss'. Concussion history was also recorded. Statistical analysis was conducted using Fisher's exact test with significance set at p < 0.05.

Results: Vestibulo-ocular dysfunction was reported in 36 players (57%). There was no association between concussion history and vestibulo-ocular dysfunction (p = 0.73). There were 38 injuries during the season. There were no between group differences for vestibulo-ocular function in players with and without a season injury (p = 0.81).

Conclusion: There is a high prevalence of vestibulo-ocular dysfunction in adolescent rugby union players, however, this was not associated with musculoskeletal injuries during the season. The relevance of vestibulo-ocular findings in adolescents rugby union players needs further investigation.

- Vestibulo-ocular dysfunction is common in male adolescent rugby union players and positive findings should be interpreted carefully.
- Understanding the impact of vestibulo-ocular dysfunction may help determine the role of vestibular rehabilitation in management of adolescent's post-concussion.
- The wider impact of vestibulo-ocular dysfunction on academic or sporting performance is unknown.



### How much physiotherapy, chiropractic or osteopathy do compensated Australian workers with low back pain attend? A retrospective cohort study

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Poster Presentations Thursday Lunch, Exhibition Hall, October 5, 2023, 12:50 PM - 1:32 PM

Aim: To identify the proportion of and number of times that compensated Australian workers with low back pain attended physiotherapy, chiropractic or osteopathy and the factors associated with using these services.

Design: A retrospective cohort study.

Method: We included accepted workers' compensation claims for low back pain with more than two weeks' time loss from four Australian states. Workers were grouped by whether they attended solely physiotherapy, chiropractic or osteopathy or multiple of these professions in the first two years of their claim. Descriptive statistics, logistic regression and quantile regression were used to describe differences between workers and the average number of encounters with each profession.

Results: Most claims attended solely physiotherapy (N=21,036, 73.0%), with less than two percent attending solely a chiropractor (N=528), one percent an osteopath (N=296), and 18% (N=5,202) not attending any service. Claim jurisdiction was the most substantial contributing factor to the likelihood of an encounter with a given profession. Those seeking care from multiple professions (N=1,760, 6.1%) attended a median of 31 services, while those seeing only a physiotherapist did so a median of 13 times, chiropractor 8 times and osteopath 10 times.

Conclusion: Most Australian workers with time loss workers' compensation claims for low back pain attend physiotherapy. Jurisdiction of claim is the strongest predictor of profession choice, possibly due to regional accessibility.

- Most Australians with a workers' compensation claim for low back pain see a physiotherapist
- Jurisdiction is the strongest predictor of choice of physiotherapist, chiropractor or osteopath



## Current physiotherapy practice around falls prevention in breast cancer care

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Poster Presentations Thursday Lunch, Exhibition Hall, October 5, 2023, 12:50 PM - 1:32 PM

Aim: To investigate physiotherapists' knowledge, beliefs and current practice around falls prevention in the setting of breast cancer.

Design: Cross-sectional study.

Method: Currently registered, practising Australian physiotherapists who care for people with breast cancer were invited to participate. A comprehensive online survey was used to collect data that were analysed descriptively. Free-text responses were classified into key themes for analysis.

Results: Of the 52 physiotherapists who completed the preliminary screening questions, complete responses were received from 42 eligible physiotherapists, with broad representation across community and clinical practice settings. Despite the majority (71%) having specific training or access to falls educational resources, physiotherapists reported only moderate confidence in assessing falls risk (median 6, interquartile range (IQR) 4-8; scale 0 (not at all confident) - 10 (extremely confident)) and delivering falls prevention care (median 6, IQR 5-8). Whilst a small proportion used falls risk screening tools (29%), most assessed standing balance either as part of an overall mobility or functional assessment or by using a specific balance outcome measure (60%). Time constraints were the most frequently perceived barrier to including falls prevention activities within breast cancer care.

Conclusion: This preliminary study has identified some clear opportunities to optimise clinician confidence to facilitate the uptake of best-practice falls prevention strategies in people with breast cancer.

- People with breast cancer may not be routinely screened for falls as part of their physiotherapy management.
- The development of falls prevention training resources specific to people with breast cancer is a priority.



### Community-based physical activity interventions for adolescents and adults with complex ceporebral palsy: a scoping review investigating implementation and safety

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Poster Presentations Thursday Lunch, Exhibition Hall, October 5, 2023, 12:50 PM - 1:32 PM

Aim: To identify implementation strategies and safety outcomes of community-based physical activity interventions for adolescents and adults with complex cerebral palsy (CP).

#### Design: Scoping review

Method: Five electronic databases were systematically searched to April 2022. Data were extracted on implementation and safety of physical activity interventions for adolescents and adults with CP, GMFCS IV and V, delivered in the community.

Results: Seventeen studies with 262 participants (160 participants GMFCS IV or V) were included. Community settings included schools (n=4), homes (n=3), gymnasia (n=2), pools (n=2) and other (n=4). Most studies specified medical or safety exclusion criteria. Implementation strategies included pre-exercise screening, use of adapted equipment, familiarisation, supervision, physical assistance, and physiological monitoring. Attendance was high and attrition low. Nine studies reported non-serious, expected and related events. Four studies reported minor soreness and four reported minor fatigue post-exercise. Serious adverse events related to exercise were infrequent (4/160 participants; three participants withdrew from an exercise program and one ceased exercise for a short period). Most frequently reported was pain, requiring temporary exercise cessation or program change, or study withdrawal (three participants).

Conclusion: For most adolescents and adults with CP GMFCS IV and V, physical activity interventions can be safely performed in a community setting, without post-exercise pain or fatigue, or serious adverse events.

- Supervised community-based physical activity interventions can be safely performed by people with complex CP
- Post-exercise pain or fatigue was uncommon
- Serious adverse events are infrequent when exercising in community settings, with safety strategies



# Seas the day – beach use, preferences, and benefits for older people and people with disability: an Australian community survey

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Poster Presentations Thursday Lunch, Exhibition Hall, October 5, 2023, 12:50 PM - 1:32 PM

Aim: To determine the patterns, preferences, and benefits of beach access for older people and people with disability.

Design: Anonymous online cross-sectional survey.

Method: A 39-item online survey (categorical, ordinal, and open response data) was developed to explore perspectives of older people (>65 years) and people with disability or mobility limitation (temporary/permanent) regarding weekly and seasonal patterns of beach use, influencing factors on preferred beaches to visit, reasons for visiting the beach, and perceived benefits of beach access. Descriptive statistics were used to report beach use, preferences, and benefits.

Results: 350 people completed the survey (69% female; age range 2-90 years (mean=52)). Disability/mobility limitation was reported by 88% of respondents, with 77% requiring a community mobility aid. Only 55% of respondents were able to visit the beach and did so year-round. One third (34%) visit the beach weekly and 94% spend at least 30 minutes at the beach per visit. Beach activities most likely to be engaged in were swimming (56%), walking (52%), and meeting friends/family (49%). The most frequently reported benefits of beach access included enjoyment/wellbeing (99%), reduced stress (95%), and physical benefits (86%).

Conclusion: Older people and people with disability have limited beach access. Those who can visit the beach participate in health-promoting activities and report a wide range of associated health benefits.

**Key Practice Points:** 

• Promoting and enabling frequent beach access for older people and people with disability may improve their participation in health-promoting activities.



### Being overweight or obese has the potential benefit to reduce mortality and improve functional recovery following stroke: an umbrella review

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Poster Presentations Thursday Lunch, Exhibition Hall, October 5, 2023, 12:50 PM - 1:32 PM

Aim: Conflicting evidence exists on the impact of body weight on stroke outcomes. We aimed to synthesise the literature to address "What is the effect of abnormal body weight (underweight, overweight, or obesity) on mortality and functional recovery in adults after stroke?"

### Design: Umbrella review

Method: We used Joanna Briggs Institute methodology to systematically search nine databases (to Feb 2023) and synthesise the literature. Inclusion criteria: systematic reviews of adults (>18 years), with stroke, in all settings and stages after stroke, categorised by body weight (Body Mass Index (BMI)). Outcome Measures: All-cause mortality and/or functional recovery any time following stroke.

Results: Seven systematic reviews from 174 primary studies (including duplicates) were included. Excess body weight (being overweight (BMI 25 – 29.9 kg/m<sup>2</sup>) or obese (BMI >30 kg/m<sup>2</sup>)) appears to reduce mortality. Being underweight (BMI < 18.5 kg/m<sup>2</sup>) increases mortality risk. The impact of abnormal body weight on functional recovery is less clear; data from studies of excess body weight are inconclusive; the underweight category appears to be associated with poor functional outcomes.

Conclusion: Abnormal body weight affects post-stroke outcomes and should be considered in clinical decision-making, prognostic research, and clinical trials of rehabilitation interventions. Further research is needed to investigate the impact of body weight and distribution on post-stroke outcomes.

- The "obesity paradox" seen in several diseases is evident after stroke.
- Excess body weight is associated with increased survival time compared to normal body weight.
- Body weight should routinely be recorded for stroke patients.



# Priorities and willingness to use nerve stimulation for bladder and bowel management in people with spinal cord injury in Australia

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Poster Presentations Thursday Lunch, Exhibition Hall, October 5, 2023, 12:50 PM - 1:32 PM

Aim: To investigate the priorities, needs and willingness to adopt nerve stimulation devices for managing bladder and bowel dysfunction in people with spinal cord injury (SCI) living in Australia.

Design: Online survey

Method: Survey was advertised via standard communication channels, such as advocacy groups, social media, attending SCI sporting events and by word-of-mouth.

Results: Sixty-two responses (32% female, 68% male) were included. Bladder emptying through urethra without catheter was the highest priority for bladder function. Reducing time along with constipation were the top priorities for bowel function. The highest concern was the 4% chance of requiring surgical removal of the whole system for internal devices, while wearing a device with wires connected to electrodes on the skin was the main concern for wearing external nerve stimulation devices. Despite these concerns, 53% of respondents were willing to trial an implanted nerve stimulation device and 70% of respondents would trial an external device to improve and gain independence in bladder and bowel function.

Conclusion: The findings from this study aimed to help guide further research, as well as highlight the potential role in which nerve stimulation can have in addressing bladder and bowel dysfunction in people with SCI.

- Internal and external nerve stimulation approaches can be adopted successfully for bladder and bowel management and reduce medical complications in people with SCI.
- Australian physiotherapists should evaluate their role in bladder and bowel management in people with SCI.



# The effects of sport and physical recreation for adults with physical and intellectual disabilities: a systematic review with meta-analysis

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Poster Presentations Thursday Lunch, Exhibition Hall, October 5, 2023, 12:50 PM - 1:32 PM

Aim: To evaluate the effects of sport and physical recreation for adults living with disability.

Design: Systematic review with meta-analysis of included randomised controlled trials.

Method: Studies were identified from six electronic databases. Eligible trials included adults living with physical or intellectual disability, comparing sport or physical recreation to non-active control. Primary outcomes were participation, mobility, and quality of life. Meta-analyses were conducted using random effects models applying GRADE approach to rate certainty of evidence.

Results: Seventy-four trials (n=2,947 participants; 66% living with physical disability from degenerative health conditions) were included. Only four trials included adults with intellectual disability. No trials evaluated sport; the top three recreation activities were traditional Chinese exercise (35%), yoga (27%) and dance (18%). Health professional involvement was reported for 38% interventions, with physiotherapists most common.

Participation was measured predominantly as attendance (mean attendance=81%, 30 intervention groups). There was low certainty evidence that recreation activities improve combined mobility (SMD 0.38, 95%CI 0.07 to 0.69, participants=469, comparisons=11) and walking endurance (MD 40.3m, 95%CI 19.5 to 61.1, participants=801, comparisons=24), and very low certainty evidence recreation activities improve quality of life (SMD 0.20, 95%CI -0.11 to 0.51, participants=574, comparisons=18).

Conclusion: Physical recreation likely confers multiple benefits for people living with disability regardless of activity chosen, thus offering a potentially enjoyable and scalable strategy to increase physical activity.

- Physiotherapists should support referral to community-based recreation activities when identified as a preference.
- Support may involve working with community providers to effectively include people living with disability.



# Long Covid - physiotherapy management strategies to support outpatients with Long Covid.

Knight D<sup>1</sup>

<sup>1</sup>Beyond Pain

Poster Presentations Thursday Lunch, Exhibition Hall, October 5, 2023, 12:50 PM - 1:32 PM

Background: Long Covid (LC) affects up to 10% of those infected with Sars COV-2. Now classified as a chronic multi-system disease, management strategies are required whilst treatments are researched. We have the capacity as physiotherapists to greatly impact the function of suffers and improve their quality of life through adaptation and extension of current management tools we use.

Objectives/Aims/ Learning Outcomes:

Provide clinicians with an understanding of:

1. Mechanisms of long covid – immune system, micro clots, autonomic nervous system damage and mitochondrial dysfunction.

2. Recognise common symptoms which may impact physiotherapy treatment – Breathlessness, fatigue, Poor concentration and memory, cough, hoarseness, exercise intolerance, chest pain, palpitations, sleep disturbance, headache, and Musculoskeletal pain.

3. Understand the challenges faced by long covid patients – planning, activities of daily living, work, social, physical, emotional, psychological

- 4. Understand basic management strategies available to physiotherapists with
- Pacing multi-dimensional (cognitive, physical, emotional, sensory)
- Graded exercise is contraindicated
- Modified exercise
- Posture, readiness, progression,
- Lifestyle education- active rest, sleep, diet
- Breathing/Vocal exercises- pattern, control
- The role of wearable devices Resting Energy, Heart Rate Variability, Heart Rate, Respiratory Rate.
- Vagal nerve activation techniques to manage dysautonomia humming, yoga, breathing

- Graded exercise is contraindicated.
- Physical capacity can be enhanced through modified exercise, multi-dimensional pacing, parasympathetic nervous system activation, yoga, meditation, mindfulness, breathing exercises, monitoring of physiological signs, breathing pattern, tongue and voice exercises



# "It's important for us all to be on the same page": exploring staff perceptions of factors that influence mobility documentation.

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Poster Presentations Thursday Lunch, Exhibition Hall, October 5, 2023, 12:50 PM - 1:32 PM

Aim: To explore and describe clinician perceptions of written communication about patient mobility in medical wards, and perceived barriers and enablers to this communication.

Design: This qualitative study used a rapid deductive approach, with semi-structured interview questions based on the Consolidated Framework for Implementation Research (CFIR).

Method: Clinicians from three medical wards were invited to participate in 30-minute interviews. Interviews were recorded, transcribed verbatim and analysed using deductive and thematic techniques.

Results: From 17 interviews, key themes identified that written communication about mobility is important and valued by clinicians; clinicians are unclear about their previous training in mobility communication; clinicians are not aware of organisational responsibility for mobility communication; multiple purposes for written communication contributes to multiple locations and inconsistency; and clinicians perceive that improvement would require a multi-disciplinary and multi-level approach. Suggestions for improvement in mobility communication included a common language, consideration of location of the mobility record and clear responsibility for written communication about mobility.

Conclusion: Written communication about patient mobility was valued by clinicians and a range of barriers to effective inter-disciplinary communication were identified.

- A common interprofessional language supported by multi-disciplinary education and organisational governance may improve mobility communication.
- Having clear professional roles and responsibility for mobility documentation is important.



# Application of inexpensive 3D printed prototype for aquatic exercise aerobic fitness testing; a case study

#### Kwok M<sup>1</sup>, Ng S<sup>1</sup>, Ngai S<sup>2</sup>, Lui K<sup>2</sup>, So B<sup>1</sup>

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Poster Presentations Thursday Lunch, Exhibition Hall, October 5, 2023, 12:50 PM - 1:32 PM

Aim: To describe the creation of a prototype using 3D printing technology in the development of a waterresistant prototype to perform aquatic exercise testing.

#### Design: A case study design

Method: To reliably use a portable metabolic device (PNOE), to perform aquatic exercise testing, a rapid prototype of a water-resistant case was created using 3D printing. The initial design was manufactured by the University Research Facility in 3D Printing (U3DP). The first fused deposition modelling (FDM) iteration of the prototype gave insight into the manufacturing and design process but had issues with inadequate capability in resisting water. The second-generation FDM iteration was refined to increase functionality and applicability to remain watertight. The final design was printed using poly-jet 3D printer as this allowed smooth surface finishing, combining soft and hard material in a single model.

Results: The final prototype for a water-resistant case to use with a portable metabolic device was created and further developed with improved structural design. The final prototype has been used successfully while performing aquatic exercise tests. The 3D-printed prototype proved easy to produce and provide a costeffective, water-resistant in performing aquatic exercise testing.

Conclusion: Designing and generating a 3D- printed prototype to keep exercise testing equipment dry while water resistant was feasible and cost-effective. Prototypes can be customized and applied to portable devices.

- Inexpensive 3D printing has value in rapid prototyping to successfully use with portable exercise testing equipment.
- 3D-printed prototypes can be assembled and customized at low cost in research projects.



### Ergonomic interventions for treating work-related complaints of the arm, neck or shoulder in adults

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Poster Presentations Thursday Lunch, Exhibition Hall, October 5, 2023, 12:50 PM - 1:32 PM

Aim: To assess the effectiveness of ergonomic intervention for work-related complaints of the arm, neck or shoulder (CANS) in adults on pain.

Design: Systematic review (update)

Methods: This is an update of an existing Cochrane review. We searched eight databases from: May-2013 to July-2022. We included randomised (and quasi) controlled trials evaluating ergonomic interventions for work-related CANS in adults. We excluded trials undertaken to test non-ergonomic conservative management (i.e., exercise therapy) or injections/ surgery. Two review authors independently selected trials, extracted data and assessed risk of bias (Cochrane Risk of Bias-1 tool). The assessment of the certainty is done using the Grading of Recommendations, Assessment, Development, and Evaluations (GRADE) approach.

Results: We included 22 studies (13 from parent review; 9 from update). We judged 10 studies to have a high risk of bias. This was mainly due to unblinded trial participants and outcome assessment or lack of an intention-to-treat analysis. Preliminary results suggest that ergonomic interventions may lead to a decrease in pain when compared with no intervention at short-term & long-term follow-up. None of the ergonomic interventions were more beneficial for any outcome measures when compared with active treatment (including exercises).

Conclusion: Ergonomic interventions may decrease pain at short & long-term follow-up when compared with no treatment but did not work when compared to active treatments (including exercise therapy).



# Effectiveness of aquatic therapy on disability and quality-of-life using biopsychosocial approaches in low back pain: a systematic review

Shahid P<sup>1</sup>

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Poster Presentations Thursday Lunch, Exhibition Hall, October 5, 2023, 12:50 PM - 1:32 PM

Aim: Evaluate the effectiveness of aquatic therapy to improve disability and quality of life for people with chronic low back pain and to determine the use of biopsychosocial approaches in management.

Design: Systematic review of comparison trials on aquatic therapy published from 2012 to 2022.

Method: A MEDLINE database search was completed to identify relevant studies. The inclusion criteria consisted of participants experiencing low back pain for greater than three months, who engaged in aquatic therapy, and had a comparison group. The outcomes evaluated were the Roland-Morris Disability Questionnaire which measures level of disability caused by low back pain and the standardised physical and mental components of the 36-Item-ShortForm Survey. Data on the use of any biopsychosocial approaches was also extracted. Standardised mean difference were calculated for the aquatic group and the comparison land-therapy group.

Results: 6 studies were included demonstrating that aquatic therapy when compared to land-based therapy had a moderate to large effect for improving level of disability (SMD 0.69: 95%Cl 0.26-1.13three-studies) and self-reported physical function (SMD 1.17: 95%Cl 0.73-1.62three-studies), however there was no difference between groups for the mental component. None of the studies adopted a biopsychosocial approach or incorporated education.

Conclusion: Aquatic therapy improves physical function and level of disability. Contemporary biopsychosocial approaches are missing from the aquatic treatment of chronic low back pain.

- Aquatic therapy improves level of disability and standardised physical component of quality of life
- Further high-quality research in aquatic therapy is required using a contemporary biopsychosocial approach



### Suicide prevention is everyone's business, including physiotherapists

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Poster Presentations Thursday Lunch, Exhibition Hall, October 5, 2023, 12:50 PM - 1:32 PM

Aim: To investigate physiotherapists' self-reported frequency of contact with patients experiencing suicidal distress and examine physiotherapists' psychosocial orientation and practice area as predictors of having had a patient disclose a plan for suicide.

Design: An online cross-sectional survey of Australian physiotherapists.

Method: A non-probabilistic sample of 340 physiotherapists completed a questionnaire advertised on social media. Psychosocial practice orientation was measured with the modified Physician Belief Scale. Descriptive and regression analyses were conducted.

Results: 51.2% of respondents reported having a patient disclose suicidal thoughts at least once a year. 49.1% reported having had a person disclose a plan for suicide at least once in their career. Psychosocial orientation and practice area explained 22.9% (Nagelkerke R2) of the variance in having had a patient disclose a plan for suicide (p < 0.001). Increasing psychosocial orientation was associated with a higher likelihood of having had a patient disclose a plan for suicide. Physiotherapists working in pain management had 15.9 times higher odds (95% CI 2.0 to 128) of having had a patient disclose a plan for suicide than other physiotherapists.

Conclusion: Physiotherapists' psychosocial orientation and practice area appear to influence the likelihood of patient disclosure of suicide plans. Almost half of the respondents had a person disclose a suicide plan at some point in their career.

- Suicide prevention is physiotherapists' 'business.'
- All physiotherapists should be competent in the provision of crisis support.
- Physiotherapists working in pain management would benefit from advanced crisis support training.



# Evaluating the validity of a smartphone-based 6-minute walk test for people with persistent pain

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Poster Presentations Thursday Lunch, Exhibition Hall, October 5, 2023, 12:50 PM - 1:32 PM

Aim: To evaluate the validity of a smartphone-based 6-minute Walk Test, using the global positioning system, as an alternative to the conventional in-person 6-minute Walk Test in people with persistent pain.

Design: Cross-sectional study with participants completing both walk tests (in random order).

Method: Thirty-six participants performed both tests outdoors, separated by a fifteen-minute rest. The Bland-Altman method was used to calculate the 95% limits of agreement, with a maximum allowable difference of 100m.

Results: The mean 6-minute walking distance measured by the smartphone-based test was 13.2m higher (standard deviation 46m, 95% CI –2.7 to 29.1) than the conventional test. The limits of agreement were 103.9m (95% CI 87.4 to 134.1) and –77.6m (95% CI –107.7 to –61.0), exceeding the maximum allowable difference and indicating limited validity of the smartphone-based test.

Conclusion: The smartphone-based 6-minute Walk Test may not be interchangeable with the conventional test in individuals with persistent pain due to limited validity. However, it may still have value as a complementary tool. Further research is needed to improve the accuracy of the smartphone-based approach.

- Despite limited validity, the smartphone-based 6-minute Walk Test may be a useful tool for remote monitoring of functional capacity in individuals with persistent pain.
- Patients may benefit from increased autonomy and reduced burden of frequent clinic visits by selfadministering the smartphone-based 6-minute Walk Test at home.
- The smartphone-based 6-minute Walk Test could provide ecologically relevant assessments of functional capacity in the patient's natural environment.



### Insights into the experience and management of pain in people with Parkinson's disease: a mixed methods study

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Poster Presentations Thursday Lunch, Exhibition Hall, October 5, 2023, 12:50 PM - 1:32 PM

Aim: Describe the 'drivers' of pain, explore pain management and the relationship between pain and physical activity in people with Parkinson's disease (PwPD).

Design: Mixed-methods: explanatory sequential design.

Method: Phase one: survey of PwPD and chronic pain evaluating different 'drivers' using standardised assessments of pain, peripheral neuropathy, central nociplastic change, emotional dysregulation and maladaptive cognition. Phase two: semi-structured interviews of a purposive sample from phase one, analysed using inductive thematic analysis.

Results: Eighty-nine PwPD (mean age 67 years, 55% female) completed the survey. The most common pain drivers were: maladaptive cognitions (53%), emotional dysregulation (40%) and central nociplastic change (39%). Approaches to pain management and the response to physical activity was variable within and across those with different pain drivers. Four themes emerged from interviews with 24 participants: (1) causative perceptions of pain are diverse; (2) causation perception influenced belief in therapy value; (3) sense of control influenced disease acceptance and exercise self-efficacy; (4) pain as the unspoken PD symptom.

Conclusion: Maladaptive cognitions and emotional dysregulation contribute to chronic pain in PwPD. A variety of techniques are used to manage pain, including exercise. The variable pain response to physical activity may be influenced by the individual's sense of control over their life.

- Clinicians should screen for pain in PwPD.
- PwPD may benefit from individualised, multidimensional management that addresses pain 'drivers' and promotes a sense of control.
- PwPD and pain require close monitoring of and adjustments to exercise programs to ensure exercise can continue.



### Prevalence of serious spinal pathology: clinical setting matters

#### Melman A<sup>1</sup>

<sup>1</sup>Institute for Musculoskeletal Health (USYD & SLHD)

Poster Presentations Thursday Lunch, Exhibition Hall, October 5, 2023, 12:50 PM - 1:32 PM

Introduction: The prevalence of serious spinal pathology (red flags) in primary care is well established at ~1% of people presenting with low back pain (lbp). In the emergency department setting, estimates of ~5% are often used. Rates of serious pathology in those admitted to hospital for lbp have been seldom studied.

Aim: to determine the proportion of patients admitted to hospital lbp that have non-serious back pain, serious spinal, or serious other pathology as their final diagnosis.

Methods: electronic medical record data between january 2016 and september 2020, from three emergency departments (ed) in sydney, australia were used to identify inpatient admissions.

Results: over half (57%) of admissions from ed with a provisional diagnosis of nonserious back pain had an equivalent discharge diagnosis. However, a significant proportion of patients admitted with nonserious back pain were subsequently diagnosed with a specific pathology likely unsuitable for virtual care; 14.2% with a serious spinal pathology and 23.9% with a serious pathology beyond the lumbar spine. The most common serious spinal pathologies were fracture (8.7%) and infection (2.1%), and the most common serious pathologies beyond the spine were pathological fracture (7.3%) and infection (4.3%). These results suggest that careful patient selection will be key to the successful implementation of a virtual hospital model of care as an alternative to inpatient admission for lbp.

Conclusion: protocols need to be developed to reduce the risk of patients being admitted to virtual hospital with serious pathology.



# An advanced practice physiotherapist-led new patient rheumatology service: the Royal Adelaide Hospital experience

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Poster Presentations Thursday Lunch, Exhibition Hall, October 5, 2023, 12:50 PM - 1:32 PM

Aim: To describe the development and evaluation of an advanced practice physiotherapist-led new patient clinic, wherein rheumatologist input is based on clinical need. The clinic was established in 2010 to reduce non-inflammatory patient load on the existing rheumatologist new patient clinic, and to fast-track patients with inflammatory conditions.

Design: Prospective observational cohort study integrated into routine clinical practice.

Method: Clinic outcomes and stakeholder satisfaction surveys were collected prospectively from consecutively recruited patients and comparisons made with the rheumatologist clinic (casenote review) to guide service development.

Results: From 13/8/2019 to 13/2/2020, 131/270 (49%) patients attended the physiotherapist-led instead of rheumatologist clinic, and 102 and 139 respectively, met inclusion criteria. Mean wait times for physiotherapist-led clinic were 101 days (6-256) vs 89 (0-423) and for Category 1 patients 15 days (6-36) vs 27 (0-126), 43/102 (42%) vs 19/139 (14%) were diagnosed with non-inflammatory conditions and discharged, and 54/102 (53%) vs 118/139 (85%) required follow-up in a rheumatologist clinic. Remaining patients were lost to follow-up. Patient surveys post-clinic (n=98) revealed > 90% were satisfied with all physiotherapist-led clinic parameters assessed, and 100% of responding referring doctors (n=43) supported the clinic. Ongoing funding was secured permitting service expansion.

Conclusion: The physiotherapist-led clinic doubled rheumatologist clinic new patient capacity. Almost half the patients were discharged and waiting times for Category 1 patients with inflammatory conditions reduced. Stakeholder satisfaction was very high.

Key Practice Point:

• Experienced physiotherapists working with rheumatologists in a shared-care clinic model can increase service efficiency for patients with non-inflammatory and inflammatory conditions.



### The long head of biceps at the shoulder: a scoping review

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Poster Presentations Friday Lunchtime, Exhibition Hall, October 6, 2023, 12:20 PM - 1:02 PM

Aim: Explore the literature on the Long Head of Biceps at the shoulder. Identify emergent themes and knowledge gaps to inform research and management.

Design: Scoping review.

Method: PubMed, Embase, Cinahl, SportDiscus, CENTRAL, and Web of Science searched from inception to Dec 2021. Articles in English reporting results of Long Head of Biceps structure, function, pathology, or treatment in adults were included.

Results: 214 articles included. Key findings: a) Anatomical variations of the Long Head of Biceps are associated with shoulder pain and instability. b) Long Head of Biceps hyperactivity in individuals with symptomatic cuff tears suggests a compensatory role for the Long Head of Biceps. c) A cause-and-effect relationship between Long Head of Biceps pathology and cuff tears remains unclear. d) There is little evidence to support biceps strengthening protocols in managing shoulder pain. e) Adjunctive surgery on a healthy Long Head of Biceps with cuff repair fails to provide additional clinical improvements.

Conclusions: In individuals with symptomatic cuff tears, hyperactivity of Long Head of Biceps suggests a compensation role at the shoulder. Long Head of Biceps rehabilitation in non-surgical management of shoulder pain needs research. There are no indications for adjunctive surgery on a healthy Long Head of Biceps with cuff repair.

- The Long Head of Biceps may compensate for painful cuff pathology.
- Optimal exercises for Long Head of Biceps rehabilitation in shoulder pain need research.
- Avoid adjunctive surgery on a healthy, Long Head of Biceps with cuff repair.



# Addressing and managing sexual dysfunction as part of holistic musculoskeletal pain care

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Poster Presentations Friday Lunchtime, Exhibition Hall, October 6, 2023, 12:20 PM - 1:02 PM

Introduction/Background: Sexual dysfunction and negative impacts on intimate relationships commonly impact people with chronic musculoskeletal conditions. However, in healthcare these issues are rarely addressed despite the profound impact they can have on quality of life.

Aim/Objectives: To develop physiotherapists' knowledge and skills in assessing and managing sexual dysfunction within routine care for people with chronic musculoskeletal conditions.

Approach: In this presentation (from an experienced Women's, Men's and Pelvic Health Physiotherapist), strategies to support physiotherapists more confidently address sexual dysfunction within musculoskeletal care will be discussed. These include consideration of Annon's PLISSIT (Permission, Limited Information, Specific Suggestions, and Intense Therapy) model and how physiotherapists may apply this in clinical practice. While each stage of this model requires greater knowledge, counselling skills and confidence to apply, the first two stages are extremely useful for all physiotherapists seeking to better support their patients with sexual dysfunction. Options for identifying and assessing sexual dysfunction using validated questionnaires (including male and female-specific measures) will be reviewed.

The management of sexual dysfunction will be discussed, with application to common chronic musculoskeletal conditions. Suggested care pathways and potential referral options for specialised management will be covered.

- Given a lack of specific training, clinicians may be understandably reluctant or embarrassed to raise the concept of sexual function with patients who have chronic musculoskeletal conditions
- Knowledge of available assessment tools, strategies and referral pathways that can be used to
  address sexual function will improve clinician confidence and enable the provision of more holistic
  care



# Determining appropriate non-surgical multidisciplinary management of knee osteoarthritis in tertiary care wisely: prospective validation of a clinical prediction rule

#### Window P<sup>1,2</sup>, Raymer M<sup>1</sup>, McPhail S<sup>3</sup>, Vicenzino B<sup>4</sup>, O'Leary S<sup>1,4</sup>

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Poster Presentations Friday Lunchtime, Exhibition Hall, October 6, 2023, 12:20 PM - 1:02 PM

Aim: To evaluate the external validity of a previously developed clinical nomogram prediction tool consisting of four measures (patient-expected benefit, patient-reported knee function, knee varus angle, medial knee radiological degeneration severity) to identify individuals with poor response to conservative management of knee osteoarthritis.

Design: Multi-site prospective longitudinal study.

Method: Individuals (n=242) deemed appropriate for a trial of multidisciplinary conservative management were recruited following initial assessment from an advanced physiotherapist in a tertiary Orthopaedic service. Baseline clinical nomogram scores were collected. A 15-point global rating of change score was collected six months later, dichotomised as responder (+2 to +7) or non-responder (-7 to +1). Nomogram accuracy was evaluated through Receiver Operating Characteristics curve analysis, sensitivity/specificity, and positive/negative likelihood ratios.

Results: Rating of change scores were obtained from 210 (87%) participants. The nomogram demonstrated an Area under the Curve of .703. A cut-off score of 13.3 provided greatest combined sensitivity (0.65) and specificity (0.64). The positive likelihood ratio (likelihood of non-response) was 1.81 (95% CI: 1.32 to 2.36) and negative likelihood ratio 0.55 (95% CI: 0.41 to 0.75). Higher nomogram cut-off scores yielded higher specificity but lower sensitivity.

Conclusion: The nomogram demonstrated low capacity to identify patients unlikely to respond to conservative management.

- Collectively, four simple measures may help identify individuals at higher risk of non-response to conservative management of knee osteoarthritis
- Two nomogram measures are potentially modifiable (low expectations, low knee function) which when identified, may inform more tailored management (e.g. education, functional modification, closer monitoring)



# The role of physiotherapists in shoulder injury related to vaccine administration (SIRVA)

**Mackenzie L**<sup>1</sup>, Bousie J<sup>1</sup>, Newman P<sup>1,2</sup>, Waghorn J<sup>3</sup>, Cunningham J<sup>4,5</sup>, Bushell M<sup>6</sup> <sup>1</sup>University Of Canberra, Faculty of Health, Discipline of Physiotherapy, <sup>2</sup>University of Canberra, Research Institute for Sport and Exercise, <sup>3</sup>Kings College London, Department of Pharmacy, <sup>4</sup>Royal Melbourne Hospital, <sup>5</sup>Epworth Hospital Richmond, <sup>6</sup>University of Canberra, Faculty of Health, Discipline of Pharmacy

Poster Presentations Friday Lunchtime, Exhibition Hall, October 6, 2023, 12:20 PM - 1:02 PM

Aim: To explore incidence, pathophysiology, healthcare practitioner understanding, and identification of Shoulder Injury Related to Vaccine Administration (SIRVA).

Design: Mixed methods design including retrospective database analysis and a cross-sectional survey of healthcare professionals.

Method: This study comprised of two distinct phases, phase one: Comprehensive analysis of the European pharmacovigilance database reports, and phase two: a validated survey examining healthcare practitioner knowledge of upper limb anatomy and Shoulder Injury Related to Vaccine Administration.

Results: 756,949 cases were reported to Eudravigilance between Jan 2020 and Dec 2022. Highest reported diagnoses were neurological injuries, rotator cuff related, and adhesive capsulitis respectively. Management and long-term outcomes are poorly understood. Healthcare practitioner knowledge of Shoulder Injury Related to Vaccine Administration and anatomy were low at 55% and 42% respectively. Non-immunising healthcare professionals scored significantly higher in anatomy than immunising professionals (2.213  $\pm$  1.52 vs 3.12  $\pm$  1.50, p=0.01). Only 52% of trained vaccinaters correctly identified the target 40x20mm for vaccination.

Conclusion: Healthcare practitioner knowledge of upper limb anatomy and Shoulder Injury Related to Vaccine Administration are low. While incidence is rare, practitioners should have a good understanding of the mechanism, induced conditions, and potential avenues for treatment and management so that they may care for patients they encounter.

- SIRVA appears a rare adverse event following immunisation, but pharmacovigilance reporting is limited.
- Health practitioner awareness of SIRVA is poor.
- Physiotherapists need to be aware of SIRVA to improve the diagnosis and management of its related musculoskeletal conditions.



# Health professionals must acknowledge that shoulder injury related to vaccine administration (SIRVA) is real and impacts people's lives: case report

#### Mackenzie L<sup>1</sup>, Bousie J<sup>1</sup>, Bushell M<sup>2</sup>, Newman P<sup>1,3</sup>

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Poster Presentations Friday Lunchtime, Exhibition Hall, October 6, 2023, 12:20 PM - 1:02 PM

Aim: To explore pathophysiology, physiotherapy diagnosis, and management of Shoulder Injury Related to Vaccine Administration.

Design: This study presents a case report of Shoulder Injury Related to Vaccine Administration induced adhesive capsulitis, explorations of pathophysiology, and subsequent physiotherapy intervention. It details the patient journey from initial injury to discharge from physiotherapy, following care guidelines.

Method: Single subject case presentation selected following presentation to a private physiotherapy clinic. Data related to goniometry, dynomometry, and ultrasonography were collected.

Results: Main symptoms included persistent pain and reduced range of motion for flexion, abduction, and internal and external rotation of the shoulder. Interventions included active and passive mobilisation via capsular stretching, and home exercise programs. Greater than two years post-injury the patient has ongoing pain, restricted shoulder movement, and disability.

Conclusion: This case report highlights the importance of healthcare practitioner knowledge of Shoulder Injury Related to Vaccine Administration. Vaccinating practitioners should be aware of the mechanism of injury of Shoulder Injury Related to Vaccine Administration for the prevention of such injuries. First contact practitioners should be aware of Shoulder Injury Related to Vaccine Administration induced conditions to ensure timely and correct diagnosis and management of SIRVA induced conditions.

- Understanding of the mechanism of injury of Shoulder Injury Related to Vaccine Administration.
- Discussion of Shoulder Injury Related to Vaccine Administration induced musculoskeletal conditions, diagnosis, and physiotherapy management.



# The effect of resistance loading on pelvic floor function in adult females: a systematic review

#### O'Rourke O, O'Shea S, Falzarano E, McPherson K

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Poster Presentations Friday Lunchtime, Exhibition Hall, October 6, 2023, 12:20 PM - 1:02 PM

Aim: To explore and synthesise the short- and long-term effects of resistance loading activities, such as lifting weights, on adult female pelvic floor muscle activation patterns.

Design: Systematic review with critical narrative synthesis.

Method: Using keywords such as "female", "strength training", "pelvic floor" and "function", seven databases were searched to identify eligible primary studies. Studies were selected, appraised and their data extracted systematically by two independent reviewers. A critical narrative synthesis was used for data interpretation.

Results: Of the 581 studies identified, 10 were eligible for inclusion. Intra-abdominal pressure, measured via an intra-vaginal probe, was used to determine pelvic floor muscle activity. Increased levels of resistance loading were found to result in a concomitant increase in measures of intra-abdominal pressure. However, the magnitude of individual pressure changes with loading varied considerably. No long-term effects of resistance loading could be determined.

Conclusion: As the degree of resistance loading increased during an activity, adult females consistently demonstrated increases in measures of intra-abdominal pressure. However, individual pressure measures varied considerably between women during the loading tasks. Factors influencing individual pelvic floor responses to resistance loading and a potential relationship with the risk of developing pelvic floor dysfunction require further investigation.

- Intra-abdominal pressure increases in response to increases in resistance loading
- Magnitude of the individual pressure response varies considerably between women
- Further research is required to determine if individual loading response may influence risk of pelvic floor dysfunction.



# Feasibility and acceptability of the Living My Life Program: a digital health intervention for rural and remote individuals with stroke

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Poster Presentations Friday Lunchtime, Exhibition Hall, October 6, 2023, 12:20 PM - 1:02 PM

Aim: To determine the feasibility and acceptability of the Living My Life Program.

Design: Explanatory sequential mixed-methods pilot study.

Method: Five individuals from rural and remote locations, with a history of stroke (>6 months) and an interest in using technology, participated in the pilot study. The 12-week Program was designed to support individuals with stroke to recover their way, in their world, according to what matters to them (goals). Participants used technologies to communicate with the therapist and complete activities. To determine feasibility, the following metrics were used: recruitment, completion, adherence, compliance, safety, and participant-reported outcome measures (PROMs). To determine acceptability, participants completed the Acceptability of Intervention Measure and a semi-structured interview about their experience. Quantitative data were analysed descriptively. Qualitative data were analysed thematically.

Results: Three participants have completed the Program, and two are underway. Participants completed all sessions, followed their plan and made progress towards their goals. They felt the Program was highly acceptable because it fitted easily into their lives, and they were able to use technologies in ways that worked for them. PROMs alone were insufficient to demonstrate the meaningful progress made by participants towards what matters.

Conclusion: The Living My Life Program was feasible and acceptable as a digital health intervention to enable individuals with stroke in rural and remote locations to recover their way, in their world.

Key Practice Points:

• Work hnologies in ways that work for them, in their world.



# Pilot of the Eastern Health physiotherapy triple s team - student support for stroke patients

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Poster Presentations Friday Lunchtime, Exhibition Hall, October 6, 2023, 12:20 PM - 1:02 PM

Aim: To explore if additional therapy provided by a student-led model improves the amount of therapy received and functional outcomes compared to usual care for patients post-stroke admitted to inpatient rehabilitation.

Design: A non-randomised feasibility study.

Method: 64 stroke patients admitted for inpatient rehabilitation and 18 undergraduate physiotherapy students were recruited. Usual clinical care was provided by 2x undergraduate students and 1x Grade 2 physiotherapist supervisor for 3x 5-week clinical placements. The following 3x 5-week clinical placements additional therapy was provided with additional 2x students and 1x supervisor. Data was collected on the amount of therapy, length of stay and functional outcomes as well as patient experience. Student outcomes included their clinical marks.

Results: Patients in the experimental group received an average of 10 additional physiotherapy sessions (95%Cl 1 to 18). There were no significant changes in functional independence, length of stay or discharge destination. There were no significant differences between groups in the student outcome measures.

Conclusion: Providing a student-led ward model was safe and feasible, and resulted in a statistically significant increase in physiotherapy sessions without adversely effecting student outcomes. It did not lead to improvements in functional outcomes or length of stay and hence is not recommended to be implemented in its current format.

- A student-led model can increase the amount of physiotherapy sessions received by patients poststroke
- No patient outcome measures changed indicating the skill of the person delivering the intervention is important.



### The outcomes of treadmill training in adults with stroke: an umbrella

review

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Poster Presentations Friday Lunchtime, Exhibition Hall, October 6, 2023, 12:20 PM - 1:02 PM

Aim: We aimed to address "What are the outcomes of treadmill training in adults with stroke?"

Design: Umbrella review (systematic review of systematic reviews).

Method: We used Joanna Briggs Institute methodology to systematically search four key databases (2010 to Feb 2023) for systematic reviews featuring randomised control trials (RCTs) or quasi-RCTs. Studies were screened, critically appraised using the AMSTAR2 tool and synthesised.

Participants: Adults (>18 years) with stroke. Intervention: Treadmill training with or without body-weight support. Exclusions: Reviews where adjunct technologies e.g. immersive virtual reality, functional electrical stimulation, aqua treadmill, or robotics were used. Outcomes: All reported outcomes classified by International Classification of Function framework.

Results: We screened 2143 titles and included 35 systematic reviews, reporting 25 outcomes. Quantitative synthesis (meta-analysis) was available for: walking speed, walking endurance, motor impairment, mobility capacity, aerobic capacity, balance, activities of daily living and safety. Other outcomes reported include cadence, step length, physical activity, timed up-and-go, cognition, muscle strength, depression, and secondary stroke risk factors. Most included reviews received a "low" or "critically low" rating for risk of bias.

Conclusion: Reported outcomes of treadmill training for adults with stroke are diverse with the majority walking-related activity outcomes. Results are mixed and the quality of evidence is highly variable. Further focused, high-quality primary studies are warranted.

- Many included systematic reviews reported walking-related activity outcomes.
- Meta-analysis demonstrates benefits of treadmill training with, or without, bodyweight support, for ambulant adults with stroke looking to increase speed, endurance, or aerobic capacity.



# Feasibility of implementing a balance group on an acute stroke and neurology ward

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Poster Presentations Friday Lunchtime, Exhibition Hall, October 6, 2023, 12:20 PM - 1:02 PM

Aim: To evaluate the demand, acceptability and practicality of implementing a balance group.

Design: Process evaluation.

Method: A physiotherapy run circuit-based balance group was initiated on the Stroke and Neurology ward twice weekly for 45-minutes during 2021-2022. Patients eligible to join the group were medically stable, had a Mobility Scale for Acute Stroke (MSAS) standing balance score greater than four and referred by treating therapists. Workforce capacity and participant availability were evaluated prior to each session. Attendance, participant demographics and staff feedback were documented.

Results: Twenty-six percent of planned balance groups ran and 69.6% of the eligible patients attended (70.6% male, mean age 66 ± 12.8 years, median admission duration 7 days IQR [3-15]). Common diagnoses included stroke (76.5%), Guillain Barre Syndrome (5.9%) and Parkinson's Disease (2.9%). Cancelled balance group sessions were related to patient ineligibility (64.7%), staffing availability (25.5%), and COVID-19 (7.8%). Physiotherapist evaluation highlighted increased therapy time (85.7%) and low burden to run the group (78.6%), however, only 57.1% thought it was an effective use of staffing.

Conclusion: Balance group was not feasible to run on an acute stroke and neurology ward due to inadequate patient eligibility and workforce capacity.

- In a high acuity stroke and neurology ward, patient medical stability and functional level may preclude participation in balance groups.
- Group therapy in the acute hospital setting relies on workforce capacity.



### Internal derangement of the knee in physically demanding occupations: a rapid review

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Poster Presentations Friday Lunchtime, Exhibition Hall, October 6, 2023, 12:20 PM - 1:02 PM

Aim: To identify and review studies reporting on occupational risk factors for the occurrence of internal derangement of the knee (IDK) in physically demanding occupations.

Design: Systematic review of the literature.

Method: This review was guided by the Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA) guidelines. A comprehensive search of seven databases was performed using terms derived from three concepts: 'risk', 'paid occupations', and 'IDK'.

Results: One article met the eligibility criteria. Findings revealed that male Turkish military personnel with IDK that was secondary to anterior cruciate ligament (ACL) ruptures, managed without reconstruction, and who continued their regular military duties following ACL rupture, had a high prevalence of additional intraarticular lesions. A moderate positive correlation was found between the time from the initial ACL rupture and the presence of at least one additional intra-articular lesion (rs = 0.574; p = 0.0001). Additionally, individuals aged 30 years and older were at slightly greater risk than their younger peers.

Conclusion: These findings suggest that the occupational demands to which Turkish military personnel are exposed are associated with IDK developing and worsening over time after ACL rupture as military duties continue.

- ACL injuries managed conservatively are frequently associated with additional intra-articular lesions in male military personnel.
- A positive correlation was found between age and the development of lesions in the knee.



### Profiling the occupational tasks of traffic and highway patrol officers

#### Schram B<sup>1,2</sup>, Canetti E<sup>1,2</sup>, Orr R<sup>1,2</sup>

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Poster Presentations Friday Lunchtime, Exhibition Hall, October 6, 2023, 12:20 PM - 1:02 PM

Aim: To profile the occupational tasks performed by traffic and highway patrol officers

Design: Prospective cohort study.

Method: A total of 23 THP officers from an Australian state police force were provided written surveys which enquired about the most common general duties tasks, most and least common highway patrol tasks, and most physically demanding highway patrol tasks. Ethics approval was provided by the Bond University Human Research Ethics Committee #BS02126.

Results: The most common tasks which were reported as being similar to general duties tasks were patrolling (16%), paperwork (14%) and attending domestic violence disputes (11%). The most common reported highway patrol specific tasks were reported as conducting random breath tests (28%), speed enforcement (10%) and paperwork (9%). Least common tasks were reported as foot pursuits (10%), medical escorts (6%) and responding to routine jobs (6%), while the most physically demanding tasks were conducting stationary randomised breath testing (14%), physical arrest of suspects (13%) and high-speed driving/pursuits (11%).

Conclusion: Police drivers have unique job tasks, dissimilar to general duties police which appear to be more sedentary in nature. Optimising physical conditioning and reduction of injury programs need to therefore differ as well.

- Police driver job tasks differ to general duties officers.
- Return to work and health promotion programs need to be individualised to this population.



### The physical fitness profiles of specialist policing teams

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Poster Presentations Friday Lunchtime, Exhibition Hall, October 6, 2023, 12:20 PM - 1:02 PM

Aim: To profile the fitness of two groups of Australian Specialist Police.

#### Design: Retrospective Cohort Study

Method: De-identified data of 17 male specialist police officers from two specialist police response groups (Riot Squad (RS) and Police Tactical Group (PTG)) were provided. Data included demographics (age, height, and weight), strength (1 Repetition Maximum (1RM) bench press, deadlift, pull-up + Body Weight (BW), and squat), speed (0-10m acceleration & 10-20m peak velocity), agility (box agility drill), aerobic capacity (30-15 Intermittent Fitness Test) and power (bench throw and countermovement jump).

Results: There were no significant differences in demographics, although officers from RS were, on average, older (1.45yrs, p=0.390), shorter (-2.04cm, p=0.15), and lighter (-3.43kg, p=0.55) than PTG officers. PTG officers had significantly greater strength (1RM deadlift = 38.50kg, p= 0.001, 95% CI [17.62-59.38], 1RM squat = 34.00kg, p< 0.001, 95% CI [16.6-51.5], 1RM bench press = 26.83kg, p=0.004, 95% CI [9.8-43.8]) and quicker acceleration (0.11sec, p=0.032, 95% CI [0.01-0.21]) than RS officers. Both groups performed at a level comparable to elite athletes for most other measures.

Conclusion: Specialist police possess high levels of aerobic fitness, strength, acceleration, and power, with subtle differences between units, thought to be due to varying occupational roles. This study provides benchmarks for selection, return-to-work practices and maintenance programs for health professionals working within these units.

- Specialist police possess fitness profiles comparable to elite athletes.
- Different occupational roles require different reconditioning prior to return-to-work following injury.



### Impact of boots on task performance in tactical personnel: a systematic review

#### Simas V<sup>1</sup>, Bagley T<sup>1</sup>, Truong J<sup>1</sup>, Schram B<sup>1</sup>, Canetti E<sup>1</sup>, Orr R<sup>1</sup>

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Poster Presentations Friday Lunchtime, Exhibition Hall, October 6, 2023, 12:20 PM - 1:02 PM

Aim: To identify and critically analyse articles investigating boots and their influence on task performance within a tactical population.

#### Design: Systematic Review

Method: This review followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) and was conducted by two independent reviewers. The methodology and search strategies were detailed in a protocol published in advance. A comprehensive search of six databases was performed. Eligible articles were critically appraised, and a narrative synthesis was performed.

Results: Two articles met the eligibility criteria and were included in the review. The included studies were considered of good methodological quality and reported on firefighters. One of the investigations reported that rubber boots were heavier and significantly increased the chances of hazardous slips compared to leather boots. Similarly, in the second study, rubber boots had greater weight than leather ones, and the authors found a significant negative correlation between weight and gait performance.

Conclusion: In a firefighting population, both weight and material used in boots should be considered, as rubber boots and heavyweight material negatively impact gait parameters and, consequently, task performance. However, the results of this review should be interpreted with caution.

- Compared to leather boots, rubber boots increase the chances of hazardous slips in firefighters.
- Increases in boot weight negatively affect gait performance in firefighters.
- Task performance in a firefighting population is significantly affected by boots' weight and material, and this finding should be considered when implementing injury prevention strategies in the fire service.



# Effectiveness of physical conditioning practices for female military personnel

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Poster Presentations Friday Lunchtime, Exhibition Hall, October 6, 2023, 12:20 PM - 1:02 PM

Aim: to investigate the most effective physical conditioning practices for female military personnel.

Design: Systematic review.

Method: Following the PRISMA guidelines and protocol registered with OSF, PubMed, Embase, CINAHL, SPORTDiscus, and reference lists of included studies were searched using the themes 'female', 'military' and 'conditioning'. Dedicated inclusion and exclusion criteria were applied. Critical appraisal and data extraction were performed independently by two authors.

Results: Seven of 6,317 citations were included in the study. The mean quality score of the studies was considered 'good' (64.4±16.4%). All included studies incorporated strength and aerobic endurance training as a training paradigm; 71% included power specific training; and 43% included occupational specific task training. Improvements in fitness included 50% increase of 1-RM strength, 18.4% increase in VO2max and 14.1% decrease in pack march time.

Conclusion: The volume of evidence suggests that several training modalities, including strength, power, and aerobic endurance, can optimise both training adaptations and occupational performance for female soldiers. This review provides summary evidence to assist in informing optimal training practices and guide future direction of research.

- Physical conditioning for female military personnel appears to be optimised with individualised and periodised physical conditioning programs, incorporating a combination of strength and aerobic endurance training, task specific training, high intensity interval training and a combination of both upper and lower body resistance exercises.
- The parameters of fitness associated with increasing female soldier performance may be used to inform rehabilitation and reconditioning requirements



### Use of a load carriage assistance device for specialist police

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Aim: to examine the effectiveness of a load carriage assistance device (LCAD) on specialist police mobility and marksmanship.

Design: A randomized counter-balanced study.

Method: Six specialist police officers (age = 41.1±6.2 years, weight = 88.4±9.2 kg) completed 2x2 trials of a tactical course as quickly as possible with and without a Reaper<sup>™</sup> LCAD (randomised), worn to support the load of their ballistic shield (±20 kg). Heart rate was measured via an Equivital<sup>™</sup> harnesses and marksmanship via distance from centre of target (DCOT). Perceived LCAD impacts were measured with a visual analogue scale (VAS). Bond University Human Research Ethics Committee provided ethics approval (RO1585).

Results: No significant differences were found for heart rate (non-Reaper<sup>™</sup>=152.20±7.29 bpm; Reaper<sup>™</sup>=152.01±12.97 bpm, p=0.910) or completion time (non-Reaper<sup>™</sup>=80.46±13.98 secs, Reaper<sup>™</sup>=76.82±11.23 secs, p=0.130); although a trend towards faster times wearing the ReaperTM was found. Marksmanship was not significantly different between trials however officers lowered the shield on the ground during the non-Reaper<sup>™</sup> trials to engage the target. The VAS results were significantly poorer (p<0.001) in non-Reaper<sup>™</sup> (-5.58±1.93 mm) versus Reaper<sup>™</sup> (2.88±4.90 mm) trials.

Conclusion: Officers considered the riot shield to negatively impact their performance to a lesser degree when assisted by the LCAD. The ability to support the shield on the LCAD allowed officers to maintain protection behind a riot shield.

Key Practice Points:

• Prescription of a riot shield LCAD may be of benefit to specialist police especially if returning from an upper limb injury - which is a leading site of injury in this population.



### Differences in cardiovascular demand between male and female marines during progressive loaded hikes

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Poster Presentations Friday Lunchtime, Exhibition Hall, October 6, 2023, 12:20 PM - 1:02 PM

Aim: To determine the differences between male and female marines in cardiovascular load in progressive loaded hikes.

Design: Prospective cohort study.

Method: United State Marine Corps trainees (565 males; 185 females) completed six loaded hikes (1: 10kg, 30mins; 2: 10kg, 45mins; 3: 15kg, 30mins, 4: 15kg, 45mins; 5: 20kg, 30mins; 6: 20kg, 45mins) during which heart rate (HR) response was measured. HR average (HRavg), HR maximum (HRmax), and pace were measured via Polar Grit watch. Independent samples t-tests were conducted to compare between genders, with significance set at 0.008 after adjusting for multiple comparisons.

Results: Female Marines were significantly lighter than male Marines for all hikes (p<0.001) with a significantly heavier relative load (10kg ~15%, 15kg ~25%, 20kg ~33%, p<0.001). There were no significant differences in pace in any hike and no significant differences were found in HRavg or HRmax when comparing male and female Marines during Hikes 1 or 2. HRavg was significantly higher for females during Hike 3 (+9.3bpm, p=0.002), with both HRavg and HRmax significantly higher in Hike 4 (+11.6bpm, +10.9bpm, p<0.001), Hike 5 (+8.2bpm, +9.1bpm p<0.001)and Hike 6 (+6.1bpm, +7.5bpm p<0.001) respectively.

Conclusion: Female marines have a greater cardiovascular demand during load carriage events when carrying loads above 15kg.

- For female Marines cardiovascular demand may be higher when carrying loads above 15kg.
- Strategies to condition females to carry heavier relative loads need to be developed and this requirement should inform any return-to-training following injury.



### What we don't understand, we don't look for

<u>**Truscott L**</u><sup>1</sup> <sup>1</sup>Griffith University

Poster Presentations Friday Lunchtime, Exhibition Hall, October 6, 2023, 12:20 PM - 1:02 PM

Aim: To understand the movement difficulties which occur in young autistic children, as described in autism research.

Design: A review of autism literature was undertaken.

Method: An extensive search of a number of databases was undertaken from 21 May 2021 to source articles published in the last 10 years. A Boolean search using the terms (motor OR movement), and (difference OR difficult\* OR delay OR impairment), and (autis\* OR ASD OR Asperger's OR PDD), and (child\* or infant) was used to capture most articles relevant to this topic. The terms ASD (autism spectrum disorder), Asperger's, and PDD (pervasive developmental disorder) were included as historical terms for diagnoses now encapsulated under the diagnosis of autism.

Results: The prevalence, heterogeneity, complexity and specificity of movement difficulties in autism were identified, with over 20 movement difficulties described in the research literature. Differences were described between the movement difficulties found in autism with those found in children with developmental coordination disorder. Under-recognition of movement difficulties at autism diagnosis was reported, with difficulties identified in the assessment tools used in autism.

Conclusions: Movement difficulties in autism are highly prevalent, heterogeneous, complex and specific to autism. This likely requires clinicians to use a range of strategies to identify these difficulties.

- Movement difficulties in young autistic children are easily missed in autism diagnosis, as current movement assessments are unlikely to capture these difficulties.
- Physiotherapists working in paediatrics need to be aware of and knowledgeable about the movement difficulties found in young autistic children.



# What does infant participation look like according to parents and health professionals? An international Delphi study

#### Mobbs C<sup>1,2</sup>, Spittle A<sup>3,4</sup>, Johnston L<sup>1</sup>

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Poster Presentations Friday Lunchtime, Exhibition Hall, October 6, 2023, 12:20 PM - 1:02 PM

Aim: To gain consensus on the constructs and content of infant participation for typically-developing infants.

Design: Three-round international Delphi study

Methods: Participants were parents of children aged <2years and health professionals (HPs). In Round 1, all participants answered open-ended questions on: Attendance: life situations between 0-12 months; Involvement: behaviours infants demonstrate; and Parental role. HPs were also asked to Describe infant participation; Similarities/differences between infants and older children; and Participation Assessments and Interventions. Response items from Round 1 were rated for consensus in Rounds 2 and 3, using ≥85% agreement threshold.

Results: Sixteen parents and 35 HPs responded. Agreement was high for the parent roles of mediating infant participation, including providing access, support and a strong relationship. Participants agreed that diversity of infant Attendance expands across the first 12 months. Participants agreed on many ways that infants demonstrate Involvement, with 7/10 HP-generated and 9/9 parent-generated items reaching consensus. HPs agreed that the constructs of Attendance and Involvement in a life situation do underpin infant participation. However, agreement was low for participation similarity/differences between age groups and intervention approaches/strategies. No consensus was reached for assessments.

Conclusion: Parents play a central role in co-constructing opportunities for their infant's participation. Infants are likely to increase frequency and diversity of participation Attendance over time. Infants demonstrate objective and recognisable signs of participation Involvement. Research is needed to develop psychometrically-sound infant-specific participation assessments.

**Key Practice Points** 

• Items reaching agreement inform clinicians and researchers on aspects of infant participation to consider when working with families.



### Evaluating the measurement properties and feasibility of physical activity and physical function assessments for children undergoing acute cancer treatment

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Poster Presentations Friday Lunchtime, Exhibition Hall, October 6, 2023, 12:20 PM - 1:02 PM

Aim: To evaluate criterion validity, responsiveness, and feasibility of one physical activity assessment tool (Fitbit Inspire, criterion Actigraph); and construct validity, responsiveness and feasibility of six physical function assessment tools (Movement ABC-2, Timed Up and Go, 30-second Chair Stand, Timed Rise from the Floor, Timed Up and Down Stairs, Six-minute Walk Test) for children with cancer.

Design: A prospectively-registered, ethics approved, mixed-methods, longitudinal, single-group study

Method: Assessment was performed at two time-points. Measurement properties were evaluated using the Consensus-based Standards for the selection of health status Measurement Instruments (COSMIN) framework. Feasibility was assessed quantitively, and qualitatively with semi-structured interviews and focus-groups.

Results: Twenty children/adolescents (median age 13yrs, range 5-16, various cancer diagnoses), 20 parents, and 16 clinicians participated. There was evidence of criterion validity and responsiveness for the Fitbit compared to the Actigraph, with a tendency to overestimate step count. The 30-second Chair Stand, 6-minute Walk Test and Timed Up and Go were feasible and showed evidence of construct validity and responsiveness. Consideration of timing and intent of assessment are crucial to maximise feasibility.

Conclusion: We recommend Fitbit to assess physical activity and the 30-second Chair Stand, 6-minute Walk Test and Timed Up and Go to assess physical function in children undergoing acute cancer treatment.

- The Fitbit, 30-second Chair Stand, 6-minute Walk Test and Timed Up and Go are feasible to use and have evidence of measurement properties specific to children undergoing acute cancer treatment
- Consider the timing and intent of assessments to maximise feasibility



### Effectiveness of school-based physiotherapy intervention for children

#### Alexander K<sup>1</sup>, <u>Clutterbuck G</u><sup>1</sup>, Johnston L<sup>1</sup> <sup>1</sup>The University of Queensland

Poster Presentations Friday Lunchtime, Exhibition Hall, October 6, 2023, 12:20 PM - 1:02 PM

Aim: To evaluate effectiveness of school-based physiotherapy for improving students' participation in schools.

#### Design: Systematic review

Method: Four databases were searched for papers published between 2011-2022 involving children receiving physiotherapy in schools, with physiotherapy outcomes reported. Articles were categorised by intervention type and evaluated based on evidence level and conduct.

Results: Thirteen intervention types (24 studies) met criteria. Strong positive evidence supported treadmill training without bodyweight support (n=1), and upper limb and fine motor intervention (n=2). Moderate positive evidence supported gross motor activity training with multimodal education-based therapy (n=2), neurodevelopmental treatment (n=2), and rock climbing (n=1). Weak positive evidence supported addressing barriers to participation (n=1), ergonomic health literacy (n=3), gross motor activity training with progressive resistance exercise (n=1), hippotherapy (n=1), multimodal education-based therapy (n=7), overground gait training (n=2), and treadmill training with partial bodyweight support (n=1). Strong conflicting evidence was available for non-immersive virtual reality (n=2).

Conclusion: There is preliminary supporting evidence for several school-based physiotherapy interventions, primarily those with established efficacy in other contexts. There is insufficient evidence to properly guide current practice, with participant diversity a challenge for school-based research. More research is urgently needed to develop and test efficacy of physiotherapy approaches in schools.

- Interventions with proven efficacy in other contexts were effective in schools.
- Successful interventions were designed with a focus on assisting children to improve engagement in school activities.
- Participation was measured on few occasions and a lack of school-specific participation measures was noted, providing direction for future research.



### Supporting the developmental care of infants with congenital heart disease within a hospital environment

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Poster Presentations Friday Lunchtime, Exhibition Hall, October 6, 2023, 12:20 PM - 1:02 PM

Aim: it is well documented infants born with congenital heart disease (CHD) are at multifactorial risk of developmental delay and those who undergo open-heart surgery are at an even higher risk of adverse long-term outcome. A resource including recommendations for developmental assessment and management of infants with congenital heart disease, would support hospital physiotherapists in the management of these infants.

Design: Environmental scan and expert opinion.

Method: Physiotherapists from cardiac and neurodevelopmental backgrounds consulted to understand the developmental complexities and challenges associated with infants who have CHD. Assessment and intervention recommendations were categorised based on age, acuity, risk factors, type of surgery and physiological stability. A screening pathway was developed to guide clinicians on the most appropriate assessments and intervention strategies. Additionally, a summary tool to provide targeted information on common diagnoses and surgical procedures was developed, incorporating the associated physiological implications for physiotherapy management.

Results: The cardiac infant resource package has been disseminated to the department and feedback is currently being sought and will be presented.

Conclusion: Infants with CHD have complex presentations and varied neurodevelopmental outcomes. This resource guides clinicians to understand the clinical, physiological and neurodevelopmental implications and enable effective and safe management of these high-risk infants.

- Infants with CHD are complex, and their neurodevelopmental needs vary
- Physiotherapists must be aware of the increased physiological implications and the impact on assessment and intervention
- This resource provides comprehensive guidance for physiotherapists working in Paediatric Cardiac Intensive Care and hospital ward environments



### Do physiotherapy and occupational therapy interventions have a role in the management of pediatric functional neurological disorder? A systematic review

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Poster Presentations Friday Lunchtime, Exhibition Hall, October 6, 2023, 12:20 PM - 1:02 PM

Aim: To evaluate if physiotherapy and occupational therapy interventions improve activity and participation function for children and adolescents with functional neurological disorder compared to usual care.

Design: Systematic review.

Methods: Registered prospectively in PROSPERO (registration number CRD42022358970), a search was conducted on Cinahl, Embase and Medline until September 2022. Eligibility criteria were applied by two reviewers independently. Methodological quality was assessed using the Mixed Methods Appraisal Tool. Data were synthesised narratively and the certainty of evidence assessed using a Grading of Recommendations, Assessment, Development and Evaluation narrative approach.

Results: Eight non-randomised studies (n=451 participants, mean age 13.2 years) of intervention were selected. There was very low certainty evidence that for about three of four participants inpatient or outpatient multidisciplinary programs involving physiotherapy and occupational therapy led to recovery at the end of the program, with recovery and school attendance retained at 12 months. Two studies provided very low certainty evidence that about half of participants attending multidisciplinary programs were independent on all WeeFIM items at program discharge.

Conclusions: There is insufficient evidence to recommend routine physiotherapy and occupational therapy involvement in multidisciplinary management for children and adolescents with functional neurological disorder.

- There is little evidence to support physiotherapy or occupational therapy involvement as part of a multidisciplinary intervention for children or adolescents with functional neurological disorder.
- Physiotherapy intervention has not been studied as a standalone intervention in this population to date.
- Current evidence may be more supportive of psychological interventions for functional neurological disorder.



# The development of Wheely Fun, a new intensive paediatric program for learning and practicing use of powered mobility

#### West S<sup>1</sup>

<sup>1</sup>Kids Plus

Poster Presentations Friday Lunchtime, Exhibition Hall, October 6, 2023, 12:20 PM - 1:02 PM

Background: Self initiated movement is important. A critical phase occurs at 6-9months when infants show a powerful drive to "Go To" something. This leads to object exploration, and the opening up of learning and social opportunities. When this is not possible due to mobility delay or disability, powered mobility is an effective option.

Wheely Fun is a specific 1:1 intensive program that teaches the skill of self-driving, delivered in a motivating small group environment from 9months to 25years. We use targeted assessments and techniques depending on functional level. The development of new programs in community allied-health is not easy. Synthesising knowledge into action in the real world for your own context requires a growth mindset, persistence and teamwork!

Aims: To present our learnings and successes in developing a program for advancing skills in powered mobility for infants, children and young people.

Approach: The lecture-style presentation will detail, via slides, case studies and videos, how this program has been developed, including a framework for teaching self-driving skills, concluding with question time.

**Key Practice Points:** 

Participants will develop in understanding of

- How self-initiated movement typically develops, and why independent movement is so important for young people living with disability.
- The Wheely Fun Program framework for facilitating driving powered mobility, assessments and early positive results.
- How to develop and implement a new program in a community health setting.



### An online interactive learning module improves student confidence and preparedness for clinical skills examinations

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Poster Presentations Friday Lunchtime, Exhibition Hall, October 6, 2023, 12:20 PM - 1:02 PM

Aim: To determine if an online interactive learning module improves student understanding of performance standards and preparation for clinical skills examinations.

Design: A pre- post-intervention study.

Method: All first-year undergraduate physiotherapy students enrolled at an Australian University were invited to volunteer. Students completed an interactive online module created with Rise 360 (Articulate, NY, USA) to aid student understanding of performance standards and improve exam confidence. The module contained three key elements: (i) exemplar videos of students performing clinical examinations, (ii) examiner-completed marking rubrics for each performance, and (iii) self-paced reflective learning activities (e.g. quizzes, matching tasks) aimed at improving understanding of performance standards and the examination process. Pre- and post-module surveys were administered to examine student perceptions including their exam preparedness and skills confidence.

Results: 103 first year students (78%) completed the pre-survey and 49 students (37%) completed the postsurvey. Pre-survey results revealed that 92.2% of students were anxious about their upcoming clinical skills examination, and only 36.9% of students were confident in the clinical skills that would be assessed. Postsurvey results, however, demonstrated that 65.3% of students were confident in their clinical skills. Postmodule results also revealed 55.1% of students felt prepared for the clinical examination while only 16.3% felt unprepared.

Conclusion: A self-paced, interactive learning module improves physiotherapy student confidence, understanding of performance standards, and preparedness in undertaking high stakes stress-invoking clinical examinations.

- Students report high levels of anxiety prior to clinical examinations.
- Self-paced, online modules effectively support student preparation for clinical examinations.



# Self-directed websites effectively improve physical activity and diet quality in people living with chronic illness. A systematic review and meta-analysis

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Poster Presentations Friday Lunchtime, Exhibition Hall, October 6, 2023, 12:20 PM - 1:02 PM

People living with chronic conditions want resources to manage their secondary risk factors. Online, selfdirected programs may help achieve effective risk factor management for people living with chronic illness. We aimed to explore whether self-directed web-based programs can facilitate improvements in physical activity levels and/or diet quality for people living with conditions like cardiovascular disease, diabetes, cancer and stroke.

A search was conducted in MEDLINE, EMBASE, CINAHL and PEDro from earliest available until 3rd of February 2023. Randomized control trials evaluating effectiveness of self-directed web-based programs on physical activity levels and/or diet quality in adults living with chronic illness were included. Where reported, data on quality of life and/or self-efficacy was also extracted.

Thirty-two papers were included with data from 6556 participants pooled for meta-analysis. We found moderate level evidence that self-directed web-based programs significantly improve physical activity levels (MD 41.45min, 95% CI (21.93 to 60.97)), quality of life (SMD 0.36, 95% CI (0.12 to 0.59)) and self-efficacy (SMD 0.26, 95% CI (0.05 to 0.48)) when compared to usual care. There was high level evidence of reduction in processed meat consumption (MD, 1.14 portions per/week, 95% CI (0.70 to 1.58)). No significant differences were detected for other outcomes when compared to usual care or when comparing self-directed web-based programs offering more personalized and/or supported content.

Participation in self-directed web-based programs leads to improvements in physical activity levels, quality of life, self-efficacy and some positive dietary changes in people living with chronic illness when compared to usual care.



# The establishment of a consumer advisory group for an allied health department at an Australian university

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Poster Presentations Friday Lunchtime, Exhibition Hall, October 6, 2023, 12:20 PM - 1:02 PM

Aim: There is a need for consumer engagement in health and medical research and education, however, limited evidence exists on how to develop a framework for consumer engagement. Here, we describe our Working Group's experience in developing an Allied Health consumer engagement framework.

Design: Retrospective descriptive analysis.

Method: Consistent with local and state guidelines, consumers were defined as people who use, or are potential users of, healthcare services. We followed the Australian National Health and Medical Research Council-recommended stepped approach for the development of a consumer engagement framework. An information forum, formal application process, and induction of CAG members, were strategies used for successful implementation.

Results: Between March 2020 and April 2021, the Working Group developed a consumer engagement framework. Ten health consumers formally applied for membership and were selected as CAG members. Three academic staff members, representing each of the department's educational programs, joined the CAG. The first meeting was held in May 2021.

Conclusion: We learned that having consumers involved in teaching and research practices is both feasible and desirable, with our Consumer Advisory Group generating new and meaningful ideas that contribute to innovative education. Consumers identified they were interested in engaging more directly with our teaching and research, and our CAG's plans include seeking sustainable ways to achieve this.

- Our Working Group developed an Allied Health consumer engagement framework which led to the establishment of the CAG.
- Collaborating with consumers for health and medical research and education is both feasible and desirable.



# Feasibility of a longitudinal cohort study to examine functional outcomes of people with oseointegrated and socket above-knee amputations

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Poster Presentations Friday Lunchtime, Exhibition Hall, October 6, 2023, 12:20 PM - 1:02 PM

Aim: To determine the feasibility of conducting a longitudinal cohort study to assess balance, balance confidence, gait and quality of life, in persons with above-knee amputation, fitted with osseointegrated or conventional socket prostheses.

Methods: Feasibility was evaluated based on four metrics; process, resources, safety and outcome measure suitability. Participants attended a one-off assessment of: (1) Timed up and go test, (2) Activities-specific balance confidence scale questionnaire, (3) Questionnaire for persons with transfemoral amputation, and (4) SMART EquiTest system balance assessment. Measures were summarised using percentages or descriptive analysis.

Results: Seven above-knee amputees participated in the study (osseointegrated 57%, conventional socket 43%). Results showed conducting a longitudinal study is feasible and safe. Three of the outcome measures were considered acceptable for use in future studies. The SMART EquiTest proved a suitable balance assessment tool in this population.

Conclusion: It is feasible to conduct a longitudinal cohort study to assess balance, balance confidence, gait and quality of life in persons with above-knee amputation. Incorporation of recommended changes to the protocol and procedures would form a robust study, providing advice and direction for patients, clinicians and funders to inform prosthetic choice.

- Conducting a longitudinal cohort study in persons with above knee amputation, fitted with osseointegrated or conventional socket prostheses is feasible and safe.
- A longitudinal study could help provide advice and direction for patients, clinicians and funders to inform prosthetic choice.
- SMART Equitest is suitable for use in persons with above-knee amputation fitted with a prosthesis.



#### Behaviour change traps and how to avoid them!

Bills C<sup>1</sup>

<sup>1</sup>Licensed HealthChange Associate

Poster Presentations Friday Lunchtime, Exhibition Hall, October 6, 2023, 12:20 PM - 1:02 PM

Background: While Physiotherapists understand the need to include behaviour change facilitation techniques into their practice, they may be unaware of how standard consultation structure can impact negatively on patient engagement and adherence. This session outlines common behaviour change traps clinicians and services fall into, provides strategies to avoid them and a video demonstration applying this information to a clinical scenario.

Aims: To increase participants' awareness of current common clinical practices that impact negatively on client engagement and adherence to treatment recommendations and understand how modifying clinical practice can avoid these traps.

Approach: The presenter will provide a slide presentation outlining the common clinical practice traps (10 min). Simple audience participation activities will be used to highlight how common these clinical practice traps are. This will be followed by slides outlining clinical practice changes that help clinicians avoid these traps (10 min). Participants will then view an excerpt of a real client consultation demonstrating use of some strategies (7min). Take home learning materials will be provided to assist participants to use the strategies.

Key Practice Points:

Participants will understand

- how the timing and type of assessment tasks can impact on adherence
- how to use a behavioural Menu of Options to better engage patients
- how to use simple questions to avoid ineffective goal setting



### Ready Student One: simulation-based education, virtual reality, and the perception of stress

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Poster Presentations Friday Lunchtime, Exhibition Hall, October 6, 2023, 12:20 PM - 1:02 PM

Aim: To investigate differences in the physiological perception of physiotherapy student stress undergoing two types of simulated environments.

Design: Quasi-experimental

Methods: Students enrolled in a Doctor of Physiotherapy program were subjected to two stressors: a neurological patient simulation (SIM) and a free-roaming virtual reality (VR) immersive gaming scenario. Physiological parameters including respiratory rate, heart rate, skin temperature, salivary cortisol, and  $\alpha$ -amylase were collected prior to, immediately post, and 15, 30, and 60 minutes after each scenario. NASA-task load index (TXL) assessed participants' perceptions of stress prior to, and at the end of, each scenario. Repeated measures linear mixed model analysed the impact of sampling time, stressor, and their interaction on the physiological parameters and NASA-TXL.

Results: The VR experience elicited a marked increase in cortisol concentration (1.7nmol/L SE 0.8, p=0.045) from baseline, but not  $\alpha$ -amylase, levels immediately after the task. The SIM experience did not influence the concentration of salivary stress markers, although  $\alpha$ -amylase concentrations were higher in samples obtained pre-SIM compared to pre-VR samples. NASA-TXL results indicated that students perceived themselves as performing worst and being more stressed, frustrated, and insecure prior to, and after, the SIM compared to the VR task.

Conclusion: The SIM scenario had a greater anticipatory perceived stress while the VR immersive gaming experience highlighted greater post-event physiological response to stress.

**Key Practice Points:** 

 Combination of VR and SIM may better portray the totality of the stress response that may be experienced by students in clinical education, including both anticipatory and task-associated stress response.



# Balanced dental occlusion has positive impacts on jump height and modified reactive strength index of vertical jump

#### Yamada Y<sup>1</sup>

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Poster Presentations Friday Lunchtime, Exhibition Hall, October 6, 2023, 12:20 PM - 1:02 PM

Aim: To reveal the effect of dental occlusion on vertical jump performance with a focus on the individual's occlusal balance (left-right ratio of occlusal forces).

Design: A crossover design that involves two groups.

Methods: 23 healthy participants (13 male and 10 female) considered as with correct occlusion by a dentist were selected. The occlusal strength measurement was carried out to divide all subjects into 2 groups which were balanced (n=13) and unbalanced (n=10) groups. Occlusal conditions were set: no tooth contact (Nobite condition) and occlusion at maximum effort (Max condition). For the vertical jump tasks, subjects performed Squat Jump (SJ) and Counter Movement Jump (CMJ). Recorded EMG and force-time data were analyzed. The given results were compared between conditions in each group.

Results: Balanced group performed significantly increased jump height (p = 0.02) in SJ and modified reactive strength index (p = 0.003) in CMJ in Max condition. Unbalanced group showed no significance between conditions.

Conclusion: This research indicates that the outcome of teeth occlusion on vertical jump can be altered depending on the individual's occlusal balance.

- Only balanced group can perform positive outcomes in terms of vertical jump performance.
- It may be suggested that athletes who have unbalanced occlusion wear an occlusal splint to correct their occlusal balance.



### Health professionals' involvement in volunteering of professional skills: a scoping review

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Poster Presentations Friday Lunchtime, Exhibition Hall, October 6, 2023, 12:20 PM - 1:02 PM

Background: Volunteering by health professionals has enormous potential as a method of health promotion. This study aimed to identify available literature on involvement of health professionals in professional volunteering activities with focus on volunteering in health promotion.

Method: Database searches for studies in English language from 2010-21 were undertaken and refreshed in 2023. Data were extracted on study design, volunteering profession, country of volunteering, the extent and nature of engagement, the impact of volunteering on providers and recipients, and motivators and barriers.

Results: 144 eligible studies were identified. Half of these (56%) were quantitative (90% of these descriptive), 32% qualitative and 12% mixed methods. Only 6% of studies were interventional. Doctors/surgeons were the most reported volunteering profession (51% studies) and physiotherapists were reported only in 1 (0.7%) or concert with other professions (3%). Half the studies were from USA (53%) with only 7% from Australia and NZ. International volunteering in low- and middle-income countries was the most reported location (56%). Providing service, surgical procedures and training were the dominant volunteering activities (62.5%), with health promotion only reported in 3% of studies. Studies reported multidimensional positive impact from volunteering, both professionally and personally. Time and family commitments were the main barriers.

Conclusion: There is abundant evidence of multifaceted positive effects of volunteering on both health professionals and recipients, however the evidence of physiotherapists' skilled volunteering in health promotion is lacking. Further studies of volunteering programs to facilitate physical activity could allow development of new, sustainable approaches for public health promotion.



#### A systematic review of functional outcomes following inpatient versus outpatient hip or knee arthroplasty

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Poster Presentations Friday Lunchtime, Exhibition Hall, October 6, 2023, 12:20 PM - 1:02 PM

Aim: To date, most studies have focused on the comparison between inpatient and outpatient settings assessing the safety and success of the surgery as defined by costs or complications and readmissions. Therefore, this review aims to explore the available evidence for the effect on functional outcomes following inpatient versus outpatient hip or knee arthroplasty.

Design: Systematic review

Methods: A search of three databases was conducted to identify eligible studies. Studies investigating inpatient and outpatient comparator groups, for a population of patients undergoing hip or knee arthroplasty, that assessed one or more functional outcomes, were included. A narrative synthesis of results is described along with quantitative data presented in tables and figures.

Results: Seven studies of overall good methodological quality containing 1,876 participants were included in this review. Functional outcomes varied, with 20 different functional outcomes utilised, of which 18 were patient-reported tools. Results of functional outcomes offered mixed support for inpatient and outpatient pathways.

Conclusion: Outpatient or inpatient pathway selection for hip or knee arthroplasty should not be based on the superiority of functional outcomes alone. However, given there is growing evidence in support of an outpatient pathway with respect to cost-savings and safety, it could be proposed that an equivalency of post-operative function between the two settings makes same-day discharge favourable.

- Superiority of functional outcomes following inpatient versus outpatient arthroplasty cannot be determined based on the current available literature.
- More studies should include outcomes of physical performance function, rather than utilising patient-reported outcomes alone.



### Exploring the experiences of physiotherapists integrating a new objective measurement into routine clinical care

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Poster Presentations Saturday Lunchtime, Exhibition Hall, October 7, 2023, 12:50 PM - 1:32 PM

Aim: To explore the barriers and enablers to implementing the Balance Intensity Scale into routine care.

Design: Mixed-methods study utilising the Theoretical Domains Framework and the Capability, Opportunity, Motivation, Behaviour model.

Methods: Sub-acute physiotherapists in a metropolitan hospital participated in tailored implementation of the Balance Intensity Scale. Implementation was supported by an education program, change champions, and environmental reminders over a 6-week period. Participants completed a pre- and post-implementation survey and a post-implementation focus group.

Results: Pre- and post-surveys were completed by 24 and 12 participants respectively. One focus group (n=7) was conducted. Prior to implementation 33% (n=8/24) of participants reported they measured balance exercise intensity in everyday practice. Framework analysis identified themes in Capability (n=4), Opportunity (n=4) and Motivation (n=5) domains that influenced behaviour when implementing new evidence. The implementation process enhanced participants' Knowledge (p = 0.04), Skills (p = 0.003) and Belief in capabilities (p = 0.03) to increase facilitation of prescribing and measuring balance exercises.

Conclusion: In-depth theoretical evaluation identified perceived barriers and enablers to implementation of a new outcome measure. This study highlights strategies to support future implementation efforts including emphasis on supporting the team and facilitating social support, ensuring new evidence is theoretically sound, and respecting the amount of time required for implementation.

- When integrating new evidence into routine care the support of departmental managers strengthens implementation efforts.
- Approaching evidence implementation as a team helps clinicians to sustain the effort required to translate new evidence into practice



#### Application of advanced haptic and visual feedback technology in physiotherapy teaching settings: a preliminary exploration of educators and clinicians' perceptions

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Poster Presentations Saturday Lunchtime, Exhibition Hall, October 7, 2023, 12:50 PM - 1:32 PM

Aim: To explore the perceptions of physiotherapy educators and clinicians on the feasibility and acceptability of an advanced haptic and visual feedback device as a teaching and learning tool within educational and clinical settings.

Design: Qualitative study with interviews/ focus groups.

Methods: Participants were physiotherapy educators and expert clinicians. Participants were trained to use the SpinalLog 2 then use this device for up to two hours. They participated in interviews and focus groups to explore their perceptions on students using this haptic and visual feedback device to learn about force generation and its role in refining manual handling skills in application to the lumbar spine.

Results: Analysis revealed five themes involving feasibility and acceptability of the SpinalLog 2 as a teaching and learning tool: 1) Haptic feedback; 2) Visual elements; 3) Clinical reasoning implications; 4) Teaching implications; and 5) Technical considerations.

Conclusion: These findings help identify that an advanced haptic and visual feedback device may be valuable during the teaching of spinal mobilisation techniques within physiotherapy curricula. Participants also gave valuable feedback to improve application in educational and clinical settings.

- The real-time force pattern visualisation and haptic feedback of the device may enable educators to better explain force-production during spinal mobilisation through demonstrations, potentially improving interaction and engagement between educators and students discussing clinical reasoning.
- Enhanced visual and haptic feedback may enhance students' ability to monitor their skill development and allow more independent practice with less frequent advice from instructors, increasing flexibility of learning opportunity.



### Predicting curve progression in teenagers with idiopathic scoliosis: an evaluation of machine learning models from a systematic review

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Poster Presentations Saturday Lunchtime, Exhibition Hall, October 7, 2023, 12:50 PM - 1:32 PM

Aim: This study aimed to systematically review literature regarding the development and validation of machine learning (ML) models using data from the first clinical visit to predict ensuing curve progression in adolescent idiopathic scoliosis(AIS).

Design: Systematically review

Method: Six databases were searched from inception to 31 December 2022. The Checklist for Critical Appraisal and Data Extraction for Systematic Reviews of Prediction Modelling Studies was followed. The methodological quality of the included studies was assessed by IJMEDI checklist.

Results: Of 2,111 identified publications, 57 articles were identified for full-text screening. Seventeen studies involved 3,701 patients with AIS and 38 ML models were included. Twenty-two ML models predicted the risk of curve progression, 4 ML algorithms predicted progression thresholds (curve severity), 11 ML models predicted the Cobb angle in the final clinical visit and 1 ML model predicted the curve shape and pattern variations. The IJMEDI checklist revealed that a high percentage of the included studies had critical shortcomings in data understanding, data preparation, validation, and deployment. The identified 31 ML models showed moderate to high accuracy, with the area under the receiver operating characteristic curve ranging from 0.70-0.93 in most of the prediction categories.

Conclusion: While most of the ML models have shown to have good accuracy, future studies should address these limitations and validate existing ML models in one or more clinics.

**Key Practice Points:** 

• Assess the accuracy of existing curve progression predictive ML models in teenagers with AIS



#### Exploring the beliefs, perceptions, and experiences of individuals living with tendinopathy: a systematic review of qualitative studies and metaethnography

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Poster Presentations Saturday Lunchtime, Exhibition Hall, October 7, 2023, 12:50 PM - 1:32 PM

Aim: To synthesise qualitative studies exploring beliefs, perceptions, and experiences of patients with tendinopathy.

Design: A systematic review with meta-ethnography.

Method: Four databases were systematically searched to identify studies that; included any clinically diagnosed tendinopathy; investigated beliefs, perceptions, and/or experiences of living with tendinopathy; and utilised qualitative methods. Risk of bias was assessed using the Joanna Briggs Checklist for Qualitative Studies. Data synthesis was completed using the seven phases of meta-ethnography and reported according to the eMERGe guidelines.

Results: 19 studies were included (n=10: rotator cuff, n=5: Achilles, n=2: gluteal, n=1: lateral elbow, and n=1: mixed tendinopathies). Methodological quality of included studies was variable. Qualitative synthesis identified three main universal themes (with brief description): 1) What's going on with my tendon? (Participants wanted clarity regarding the cause of their symptoms); 2) Fixing my tendon (Participants had varied beliefs regarding optimal management strategies and how to reduce their pain); and 3) The impact on my lifestyle (Participants felt frustrated with the negative impact that their clinical condition had on their life).

Conclusion: Patients have limited understanding of the aetiology of tendinopathy and express varied beliefs regarding the optimal management. Tendinopathy impacts psychological (e.g., depression) and psychosocial (e.g., limited participation) constructs and may require a biopsychosocial approach, consistent with other persistent pain conditions.

- Patients with tendinopathy would benefit from evidence-based information regarding the aetiology and management of their clinical condition.
- Clinicians should consider psychological and psychosocial impacts of persistent tendinopathy and use a biopsychosocial approach to management.



#### Diagnostic labels for hip pain impact beliefs about hip pain management: an online randomised controlled trial

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Poster Presentations Saturday Lunchtime, Exhibition Hall, October 7, 2023, 12:50 PM - 1:32 PM

Aim: Compare the effects of diagnostic labels and their explanations on beliefs about hip pain management.

Method: Online randomised controlled trial, intention-to-treat analysis.

Results: 626 people 45  $\geq$  years with or without hip pain considered a hypothetical scenario (seeking care for a hip problem) and were randomised to a diagnostic label and explanation: 1) hip osteoarthritis, 2) persistent hip pain, or 3) hip degeneration. Primary outcomes were beliefs about exercise causing joint damage and surgery being necessary. Numerical rating scales, 0=definitely would not/unnecessary to 10=definitely would/necessary were used. Secondary outcomes included treatment and care provider beliefs. Compared to hip degeneration, participants allocated hip osteoarthritis (mean between-group difference -1.3 [95% CI -1.9 to -0.7]) and persistent hip pain (-1.8, -2.3 to -1.2]) believed exercise would be less damaging and surgery less necessary (hip osteoarthritis -1.5 [-2.1 to -1.0]; persistent hip pain -2.2 [-2.7, to -1.6]). Participants allocated persistent hip pain believed surgery was less necessary than hip osteoarthritis (-0.7 [-1.2, -0.1]). Hip osteoarthritis and persistent hip pain resulted in favourable beliefs for exercise benefits, physiotherapy helpfulness, and concern.

Conclusion: People allocated to hip osteoarthritis and persistent hip pain believed exercise less damaging and surgery less necessary than those allocated hip degeneration.

- Avoid biomedical descriptions of hip pain 'wear-and-tear' and 'degeneration'
- Consider a contemporary OA diagnosis or persistent hip pain label with a biopsychosocial explanation
- An osteoarthritis or persistent hip pain label and explanation may reduce the perceived need for surgery and enhance the perceived helpfulness of exercise and physiotherapy



#### Shearwave velocity identifies altered tendon but not muscle stiffness in mild hypercholesterolaemia

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Poster Presentations Saturday Lunchtime, Exhibition Hall, October 7, 2023, 12:50 PM - 1:32 PM

Aim: To determine the impact of hypercholesterolaemia on stiffness of the calf muscle-tendon unit as measured by shearwave velocity (SWV).

Design: A case control study comparing adults between 50-80 years with and without hypercholesterolaemia, matched for age, mass and physical activity.

Method: 12 adults (5 male, mean age 63.1± 8.0) without lower limb injury or statin use were divided into elevated (LDL >3.33mmol/L) or control (LDL<2.56mmol/L) groups using a fasting finger prick test. In a prone position, SWV of the left Achilles tendon and gastrocnemius medialis muscle were measured in a relaxed state under 4 loads (0-1.5kg). Electrogoniometry and electromyography were used to monitor ankle angle and muscle activity respectively. A repeated measures ANOVA was performed to determine the effect of group, load and region on SWV, with additional ANOVAs for each region.

Results: Significant effects of group (p=0.015), load (p<0.001) and region (p<0.001) as well as significant loadby-region (p<0.001) and near significant group-by-region (p=0.052) interactions were identified. SWV was higher for tendon than muscle and increased with load for both regions. Compared to controls, the elevated cholesterol group showed higher SWV for tendon (p=0.024) but there were no differences in muscle SWV (p=0.946).

Conclusion: Hypercholesterolaemia had an effect on tendon, but not muscle mechanical properties in physically active participants.

- Older adults with mildly elevated LDL displayed altered Achilles tendon stiffness as measured by shearwave elastography
- Hypercholesterolaemia may lead to changes in tendon mechanical properties
- Muscle mechanical properties may be unaffected by mild hypercholesterolaemia



### Determining the effectiveness and feasibility of a virtual hospital model of care for low back pain

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Poster Presentations Saturday Lunchtime, Exhibition Hall, October 7, 2023, 12:50 PM - 1:32 PM

Introduction: Low back pain was the 5th most common reason for an emergency department (ED) visit in 2020–21 in Australia, with >145,000 presentations; 30% of these patients were subsequently admitted to hospital. Admitted patient care accounts for half of the total healthcare expenditure on low back pain in Australia.

Aim: The primary aim of the Back@Home study is to assess the effectiveness and feasibility of implementing a virtual hospital model of care to reduce length of admission in people presenting to ED with musculoskeletal LBP. Secondary aims are to reduce rates of traditional hospital admission from the ED, as well as re-presentations and readmissions to the traditional hospital. We also aim to demonstrate non-inferiority of patient-reported outcomes, such as satisfaction with care.

Methods: We plan to conduct an interrupted time series study at three metropolitan hospitals in Sydney, New South Wales, Australia. Eligible patients will include those aged 16 years and over with a primary diagnosis of musculoskeletal low back pain presenting to emergency departments. Implementation of 'Back@Home' will be evaluated over 12-months, and compared to a 48-month pre-implementation period, using monthly time-series trends in average length of hospital stay as the primary outcome.

Results: Preliminary results will be analysed 6 months post implementation and presented at the conference.

Conclusion: A robust study design will be used to evaluate a novel model of care implementation for low back pain, combining an interrupted time series, patient reported outcomes, as well as process and cost effectiveness evaluations.



#### Can language enhance physiotherapists' willingness to follow Choosing Wisely recommendations? A best-worst scaling study

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Poster Presentations Saturday Lunchtime, Exhibition Hall, October 7, 2023, 12:50 PM - 1:32 PM

Background: Choosing Wisely recommendations could reduce physiotherapists' use of low-value care. Objective: To investigate whether language influences physiotherapists' willingness to follow the Australian Physiotherapy Association's (APA) Choosing Wisely recommendations.

Design: Best-worst Scaling survey

Methods: The six original APA Choosing Wisely recommendations were modified based on four language characteristics (level of detail, strength- qualified/unqualified, framing, and alternatives to low-value care) to create 60 recommendations. Physiotherapists were randomised to a block of seven choice tasks, which included four recommendations. Participants indicated which recommendation they were most and least willing to follow. A multinomial logistic regression model was used to create normalised (0=least preferred; 10=most preferred) and marginal preference scores.

Results: 215 physiotherapists (48.5% of 443 who started the survey) completed the survey. Participants' mean age (SD) was 38.7 (10.6) and 47.9% were female. Physiotherapists were more willing to follow recommendations with more detail (marginal preference score of 1.1) or provided alternatives to low-value care (1.3) and less willing to follow recommendations with negative framing (-1.3). The use of qualified ('don't routinely') language (vs. unqualified - 'don't') did not affect willingness. Physiotherapists were more willing to follow recommendations to avoid imaging for non-specific low back pain (3.9) and electrotherapy for low back pain (3.8) vs. recommendations to avoid incentive spirometry after upper abdominal and cardiac surgery.

Conclusion: Physiotherapists were more willing to follow recommendations that provided more detail, alternatives to low-value care, and were positively framed. These findings can inform the development of future Choosing Wisely recommendations and could help reduce low-value physiotherapy.



# Quantitative ultrasound texture analysis to study musculoskeletal soft tissue structures: a systematic review to identify opportunities

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Poster Presentations Saturday Lunchtime, Exhibition Hall, October 7, 2023, 12:50 PM - 1:32 PM

Aim: Quantitative texture analysis is a method that has recently been used to analyse ultrasound images. It can provide information such as composition and morphology of structures. No study has systematically reviewed how this method has been used in musculoskeletal research. This study aimed to determine how quantitative ultrasound texture analysis has been applied to study musculoskeletal soft tissue structures.

Design: A systematic review.

Method: Terms related to ultrasound imaging, musculoskeletal soft tissue, and texture analysis were used to search for papers in several databases. Studies using higher-order texture analysis (i.e., relationship between pixel intensities and spatial distribution) were included.

Results: The search yielded 90 studies. Texture analysis has been used to study muscles, tendons, and fasciae for the following purposes: 1) to compare features between two groups of individuals or two types of tissue (e.g., healthy vs. pathological tissue); 2) to classify individuals or tissue into categories; and 3) to detect and segment a structure (i.e., identify its boundaries based on differences in texture) to provide automated morphologic information such as cross-sectional area, thickness, or pennation angle.

Conclusion: Quantitative ultrasound texture analysis has been used to examine various musculoskeletal structures and for different purposes. The next step of this work is to investigate whether this method can provide meaningful information to guide clinical practice.

- Quantitative ultrasound texture analysis could offer opportunities to aid in diagnosing and monitoring populations in physiotherapy.
- This work can be used as a basis for future studies aiming to employ this method.



### The experiences of individuals living with a musculoskeletal disorder in receiving a prognosis from a physiotherapist: a qualitative study

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Poster Presentations Saturday Lunchtime, Exhibition Hall, October 7, 2023, 12:50 PM - 1:32 PM

Aim: To explore the experiences of individuals with musculoskeletal disorders towards prognosis; how physiotherapists impact prognosis; the impact receiving a prognosis has; and individuals' preferences regarding receiving a prognosis.

Design: Exploratory phenomenological study.

Method: Fifteen participants with musculoskeletal disorders were recruited from private physiotherapy practices. Data was collected via semi-structured interviews and analysed using inductive coding and thematic analysis.

Results: Five themes were identified. First, participants experience of prognosis was influenced by seeking a cause for their pain. Second, participants wish to receive a prognosis from physiotherapists. However, this is often not their experience. Third, physiotherapists impact prognosis through exercise prescription, management of conditions, and improving function. Fourth, positive impacts of receiving a prognosis include planning for the future, motivation, knowledge acquisition, and instilling hope. However, if patient expectations aren't met this can be disheartening. Finally, participants have several preferences regarding receiving a prognosis including when and how prognosis is discussed, what information is provided, how information is presented, and what prognosis is based on.

Conclusion: Whilst individuals wish to receive a prognosis, this may not always be their experience. Individuals perceive that physiotherapists are able to provide a prognosis and also impact upon prognosis. Furthermore, individuals perceive that receiving a prognosis can impact their recovery. Therefore, physiotherapists should explicitly discuss prognosis and consider patient preferences to ensure patientcentred care.

- Receiving a prognosis impacts patient recovery
- Patients have different preferences when receiving a prognosis
- Physiotherapists have the ability to provide a prognosis but also impact prognosis



### Experiences of people with chronic musculoskeletal pain participating in a mindfulness-based stress reduction program

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Poster Presentations Saturday Lunchtime, Exhibition Hall, October 7, 2023, 12:50 PM - 1:32 PM

Aim: While there is evidence supporting the use of Mindfulness-Based Stress Reduction (MBSR) for chronic pain, the experiences of people with chronic musculoskeletal pain engaging with MBSR are largely unknown. This study aimed to explore motivators for, and experiences with, participating in an 8-week MBSR program.

Design: Qualitative study using semi-structured interviews and photo-elicitation.

Method: Individuals with chronic musculoskeletal pain were recruited from the Openground MBSR program in Australia. Photo-elicitation was used to obtain rich data about participants' experiences during the 8-week MBSR program. Semi-structured interviews were conducted after the program. Interviews were audiorecorded and transcribed verbatim. Qualitative data were analysed using thematic analysis.

Results: Ten individuals were interviewed. Three themes were identified: 1) "Mindfulness enhances the connection to self and others": All participants discussed the impact mindfulness had on their sense of presence and connection with themselves and others; 2) "Mindfulness does not always reduce pain, but it changes how pain is perceived": Most participants discussed that mindfulness enhanced their ability to accept or re-signify pain; 3) "Motivators went beyond participants' expectations of improved pain and mental health": Motivators to join the MBSR course also included recommendations from clinicians and peers, evidence supporting the mindfulness practice, significant life event, and failure of other pain management approaches.

Conclusions: While not all participants experienced an improvement in pain intensity, most reported improvements in their quality of life in several other respects.

Key Practice Points:

• Mindfulness can be a valuable tool for improving overall well-being beyond just pain and mental health management.



### Early impressions of trust predict patient health outcomes and satisfaction with care for people with musculoskeletal conditions

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Poster Presentations Saturday Lunchtime, Exhibition Hall, October 7, 2023, 12:50 PM - 1:32 PM

Aim: (i) Determine the relationship between early impressions of trust and patient health outcomes and satisfaction with care at 3 months. (ii) Explore factors associated with primary health care professional (PHCP) trustworthiness such as profession and expertise.

Design: Prospective observational study nested within a randomised controlled trial.

Methods: Participants with low back pain (LBP), neck pain (NP) or knee osteoarthritis (KOA) within 4 weeks of seeking care completed baseline questionnaires of known predictors of poor outcome (eg risk stratification) as well as perceptions of trustworthiness in their PHCP. Outcomes assessed at three months included: condition-specific patient self-reported disability (ODI, NDI and WOMAC)); therapeutic alliance (WAI (S)) and satisfaction with care. Multiple regression models were used to determine if trust provided an additional benefit to predicting health outcomes. Kruskal-Wallis H test was used to compare mean-ranked trust scores between professional groups.

Results: 766 people with MSK conditions (LBP n=331, NP n =171, KOA n=264) participated. Early trust predicted all three outcomes e.g self-reported disability at 3 months (Adjusted R2=0.01, p=0.003). Perceptions of HCP trustworthiness were significantly higher for allied health professionals (AHPs) compared with medical professionals (MPs) ( $\chi$ 2(2) = 8.609 p = 0.003).

Conclusion: Early perceptions of HCP trustworthiness predict disability and satisfaction with care at 3 months. AHPs demonstrate higher trust scores than MPs.

- Clinicians should focus on developing trust with patients to improve health outcomes.
- Researchers could use simple measures of trust instead of traditional longer questionnaires to measure this construct.



### Step Up: Implementation and participation of dance groups in rehabilitation following acquired brain injury

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Poster Presentations Saturday Lunchtime, Exhibition Hall, October 7, 2023, 12:50 PM - 1:32 PM

Aim: To assess feasibility and acceptability of providing dance groups to people with recent acquired brain injuries (ABI) in a rehabilitation outpatient setting.

Design: Single blind randomised controlled trial.

Method: Participants recovering from ABI were randomised into a 'physiotherapy' or 'dance' group. Over 10 weeks, 45-minute exercise groups were provided three times a week. Physiotherapy groups were facilitated by a physiotherapist and allied health assistant (AHA). Dance groups were facilitated by professional dancers in collaboration with a physiotherapist and AHA. Attendance was measured by the number of sessions attended, out of total sessions offered. This was compared to attendance in usual care exercise groups in general subacute outpatient rehabilitation.

Results: 309 participants were screened for eligibility and 203 were deemed eligible. 154 participants declined intervention, with main reasons including: declining further therapy (32.5%) and too far to travel due to geographical location (31%). 49 participants were included in the program. Attendance was 74% and 81% across the dance (n=21) and physiotherapy groups (n=21) respectively. Attendance was comparable to usual care exercise groups' (77%).

Conclusion: A 10-week dance program delivered in a subacute outpatient rehabilitation setting was acceptable and feasible. Attendance was comparable to the physiotherapy group and usual care exercise groups. There is potential to incorporate dance as alternative therapy options for individuals recovering from ABI.

- Attendance in dance groups in rehabilitation post ABI was comparable to physiotherapy groups.
- Creative arts are an alternative way to engage individuals with ABI in physical exercise during rehabilitation.



#### Feasibility of a novel hand telehealth training program for people with Parkinson's disease: pilot randomised controlled study protocol

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Poster Presentations Saturday Lunchtime, Exhibition Hall, October 7, 2023, 12:50 PM - 1:32 PM

Aim: This study will investigate the feasibility of a task-related home-based hand training program for people with Parkinson's disease.

Design: Randomised controlled pilot study.

Method: We will recruit 20 people with mild to moderate Parkinson's disease who report problems with hand activities, excluding individuals with major cognitive deficits or comorbidities affecting their upper limbs. Participants will be randomly allocated to a hand training or usual care group. The training group will receive an individualised training program to complete for 30 minutes, three times a week over 4 weeks. The training will also direct independent practice to transfer learning to other manual activities. Training will initially be delivered face-to-face by a research physiotherapist, and then supervised weekly via telehealth for the four weeks. Following intervention, the program will be updated via telehealth at 8 and 12 weeks. The usual care group will not receive an intervention. Both groups will be assessed by an independent assessor at baseline, post-intervention, 12 weeks and 24 weeks.

Results: Primary outcomes evaluate feasibility, including adherence, acceptability, and use of technology. Secondary outcomes include dexterity (Purdue Pegboard) and self-reported manual ability (Canadian Occupational Performance Measure and other questionnaires).

Conclusion: This study is ongoing and will inform future research and clinical practice.

- The study will provide information about the feasibility of delivering task-related hand training to people with Parkinson's disease using telehealth.
- Results will help evaluate effectiveness and shape future treatments for this debilitating problem.



### Can we do it? Feasibility of implementing standardised outcome measures in a tertiary hospital neurological physiotherapy service

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Poster Presentations Saturday Lunchtime, Exhibition Hall, October 7, 2023, 12:50 PM - 1:32 PM

Aim: To determine the feasibility of implementing functional outcome measures across acute, subacute and community neurological physiotherapy care in a single tertiary hospital.

Design: Documentation audit and evaluation survey.

Method: The set outcome measures selected and embedded into clinical practice across the continuum of care following a 2021 modified Delphi process and literature review, were Mobility Scale for Acute Stroke, Functional Gait Assessment, and 10-metre walk test. Five months post-implementation, a single day snapshot documentation audit was completed. Treating neurological physiotherapists were sent a survey (n=22) to evaluate implementation.

Results: Ninety-five files were audited (60 acute, 18 subacute, 17 community). For ambulant patients, the 10-metre walk test was most frequently completed in community (65%) and subacute (39%) settings. For non-ambulant patients, the Mobility Scale for Acute Stroke was mainly reported in acute (73%) and subacute (39%) settings. Across all settings, the Functional Gait Assessment was only completed in <35% of cases.

Physiotherapists (n=13) utilised measures when confident in their utility (70%) and perceived patient benefit (77%). Facilitators included adequate orientation to the measures (77%) and ease of completion (54%). Barriers were time, environment and undetermined validity of the measures in specific neurological conditions.

Conclusion: It was not feasible to implement a set of outcome measures across the continuum of care. Further investigation to identify applicability of outcome measures to different settings and patient cohorts is warranted.

Key Practice Points:

• Use of a set of neurological outcome measures along the continuum of physiotherapy care is influenced by multiple factors



### Feasibility of a physiotherapist supervised walking program with telephone coaching to increase physical activity following acquired brain injury

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Poster Presentations Saturday Lunchtime, Exhibition Hall, October 7, 2023, 12:50 PM - 1:32 PM

Aim: To investigate the feasibility, safety, cost, and effectiveness of a four-week physiotherapist supervised walking and behaviour change program for people with acquired brain injury.

Design: Pre-post experimental study.

Method: 14 brain injury rehabilitation unit inpatients undertook twice-weekly 30min walks plus behavioural therapy for four weeks. Feasibility was measured via recruitment and drop-out rate. Measures of physical activity, sedentary time, quality of life, fatigue and exercise self-efficacy were assessed at baseline, post-intervention and long-term follow up. Participant and clinician satisfaction and acceptability, along with cost and safety data were also collected.

Results: Recruitment rate was 55% and drop out was 44%. Compared to baseline, at post-intervention, there was a significant improvement in the vitality sub-scale of the SF-36 (mean difference 14.4 (95% CI 5.0 to 23.7); p = 0.008). At long-term follow up, there were significant (p < 0.05) increases in step count, standing and stepping time, and significant reductions in total sitting time. Participants and staff reported good acceptability and satisfaction with the intervention, which was feasible, safe and of acceptable cost to deliver.

Conclusion: A physiotherapist supervised walking program with concurrent behavioural therapy appears to be feasible, safe, and acceptable to implement in people with acquired brain injury. Whilst physical activity was higher at long term follow-up, more work is required to boost physical activity during sub-acute rehabilitation.

- Physiotherapists can integrate physical activity into brain injury rehabilitation to potentially affect long-term physical activity
- Participants report good satisfaction with physiotherapist supervised walking program



### The Buffalo Concussion Test in people with mild-to-moderate traumatic brain injury: an exploratory clinical audit

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Poster Presentations Saturday Lunchtime, Exhibition Hall, October 7, 2023, 12:50 PM - 1:32 PM

Aim: To assess the performance on the Buffalo Concussion Test (BCT) in adults following a mild-to-moderate traumatic brain injury (TBI).

Design: Retrospective clinical evaluation of 49 patients with mild-to-moderate TBI, who conducted the BCT at an outpatient rehabilitation service between 2018-2020.

Method: Data collected included demographic information and performance outcomes. Test performance was descriptively analysed, demographic data was compared to performance measures, and relationships between screening measures and performance outcomes were explored.

Results: 49 patients (mean age:  $33.7\pm13.0$  years) completed the BCT. 14 patients stopped the test due to symptom exacerbation (mean test duration:  $8.1\pm4.5$  minutes), reaching an aged-predicted maximum heart rate of  $72.9\pm12.4\%$  and perceived exertion of  $13.4\pm2.2$ . Those who terminated the test for other reasons had a significantly longer test duration ( $14.0\pm4.7$  minutes, p=0.01) with a higher aged-predicted maximum heart rate ( $83.3\pm12.8\%$  p=0.01) and perceived exertion ( $17.0\pm2.5$ , p=0.01). A significant but weak correlation between HR and perceived exertion existed for those who terminated the test for other reasons (p=0.02). Higher depression and anxiety scores were weakly correlated to a higher frequency of symptoms reported at both rest and termination of the test (p<0.05).

Conclusion: The BCT can be used in the mild-to-moderate TBI population to differentiate between those who experience symptom exacerbation during exercise and those who do not based on symptom exacerbation, test duration, and poor perception of exertion.

- The BCT can be used in the mild-to-moderate TBI population to assess for symptoms during exercise
- Mental health may influence test performance.



### The incidence and risk factors for the development of fractures in military recruits and qualified personnel: a rapid review

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Poster Presentations Saturday Lunchtime, Exhibition Hall, October 7, 2023, 12:50 PM - 1:32 PM

Aim: To identify and synthesise findings from studies reporting on the incidence of, and risk factors for, traumatic fractures in military personnel.

Design: Rapid review

Methods: Following the PRISMA guidelines, PubMed, EBSCO, CINAHL and ProQuest databases were systematically searched using key terms derived from the following concepts: 'fractures', 'work' and 'risk'. Key findings from the included studies were extracted and tabulated, including risk factors, incidence and risk ratios.

Results: Twenty-eight studies were included, with four studies reporting on recruit/trainees and 24 reporting on qualified military personnel. Recruit incidence ranged from 7.7 - 29.5 cases per 1,000 person-years, while incidence in qualified personnel ranged from 1.9 - 57.6 cases per 1,000 person-years. Enlisted personnel, younger service members (18 - 29 years), and personnel of Army and Marines Corp branches were at increased risk. Fractures predominantly occurred in the lower extremities, although the hands were often a site of traumatic fracture. Risk factors and mechanisms identified for traumatic fractures included NSAID use, sports, physical training, motor vehicle accidents, collisions, blasts from improvised explosive devices, and gunshots, often in combat settings.

Conclusion: The findings highlight the incidence of fractures in recruits and qualified military personnel, and identify a range of risk factors in military environments.

- Army and Marine Corp personnel were at higher risk of fractures, with the lower limbs most affected.
- Sports and physical training are a leading cause of fracture.
- Military populations with history of non-steroidal anti-inflammatory drug use were at increased risk of fractures.



### Sex-specific differences in the impact of heavier body armour worn by law enforcement officers completing occupational tasks: a pilot study

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Poster Presentations Saturday Lunchtime, Exhibition Hall, October 7, 2023, 12:50 PM - 1:32 PM

Aim: to assess sex-specific impacts of heavier body armour in law enforcement officers completing occupational tasks.

Design: A randomized counter-balanced study.

Method: Ten qualified police officers of which six were female (mean height =  $167.97 \pm 3.67$  cm, mean mass =  $65.30 \pm 10.57$  kg) and four were male (mean height =  $82.15 \pm 6.98$  cm, mean weight =  $85.55 \pm 9.96$  kg) completed a functional movement screen for mobility and three occupational tasks wearing a law enforcement (2.1 kg) or military (6.4 kg) body armour system. Following paired samples t-tests, effect sizes (d) were calculated for the between-body armour type comparisons. Bond University Human Research Ethics Committee provided ethics approval (RO15803).

Results: When military body armour was worn, female officers experienced a greater impact on their car exit and victim drag (d = 0.37, 0.02 respectively) when compared to males (d = 0.12, -0.41 respectively). Alternatively, male officers experienced a greater impact on their mobility and agility (d = -1.29, 0.57respectively) when compared to females (d = -0.98, 0.31 respectively).

Conclusion: Wearing heavier body armour had a greater effect on female officers in the car exit and victim drag measures and on male officers in the functional movement screen and agility measures. The impacts of wearing heavier body armour should not be considered the same between the sexes.

**Key Practice Points:** 

• Heavy body armour systems may impede the sexes differently warranting consideration when rehabilitating and reconditioning police officers to return-to-work following injury.



#### Gender differences in injuries sustained during United States Marine Corps training

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Poster Presentations Saturday Lunchtime, Exhibition Hall, October 7, 2023, 12:50 PM - 1:32 PM

Aim: To investigate gender-specific differences in injuries in United States Marine Corps (USMC) trainees.

Design: Retrospective cohort study.

Method: Point-of-care injury data for USMC recruits (females=94; males=681) completing training were drawn from the Marine Corps Recruit Depot San Diego sports medicine injury database and analysed descriptively. The male: female incidence rate ratio (IRR) was calculated.

Results: Male trainees suffered more injuries (male=268; 39%; female n=22; 23%; IRR=1.68 (95% CI 1.33 to 2.1)). Sprains and strains were the leading nature of injury (female=41%; male=25%) followed by pain (female=23%; male=22%). The leading type of injury was 'new overuse injuries' for both genders (54% each). Female trainees experienced more acute injuries (36% versus 26%). While female (55%) and male (58%) rates of 'moderate' injuries were similar, female trainees experienced more 'mild' injuries (36% versus 25%). The knee (female=27%: male=23%) and lower leg (female=23%: male=21%) were the leading injury sites. All injuries were to the lower limbs in female trainees; male trainees also reported injuries to the upper limb (12%) and trunk (8%).

Conclusion: Female trainees experienced fewer injuries than male trainees, with more being mild. Both genders had similar natures of injuries in similar body sites except that male trainees reported some upper body and trunk injuries.

- Sprains and strains to the lower limbs of mild to moderate severity are highly prevalent in USMC trainees; profiles well in the scope for physiotherapy treatments and interventions.
- New overuse injuries are problematic to both genders and mitigation strategies are needed.



#### Profiling the physical demands of mounted police during a major event

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Poster Presentations Saturday Lunchtime, Exhibition Hall, October 7, 2023, 12:50 PM - 1:32 PM

Aim: To profile the physical demands of a mounted police unit during a 10-hour shift.

Design: Prospective cohort study.

Method: Data were collected from 8 mounted police officers (males=2) during 10-hour shift at Mardi Gras (reportedly one of the most physically demanding shifts), in full patrol gear, weighing on average, 6.5kg. At the beginning of their shift, officers were fitted with Polar Team Pro units to monitor heart rate (HR) and HR variability (HRV) as well as components of distance traversed and speed. Ethics approval was provided by the Bond University Human Research Ethics Committee #BS02126.

Results: The officers' travelled on average 17.6±2.4km on horseback, with average speeds of 1.8±0.3km/h and mean maximum speed of 20.1±11.6km/h. There were on average 4.8±8.0 moments of accelerations of more than 2.8m/s2 and 3.8±6.8 decelerations of more than -3.0m/s2. Throughout the shift, the mean HR was 96.3±11.7bpm and HRmax 161.9±11.7bpm. Officers spent on average 26.9±39.3min at HR70-80%, 9.2+9.0min at HR80-90%, and 2.5±2.7min at HR90-100%. The average HRV (RMSSD) was 20.0±5.9ms, with a range of 9-30ms.

Conclusion: The profile of this 10-hour shift highlighted the unique physical demands of mounted police. Time, distance, and speed on horseback are noteworthy, as well as number of accelerations and decelerations.

- Mounted police have different physical requirements to general duties police.
- Return-to-work programs for mounted police should consider the high physical demand to ensure optimal fitness for duty.



## A comparison of musculoskeletal injuries in traffic and highway patrol officers and other officers

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Poster Presentations Saturday Lunchtime, Exhibition Hall, October 7, 2023, 12:50 PM - 1:32 PM

Aim: To investigate and compare injuries between Traffic and Highway Patrol Officers and Other Officers in a State Police Force.

Design: Retrospective cohort study.

Method: Data were provided from an Australian State Police Force incident reporting database in the form of an excel spreadsheet. The data consisted of officially reported in-juries to officers which occurred between 01 July 2017 and 30 June 2022. Data were stratified into Traffic and Highway Patrol (THP) and other officers. Ethics approval was provided by the Bond University Human Research Ethics Committee #BS02126.

Results: THP officers suffered significantly more injuries than other officers (THP=416.69/1000 person-years; other=356.63/1000 person-years; IRR=1.17 (95% CI 1.13 to 1.20)). The most injured bodily location for THP was the trunk (17%) and knee (16%) and for other officers, the hand (18%) and trunk (14%). "Sprains, strains, jarring, twisting" were the most common natures of injuries (THP = 40%: other officers = 32%). For THP, "slips, trips and falls" (14%) were the most common, known, cause of injuries, followed by "physical assault" (12%). This order was reversed in other officers (14% and 21%, respectively).

Conclusion: THP officers experience around 17% more injuries than other officers. While the nature of the injuries were common between both groups, there were some differences in the causes and body sites of injury, albeit minor.

- Strategies to mitigate injuries in THP officers would also benefit other officers.
- The leading natures of injuries are well suited to physiotherapy treatment and dedicated reconditioning.



#### Grade 2 buddy program: peer support for new Grade 2 physiotherapists

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Poster Presentations Saturday Lunchtime, Exhibition Hall, October 7, 2023, 12:50 PM - 1:32 PM

Aim: The buddy program was established to address feedback for the need for a more supported transition from Grade 1 to Grade 2 physiotherapist. This study aimed to explore the perspectives of participating physiotherapists.

Design: Program evaluation survey (February 2020-November 2022)

Method: The buddy program involved pairing of a buddy Grade 2 physiotherapist (>6 months in role) and a commencing Grade 2 physiotherapist. Meeting frequency and content were determined by participants who completed an evaluation survey at one and six months of program commencement.

Results: Sixteen buddy Grade 2 physiotherapists were paired with at least one of 21 new Grade 2 physiotherapists. Surveys received: 100% at one month, 43% at six months. Pairs met most commonly once in the first month (73%), and then once (56%) again in the five months following. Topics discussed included contracts, recruitment, education and research. The program provided a flexible, non-threatening atmosphere to support new Grade 2s to ask questions. Pairings within similar clinical streams were received well. Areas for improvement included more structure including role delineation, and essential topics and increased participant accountability to meet consistently.

Conclusion: The buddy program was able to support new Grade 2 physiotherapists however lacked structure and was dependent on individual accountability.

- The buddy program provided a safe environment for new Grade 2 physiotherapists to seek advice aside from supervision and was perceived beneficial within a similar clinical area
- The success of the buddy program was reliant on pairings to take accountability for participation



## Impact of classroom-based MASK-ED<sup>™</sup> (KRS simulation) on physiotherapy student clinical performance: a randomized cluster trial

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Poster Presentations Saturday Lunchtime, Exhibition Hall, October 7, 2023, 12:50 PM - 1:32 PM

Aim: To evaluate the effectiveness of MASK-ED<sup>™</sup> simulation compared to role-play with peers for training pre-clinical physiotherapy students.

Design: A single-centre, single-blind, cluster randomized trial with concealed allocation, between group postmeasures, and intention-to-treat analysis.

Method: The participants were 144 physiotherapy students undertaking their neurological curricula. The experimental group was exposed to MASK-ED<sup>™</sup> simulation in five out of thirty-two tutorials (16%), the control continued with role-play with peers. The primary outcome measure was Assessment of Physiotherapy Practice scores from the students' rehabilitation work-integrated learning placement. These were compared between groups using Mann–Whitney U tests. Secondary outcome measures include practical and written examination scores, compared between groups via independent t-tests. Participant satisfaction surveys were also administered to the experimental group.

Results: 132 participants' (exp n=62, con n=72) results were analysed. There were no significant differences between the experimental and control groups for Assessment of Physiotherapy Practice scores (p=0.699–0.995) or across the secondary outcome measures. Participants found MASK-ED<sup>™</sup> simulation was somewhat helpful for preparing them for clinical practice, however felt that a group setting was not as effective as a one-on-one encounter would have been.

Conclusions: MASK-ED<sup>™</sup> simulation was no more effective than role-play with peers in preparing physiotherapy students for work-integrated learning.

- The influence of design on effective learning and the number of simulation encounters required to impact clinical performance requires further investigation.
- A trend towards MASK-ED<sup>™</sup> simulation being useful for students with lower GPAs was found, therefore may prove beneficial for remediation for these students.



# Exploring the barriers and enablers to quality clinical placements in physiotherapy at a teaching hospital using an implementation science approach

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Poster Presentations Saturday Lunchtime, Exhibition Hall, October 7, 2023, 12:50 PM - 1:32 PM

Aim: To explore perceptions of physiotherapy clinical education adherence to documented indicators of quality at a clinical placement provider, and to conceptualise the barriers and enablers to indicators of quality by physiotherapy clinical educators in this context using the Consolidated Framework for Implementation Research.

Design: A mixed-methods sequential explanatory study design was undertaken using a metropolitan hospital in Queensland as a case in point.

Method: Stakeholder (clinical educators, department management and university placement coordinators) perceptions of current clinical educator practise, and enablers and barriers to meeting quality indicators were assessed using a standardised survey (n=28), followed by focus groups and semi-structured interviews (n=19). Data was analysed using an inductive thematic analysis approach, and sub-themes were mapped to relevant Consolidated Framework for Implementation Research constructs.

Results: Survey data indicated that lowest performance was perceived in the quality indicator domain of 'effective collaboration' (61%). When explored further three main themes were identified: (i) training in clinical education skills is essential but currently focusses on assessment; (ii) the clinical educator role is perceived as having low value; and (iii) opportunities exist to develop current internal and external supports for clinical educators.

Conclusion: Findings from this study have informed strategies subsequently implemented at the study site, which focus on increasing the perceived value of the clinical educator role, engaging clinical educators in training as educators, and targeted collaboration with university coordinators.

- Clinical education training should include clinical education skills
- Opportunities to develop existing supports for clinical educators should be explored.



# Slacklining: a unique neurophysiological basis of action in complex balance control

#### **<u>Gabel C<sup>1</sup></u>** <sup>1</sup>Access Physiotherapy

Poster Presentations Saturday Lunchtime, Exhibition Hall, October 7, 2023, 12:50 PM - 1:32 PM

Aim: To highlight the paradigm and research evidence supporting the unique neurophysiological actions of slacklining for adjunct muscle activation and balance control, particularly for conditions affected by centrally–driven inhibition; to increase awareness of the concept of direct-v-indirect activation, through voluntary-v-involuntary processes in pre-/re-habilitation.

Design: Narrative review with clinical examples.

Method: Historical to current literature is summarised. Neurophysiological models, rehabilitation recommendations and evidence are collated from literature that demonstrates slacklining has an evolving understanding with knowledge gaps progressively filled over 2000 years. Supported intervention strategies are summarised and categorised with publications over the last 15 years evaluated for their neurophysiological basis and research evidence from anecdotal to Level-1 systematic review support.

Results: The evidence has provided explanatory neurophysiological and muscle-activation mechanisms that are accessible to rehabilitation techniques that facilitate prehabilitation and overcome rehabilitation obstacles, such as functional plateau post-injury. Evidence demonstrates unique neurophysiological capacities which facilitate central neuroplastic change, and reductions in down-regulated inhibition present with arthrogenic and potentially somatogenic muscle inhibition. Leve 1-2 evidence for Parkinson's disease and falls-reduction; and cerebral palsy static postural-control and motor skills. Level 3-5 evidence supports improved neuromuscular control, balance and short-medium ADL transference for children/elderly/athlete-specific skills.

Conclusion: The understanding and acceptance of slacklining as an involuntary-indirect adjunct muscle activation has progressively evolved. Quality research is improving and supported by clinical findings and the progression of Level 4-5 clinical evidence into the academic research and provision of Level-1 and 2 findings.

- Slacklining is not new, however neurophysiological understanding has evolved.
- Clinicians can adapt slacklining interventions in accordance with new evidence and voluntary/involuntary and direct/indirect muscle -activation techniques.
- Slacklining rehabilitation exercises can be incorporated into evolving clinical strategies.



# Slacklining into the future – the European trend and community implications for Australian physiotherapy

#### <u>Tjin F</u><sup>1</sup>

<sup>1</sup>Physiotherapy by Design

Poster Presentations Saturday Lunchtime, Exhibition Hall, October 7, 2023, 12:50 PM - 1:32 PM

Aim: to present clinical-based slacklining exercises that, facilitate the rehabilitation and prehabilitation of injured individuals with musculoskeletal and neurological conditions.

Design: a narrative summary of slackline exercises from the available literature and recognised internationally presented courses and workshops.

Method: internationally presented clinical exercise-directed slackline courses were analysed and exercise recommendations and strategies were extracted and pooled. This provides a clinically applicable range of rehabilitation and prehabilitation exercises suited to daily supervised and home regime implementation.

Results: Exercises determined as suited were: 1. Balance and stability that can be completed as safe low-high risk movement tasks for all ages. This is applicable to groups that include musculoskeletal, sporting, neurological, geriatric, paediatric and orthopaedic. 2. The subsequent individual range and flexibility can be an adjunct with the use of core control and stability principles (e.g. Pilates and gym ball) in low-impact environments for general well-being or within psychological (e.g. depression and anxiety) settings. 3. Sport-specific exercises targeting agility, speed, and muscle coordination, whilst in steady/unsteady states can provide simple effective external perturbations that facilitate the neuroplastic changes required for rehabilitation/recovery and prevention/prehabilitation.

Conclusion: the determined list of exercises provides a range of clinical options that can facilitate and progress rehabilitation and prehabilitation in musculoskeletal patients through demanding and complex balance task performance that fatigue and progress capacity of both the muscular and neural systems

- Balance and stability in safe low-high-risk movement tasks.
- Range and flexibility adjunct facilitation in low-impact environments for general wellbeing/psychological challenge.
- Sport-specific exercises target agility, speed, and muscle coordination with a fatigue comparative setting for both muscular and neural systems.



# Has the reporting of patient reported outcome measures improved in physiotherapy clinical trials in six major physiotherapy journals (2000-2018)

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Poster Presentations Saturday Lunchtime, Exhibition Hall, October 7, 2023, 12:50 PM - 1:32 PM

Aim: The primary aim was to compare the overall use of patient-reported outcome measures (PROMs) in randomised clinical trials (RCTs) published in physiotherapy journals between 2000 and 2018. The secondary aim was to evaluate whether the use of PROMs differed across musculoskeletal, neurological, and cardiopulmonary areas of physiotherapy.

Design: Meta-research.

Methods: Six major physiotherapy peer-reviewed journals were searched for RCTs published in the years 2000 and 2018. Two independent reviewers extracted data on study characteristics and reporting of PROMs. Data were presented using descriptive statistics and inferences were made based on proportions. A 20% difference between 2000 and 2018 was regarded as a meaningful difference.

Results: A total 140 RCTs were included, 39 were published in 2000 and 101 in 2018. Overall, 84% (n = 118/140) of trials reported on one or more PROMs, while 89% (n=125/140) included at least one non-PROM. We found no meaningful differences between 2000 and 2018 in the use of PROMs: 74% (29/39) of studies in 2000 versus 88% (89/101) in 2018. The overall use of PROMs per area of physiotherapy was high (range 73% to 86%), with musculoskeletal having the highest use of PROMs.

Conclusion: The majority of RCTs in six major physiotherapy journals published in 2000 and 2018 used PROMs, with no meaningful differences between years. The musculoskeletal practice area used more PROMs than neurology and cardiopulmonary, although PROM use in all practice areas was high.

**Key Practice Point:** 

• Physiotherapy research should continue to employ PROMs to promote patient-centred care.



#### A targeted eight week support program improves confidence in new physiotherapists when managing complex presentations in a large metropolitan hospital

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Poster Presentations Saturday Lunchtime, Exhibition Hall, October 7, 2023, 12:50 PM - 1:32 PM

New or recently graduated physiotherapists received limited opportunity to manage complex patients through the COVID-19 pandemic.Our aim was to offer a targeted education program to improve confidence of new or recently graduated physiotherapists in managing hospital complexity.

An eight week education and support program was piloted at a large metropolitan hospital with topics including: managing complex clinical presentations, discharge considerations, patient prioritisation and falls prevention. Sessions were held online and were designed to be interactive. We collected baseline and follow up data to measure confidence using the Bondy Rating Scale.

Recently graduated physiotherapists completed a baseline (n=11) and follow up survey (n=10). Baseline responses ranged from 'assisted' through to 'independent' for areas of: managing patient complexity, complex discharges and mobilising acutely unwell patients or patients at high risk of falls. On followup, the need for assistance reduced from 55% to 10% for managing complex discharges and from 45% to 10% for managing patients with a complex medical history. Participant's confidence improved from 27% to 60% in managing falls risk independently. Further to this, 100% of staff reported the education program was: beneficial and engaging. Lastly, 80% of senior staff (n=5) said the program saved them time.

New or recent physiotherapy graduates working in large metropolitan hospitals found an eight week structured education program beneficial for improving their confidence when managing hospital complexity. Our findings suggest that physiotherapy departments should offer tailored support programs for their new or recent graduates to help increase their confidence in delivering safe and effective care.



Physiotherapists, engineering and technology: understanding contributions, learning needs and areas of impact in healthcare innovation, entrepreneurship and technological advancement

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Poster Presentations Saturday Lunchtime, Exhibition Hall, October 7, 2023, 12:50 PM - 1:32 PM

Aim: The objective of this study was to define and understand the contribution, context and learning needs of physiotherapists in innovation connected to engineering and technology in healthcare. Design: scoping review and survey development

Method: MEDLINE and grey literature search and professional educational consultation were conducted (as part of a larger study) mapping the contribution of physiotherapists for an online survey evaluating clinical areas of innovation, technology used, experiences of physiotherapists and their opinions on impacts in healthcare and learning needs for the profession.

Results: Physiotherapists from countries across all continents contribute to technology, innovation and engineering projects in clinical areas from all life stages (paediatrics to geriatrics) and from acute hospitals to home-based rehabilitation and outpatient settings. Telehealth, digital monitoring/applications, wearables and robotics were represented. The United States, particularly, demonstrated mature professional development models related to innovation and technology predominantly linked to rehabilitation. Innovation and technology training and projects had a focus on students rather than post-graduates. Overall, physiotherapists contribute to healthcare change but opportunities to learn more about innovative practices and bioengineering were identified.

Conclusion: Physiotherapists have experience in a wide range of technology and engineering projects. Learning needs for the profession should be further explored enabling clinicians without experience in innovation to address interest and professional development targets more clearly.

- There are professional development gaps and limited training in entrepreneurship, business models, and technology for physiotherapists
- Physiotherapists have valuable insights into function, mobility, rehabilitation, and exercise with the potential to transform healthcare



### The impact of prior physical conditioning on initial tactical recruit training success: a systematic review

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Poster Presentations Saturday Lunchtime, Exhibition Hall, October 7, 2023, 12:50 PM - 1:32 PM

Aim: To determine whether recruits who underwent a physical conditioning program prior to initial tactical training had increased rates of success.

Design: Systematic Review

Method: A systematic search, following the PRISMA protocol and registered in the Open Science Framework, was conducted to identify relevant studies. Keywords, derived from three themes (physical conditioning, tactical, and recruits), were employed in the search of database CINAHL, ProQuest, PubMed, Scopus, SportDiscus, and Web of Science. Studies were screened against inclusion/exclusion criteria with data extracted and analyzed. The Joanna Briggs Institute critical appraisal tools were used to assess methodological quality of included studies by two authors independently with a Kappa analysis to determine inter-rater agreement.

Results: Of 14,411 identified articles, 13 studies informed the review. The mean quality of studies was considered 'good' with a Kappa of 0.81 between raters. Seven studies identified that an increase in physical fitness, through use of preconditioning programs, resulted in lower rates of injury. Three studies attributed increased basic training pass rates to physical conditioning programs. However, three studies failed to find a change in attrition rates following the programs.

Conclusion: The volume of evidence suggests that programs aimed at increasing muscular conditioning and aerobic endurance prior to tactical training would result in fewer injuries and increased pass rates although reductions in absolute attrition may not change.

Key Practice Points:

• Recruits are less likely to be injured if they are fitter and / or have completed additional training prior to completing training for a tactical occupation.



### The effects attributable to interprofessional collaborative practice: a physiotherapy private practitioner perspective

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Poster Presentations Saturday Lunchtime, Exhibition Hall, October 7, 2023, 12:50 PM - 1:32 PM

Aim: The aim of this study was to examine the effects attributable to interprofessional collaborative practice (IPCP) from the perspective of Australian physiotherapy private practitioners.

Design: A qualitative research design oriented toward interpretive description.

Method: 28 semi-structured interviews were conducted with physiotherapists in ten private practice facilities in Queensland, Australia. Interviews were analysed using reflective thematic analysis.

Results: Data analysis produced five themes that characterised physiotherapists' perceptions of IPCP: i) quality of care considerations; ii) not a one-size-fits-all approach; iii) the need for effective interprofessional communication; iv) fostering a positive work culture; v) fear of losing clientele.

Conclusion: The findings from this study suggest that physiotherapy private practitioners value IPCP because it can deliver superior patient outcomes, strengthen interprofessional relationships, and has the potential to enhance the professional reputation of the organisations within which they work. Physiotherapists also claimed that IPCP can contribute to poor patient outcomes when performed inappropriately, while some reported approaching interprofessional referrals with caution following instances of lost clientele.

- Physiotherapists have been recognised as integral members of collaborative practice models in primary care
- Prior to this study, there was limited published information pertaining to physiotherapy private practitioners' views and experiences of IPCP despite making up a growing proportion of Australia's primary care workforce
- The mixed views towards IPCP in this study highlight the need to explore the facilitators and barriers to IPCP in the Australian physiotherapy private practice setting.



#### Punk it up – Introducing physiotherapy students to climate change

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Poster Presentations Saturday Lunchtime, Exhibition Hall, October 7, 2023, 12:50 PM - 1:32 PM

Aim: To explore the impact of a physiotherapy assessment item upon student learning about climate change in a third-year subject at Charles Sturt University.

Design: An online module and assessment was designed for students to respond to the statement "The practice of physiotherapy in the future needs to respond ethically and sustainably to the challenges of climate change".

Method: An online survey consisting of open and closed questions was distributed to students after the completion of their Punk it up assessment item.

Results: There were 34/100 (34%) responses, 97% agreed that climate change and environmental sustainability is important to physiotherapy practice, 50% stated that the physiotherapy profession should be doing more to address climate change and 45 % suggested it should be embedded within all physiotherapy subjects within their program. Some assessment responses challenged the "traditional" core elements of physiotherapy suggesting entry-level education should include pelvic floor physiotherapy, to increase the number of physiotherapists who could provide physiotherapy to reduce the waste from incontinence pads. Examples of student work will be presented.

Conclusion: The assessment item challenged the students to be creative and to think differently about physiotherapy practice and to develop an awareness of climate change.

- Physiotherapy students feel climate change is important to include in their entry-level program
- To "do no harm" as part of professional practice should include a direct focus upon the environment and sustainable practice aiming to mitigate the effects of climate change, in all aspects of physiotherapy.



# Exploring the effects of an immersive virtual reality-based pain education activity on student engagement, satisfaction and learning

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Poster Presentations Saturday Lunchtime, Exhibition Hall, October 7, 2023, 12:50 PM - 1:32 PM

Aim: To explore the effects of an immersive virtual reality-based pain education activity on the engagement, satisfaction and learning of physiotherapy students enrolled in a Pain Sciences course. Design: Single-arm pre-post study

Method: Physiotherapy students enrolled in a Pain Sciences course at the University of South Australia were offered a 45-minute virtual reality session as an introductory activity. The session, using software designed for people with persistent pain, introduced the complexity of pain and explained its contributors and mechanisms. Interested students provided basic demographics and completed the Revised Neurophysiology of Pain Questionnaire and the Pain Attitude and Beliefs Scale for Physiotherapists (PABS-PT) before and after the session. They also completed a survey regarding their experience.

Results: The voluntary session was offered to 49 students of which 19 (11 female) participated; mean age 23.9 (5.4). Most participants enjoyed the VR session and all reported it had changed their understanding of pain. Significantly higher scores on the rNPQ (t(18) = -2.04, p < .05, r = .43) suggested participants pain knowledge had increased while significantly lower scores on the PABS-PT (t(18) = 8.515, p < .001, r = .89) indicated their biomedical orientation had lessened.

Conclusion: An immersive virtual reality-based pain education activity was engaging and capable of changing physiotherapy students' pain knowledge, attitudes and beliefs. However, less than half the students took the opportunity to participate.

**Key Practice Points:** 

• Virtual reality is a novel and engaging teaching strategy and may be associated with rapid change in pain-related knowledge, attitudes and beliefs.