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## BOOK OF ABSTRACTS

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## RECUEIL DES RÉSUMÉS



Canadian  
Physiotherapy  
Association



Association  
québécoise de la  
physiothérapie



Ordre professionnel  
de la physiothérapie  
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## Book of Abstracts

This Book of Abstracts uses anchored links: place your mouse over the presentation number in the list below and use **control click** to be taken to that Abstract.

Abstract descriptions are provided in the language in which they were presented at Congress Montreal18.

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### Cardiorespiratory

#### Poster Presentations

**38446:** Effects of completing a neurocognitive task versus walking task at different speeds on end-tidal carbon dioxide in persistent-concussion symptoms

**38871:** A Critical Analysis of Online Patient Education Resources geared towards self-management for people living with Chronic Obstructive Pulmonary Disease (COPD)

**39012:** Enseignement de l'échographie pulmonaire en physiothérapie: comparaison de la charge cognitive et de la satisfaction entre deux activités pédagogiques

### Pain Science

#### Poster Presentations

**39154:** The effects of exercise on sleep quality in adults aged 50+: A systematic review



## Global Health

### Abstract Presentations

**38643:** Physiotherapy Interventions May be Influenced by Racial and Ethnic Differences of Patients: The Results of a Scoping Review

**38652:** Développement de la physiothérapie en Haiti : Exploration des besoins pour soutenir la formation clinique et le développement professionnel

**39148:** Disability and Climate Resilience; a qualitative analysis field study and subsequent recommendations

**42484:** Do No Harm – Sustainable Involvement Overseas and Building a Lasting Connection

### Poster Presentations

**38538:** A case study of rehabilitation providers using the Knowledge Translation Triad to collaborate with community members and policymakers to influence disability policy in a global health setting

**38900:** A qualitative study of barriers and challenges to implementation of Advanced Practice Physiotherapy (APP) roles in Ghana

**39153:** Reliability of community rehabilitation worker case identification and prevalence of developmental delay among children under 6 in rural Tamil Nadu: a cross-sectional study

## Neurology

### Poster Presentations

**32539:** The Fukuda Stepping Test is influenced by stepping height and by a concurrent cognitive task

**38465:** Using the Theoretical Domains Framework to Identify Barriers and Facilitators to Exercise Among Older Adults Living with HIV

**38508:** Manual wheelchair users gradually face fewer challenges in postural stability and control with increasing rolling resistance while maintaining a rear-wheel wheelie

**38990:** Pilates as a Primary Treatment Modality in a Patient with a Glioma: A Case Study

**39081:** Understanding the causes of step length changes after repeated exposure to a split-belt treadmill gait protocol post-stroke: a pilot study

**39114:** A starting point to optimize physical activity implementation in the management of Multiple Sclerosis

**39130:** The effects of a 12-week strength training program on skeletal muscle impairments and physical limitations in men with myotonic dystrophy type 1

**39172:** Effects of gait perturbation training on dynamic balance in individuals with moderate-to-severe traumatic brain injury

## Oncology

### Abstract Presentations

**38974:** Preferences and barriers of health care providers in cancer clinical care practices regarding exercise counseling and referral

**39036:** Living Safely with Bone Metastases: Development of an Evidence-based Educational Resource Tool

**42902:** Eye Opener: Closing the Know-Do Gap: Oncology Physiotherapy Research

### Poster Presentations

**38426:** Developing a patient-led surveillance program for breast cancer-related lymphedema

**38852:** A comparison of the effects of medical Qigong and standard exercise therapy on symptoms and quality of life in patients with advanced cancer

**38928:** Does vincristine chemotherapy decrease ankle dorsiflexion range of motion and lower extremity function in adults with Acute Lymphoblastic Leukemia?

**39017:** Bridging the Gap: Incorporating Exercise Evidence into Clinical Practice in Breast Cancer Care-A Pilot RCT

**39019:** Physical rehabilitation practice patterns and outcome measures in children and adolescents with cancer across Canada

**39021:** Understanding Exercise Needs of Cancer Survivors Residing in Rural and Remote Settings

**39158:** The Effect of Therapeutic Ultrasound on Chemotherapy Induced Peripheral Neuropathy in Colon and Colorectal Cancer Patients: A Pilot Randomized Controlled Trial

## Orthopaedics

### Abstract Presentations

**32755:** Early Mobilization Following Arthroscopic Rotator Cuff Repair

**38547:** The Consequences of Youth Sport-related Knee Injury: Implications for Secondary Prevention of Osteoarthritis

**38645:** Effectiveness of directional preference to guide management of low back pain in Canadian Armed Forces members: A pragmatic study

**38964:** Preliminary Evaluation of an Advanced Practice Physiotherapy Model of care for Patients with Musculoskeletal Disorders Presenting to an Emergency Department

**38984:** Mesures de résultats rapportés par les patients pour la gestion de la douleur chronique : les patients et les cliniciens ont-ils la même perception quant aux domaines à évaluer?

**39042:** Physiotherapists' ability to diagnose and manage patients with shoulder disorders in an outpatient orthopaedic clinic: preliminary results from a concordance study

**39043:** Advanced practice physiotherapist role in orthopedic surgery triage is not limited to experienced senior physiotherapists

**39063:** A scoping review to define Advanced Practice Physiotherapy (APP) on the international stage.

**39089:** Telerehabilitation and face-to-face visits result in equivalent locomotor patterns at 4 months post total-knee arthroplasty

**39106:** The physiotherapy preventive assessment (PPA): screening and preventing MSK injuries in asymptomatic adults

**39133:** Moving toward stronger evidence to corroborate the relevance of neurodynamic assessments and interventions for individuals with carpal tunnel syndrome: Isn't it time to adopt a standardized measurement protocol when using quantitative ultrasound imaging?

**39134:** Diagnostic imaging and rehabilitative ultrasound imaging in Canadian physiotherapy. A survey of physiotherapy schools and legislative bodies.

**42285:** Thérapies régénératrices en musculosquelettique : du traitement à la réadaptation

**43938:** The middle of it all: Regional Interdependence and the Thoracic Spine

### Poster Presentations

**32107:** Can a knowledge translation implementation strategy improve the evidence-based management of lateral ankle sprains by Canadian Armed Forces Physiotherapists?

**32569:** Characterizing tendon integrity using quantitative ultrasound imaging in individuals with unilateral Achilles tendinopathy: Are all outcome measures equally relevant?

**38230:** A Descriptive Study of Physiotherapist Use of Publicly Funded Diagnostic Imaging Modalities in Alberta

**38300:** Physiotherapist-physician collaboration to help manage musculoskeletal disorders in primary care: an interprofessional model of practice in a teaching family medicine clinic

**38524:** Patient-related and objective clinical factors that influence diagnostic agreement between a physiotherapist and physicians for patients suffering from musculoskeletal knee disorders

**38542:** Operationalization of the new Pain and Disability Drivers Management Model: A Consensus Study

**38627:** Determinants of quality-of-life at 12-months following anterior cruciate ligament reconstruction in young athletes

**38843:** Is Recovery in Muscle Activation and Joint Mechanics During Gait Influenced by Total Hip Arthroplasty Surgical Approach?

**38850:** Four weeks of biofeedback-controlled muscle endurance training and temporomandibular dysfunction: a pilot study of a randomized control trial

**38886:** La cryothérapie gazeuse hyperbare dans le traitement des entorses aiguës de la cheville : un essai clinique randomisé à simple insu

**38955:** The Relationship Between Measures of Knee Loading During Gait and Cartilage Thickness in Non-Traumatic and Post-Traumatic Knee Osteoarthritis

**38987:** A systematic review of the effectiveness of weight loss programs for patients with non-specific low back pain

**38994:** The Encounter with the Specialist Affects the Test-Retest Reliability of Self-Image Quality of Life Questionnaires in Adolescents with Idiopathic Scoliosis

**38999:** Concurrent Criterion Validity of the iPod™ in the Measurement of Shoulder Range of Motion

**39047:** Rotator cuff disorders in workers: a systematic review of existing clinical practice guidelines

**39092:** Comparing the effect of widespread pain (WSP), multi-joint pain and low back pain (LBP) on measures of pain sensitization (PS) and function in people with knee osteoarthritis (OA)

**39110:** Using a mixed methods approach to understand the evidence-to-practice gap in the management of common knee conditions in Canadian and Australian physiotherapists

**39124: Analysis of Lumbo-Pelvic Coordination Variability during a Sit-to-Stand Task in Adults with Low Back Pain**

**39178: Understanding the user experience, barriers and facilitators of using a clinical tool-kit app to support evidence-based management of neck pain**

## Paediatrics

### Abstract Presentations

**39035: Watch Me Move: A Program for Parents of Young Children with Gross-Motor Delays**

**39120: Sensitivity to Change of Measurements from a New Standardized Clinical Photographic Posture Assessment Tool in Adolescents with Idiopathic Scoliosis**

**39156: Expérimentation d'une formation sur le trouble développemental de la coordination destinée aux enseignants en éducation physique**

### Poster Presentations

**37705: Physiotherapists' use of evaluation measures to guide recommendations about ankle-foot orthoses for children with cerebral palsy**

**39039: Global postural re-education in idiopathic scoliosis: immediate effect of self-correction posture on curve reduction**

## Practice Management

### Abstract Presentations

**38949: A Survey of Quebec Physiotherapists' and Physical Rehabilitation Therapists' perceptions on applying a board regulation delimiting practice**

### Poster Presentations

**38655: E-recruitment for clinical trials in physiotherapy – a rising method for a modern world?**

**38961:** Transferring paediatric pain evidence into physiotherapy practice: A context-specific systematic approach

**38980:** Use of Electronic Tablets in Physiotherapy: A Client Experience Survey in a Therapeutic Context

## Sport

### Abstract Presentations

**39003:** Immediate Effects of the Kinesiotaping on Acromiohumeral Distance and Shoulder Proprioception in Individuals with Symptomatic Rotator Cuff Tendinopathy

### Poster Presentations

**38494:** The Effectiveness of the FIFA 11+ at Improving Sport Performance Metrics: A Systematic Review

**39016:** Exercise baroreflex and implication for sport concussion: A case study

## Seniors' Health

### Poster Presentations

**32630:** TUG, TUGcog and TUGman improve after 12-week balance and mobility training with or without concurrent cognitive tasks in community-dwelling older adults

**38584:** Lower limb muscle strength, balance, mobility and function in older women with urge and mixed urinary incontinence: an observational pilot study

**38849:** Fall risk signature in Brazilian older women and balance assessment using a mobile technology

**38882:** The Effects of a Short-term, Community-based Slow-stream Rehabilitation Program on Falls Rate in Older Adults Transitioning from Hospital to Home

**38913:** The effectiveness and feasibility of a Nordic walking pole program for institutionalized older adults

- 38915:** Evaluating the effect of a rehabilitation policy and service change on facility-level activity of daily living and fall quality indicators in Ontario long-term care homes
- 38967:** Older workers with pain: how do they stay at work?
- 39005:** Examining the relationship between cognition and postural control in Alzheimer's disease
- 39006:** Balance assessment by Physiotherapists working in older adult health - survey of clinical practice in Canada and Australia
- 39008:** Combiner les exercices et la neurostimulation périphérique pour soulager la douleur chronique chez les aînés: une étude pilote
- 39104:** MMOVeS: Managing Mobility in Vulnerable Seniors with an Individualized, Self-Management, Home-Exercise Program.
- 39105:** Knitting as a promising self-management strategy for older women with osteoarthritis of the hands: A community-based pilot randomized controlled trial
- 39131:** Goals of Older Adults Participating in a Short-term, Community-based, Slow-stream Rehabilitation Program: More than Just Physical?
- 39142:** Examining the Prevalence of Falls and Future Falls Risk in Adults One-Year After Total Hip Arthroplasty
- 39151:** Planning rehabilitation services for seniors: Can we use patient's own perception?
- 39163:** How does the health-related quality of life of Canadian Seniors Fare over a Four Year Period? Trajectories from the NuAge Study

## Women's Health

### Abstract Presentations

- 38392:** Pelvic floor muscle and sexual function in endometrial cancer survivors suffering from dyspareunia
- 38510:** Optimizing bone loading - prescribing exercise for maximum impact

**38656:** Fear-avoidance and pelvic floor muscle function are associated with pain intensity in women with vulvodynia

**38872:** Do Women with Persistent Diastasis Recti Demonstrate Impaired Trunk Muscle Function?

**38874:** Reliability and Concurrent Validity of Inter-Rectus Distance and Linea Alba Stiffness in Women with and Without Diastasis Recti Abdominis

**39079:** The Influence of Pelvic Organ Prolapse on Female Sexual Dysfunction and Quality of Life - A Systematic Review

**42900:** Eye Opener: Urinary Incontinence in the Gynecological Cancer Survivor

### Poster Presentations

**38859:** Intravaginal Dynamometry Measures Correlate well with Manual Evaluation of Pelvic Floor Muscle Strength

**39025:** The impact of bladder sensation on gait in continent and incontinent community-dwelling women fallers.

**39060:** Evaluation of the Clinical Impact of the Postgraduate Program in Pelvic Floor Rehabilitation at Université de Montréal: preliminary results of a web-based survey

### Other

#### Abstract Presentations

**35448:** Equity, competence and autonomy: three core values difficult to uphold in physiotherapy care for injured workers in Canada

**35449:** Physiotherapy care for injured workers: how do current policies influence how we care for our patients?

**38501:** The role of physiotherapists in health promotion and prevention: a scoping review

**38729:** OTAs and PTAs in Canada's health care system - stakeholder perspectives

**38845: More than 10 Years Later: An Evaluation of the Policy Decision to Delist Physiotherapy Services in Ontario Related to Unmet Needs**

**38911: The ‘where’ of care: mapping physiotherapy use in Canada in relation to physiotherapist distribution**

**38927: Uncovering inequities in access to health care among adult Canadians with chronic back disorders**

**42485: What is enhanced recovery after surgery?**

### **Poster Presentations**

**38419: Au Revoir Arthrose: a French-Canadian translation of the OA Go Away tool**

**38848: Overall stabilometric profile in chronic kidney disease patients under hemodialysis: a cross-sectional study**

**38873: The Professional Qualification Program for Internationally Trained Physiotherapists: Review of the First Three Cohorts at the Université de Montréal**

**38947: Teaching and Assessing the Advocate Role: A Study Exploring Practices and Perspectives in Canadian Physiotherapy Programs**

**38951: Outil d’aide à la réussite de stage clinique basé sur la classification de Vaugh**

**38971: An Online Problem-Based Learning Remediation Program for Physiotherapy Jurisprudence**

**39053: Effect of Manipulative Techniques in Chronic Low Back Pain Workers: A Randomized Crossover Trial**

**39062: Use of real-time videoconferencing to deliver physiotherapy services: a scoping review of published and emerging evidence**

**39077: Assessing clinical performance in physical therapy students: which competencies differentiate an average from an above-average performance?**

**39084: Prevalence of chronic back disorders among Canadian adults: trends in gender, age, and geography and distribution of physiotherapists**

**39101: Road to reconciliation: cultivating cultural sensitivity in physical therapy practice through relationship and reflection.**

**39111: The Consolidated Criteria for Reporting Qualitative Studies (COREQ) Questionnaire: A Canadian French Version**

**39137: The Lighthouse pilot project: Enhancing access to physiotherapy services for people experiencing poverty and homelessness**

**39147: The Role of Exercise in Gender Transition, a Scoping Review**

# Cardiorespiratory

## Poster Presentations

### **38446: Effects of completing a neurocognitive task versus walking task at different speeds on end-tidal carbon dioxide in persistent-concussion symptoms**

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**Background:** Concussion is defined as a mild traumatic brain injury negatively affecting neurocognitive and physical performance. Abnormal breathing patterns in other clinical populations have been known to cause similar concussion-like deficits. Having an autonomic dysfunction, which is commonly accompanied with concussion, and/or having a history of respiratory health-related issues may result in prolonged recovery times following a concussion.

**Purpose:** To examine differences between healthy and concussed participants when performing a neuropsychological and physical task on measures of end-tidal carbon dioxide (ETCO<sub>2</sub>).

**Relevance:** Identifying potential abnormal respiration after concussion can introduce a new alternative option when prescribing treatment to patients with prolonged symptoms. Monitoring ETCO<sub>2</sub> may also be used as a clinical measure to track patient recovery.

**Methods:** Twenty-two participants (17 healthy; 5 concussed) completed the Immediate Post-Concussion Assessment and Cognitive Test (ImPACT) battery and walked on a treadmill at a slow and fast walking speed. A CapnoTrainer© capnography breath analyser measured ETCO<sub>2</sub> at rest, during the ImPACT battery, and while walking.

**Results:** Statistically significant main effects were observed for time ( $F(1,20)=5.332, p=.032$ ;  $F(2,38)=52.305, p=.001$ ) and group ( $F(1,20)=14.388, p=.001$ ;  $F(1,19)=8.283, p=.01$ ) in ETCO<sub>2</sub> during the cognitive and physical tasks respectively. **Conclusion:** Both groups' ETCO<sub>2</sub> responded similarly to cognitive loading and physical stress. Conversely, ETCO<sub>2</sub> was significantly elevated in the persistent-concussion symptoms group at rest, during the completion of the ImPACT battery, and while walking. Therefore, abnormal ETCO<sub>2</sub> levels may occur after concussion and future investigations are warranted.

### **38871: A Critical Analysis of Online Patient Education Resources geared towards self-management for people living with Chronic Obstructive Pulmonary Disease (COPD)**

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**Background/Rationale:** Patient education geared towards chronic disease self-management is an important part of the healthcare process. The internet is becoming the go to source of accessible information about managing health conditions, including for those people living with chronic diseases, such as COPD. It is primordial that this information is accurate and based on best practices.

**Purpose/Research Objectives:** The purpose of this study is to evaluate patient education websites regarding COPD. The major research question is “What is the quality of online patient education resources for people living with COPD?”

**Relevance:** Results of this project will allow physiotherapists working with people living with COPD to recommend quality patient education websites to their patients with confidence.

**Methods:** Following an established method of website evaluation, including purposefully sampling, 20 websites were independently evaluated by two reviewers using the DISCERN tool and the CRAAP tool. These standardized website evaluation tools include criteria related to credibility, literacy, accuracy, biases, and conflicts of interest.

**Results:** Preliminary results indicate there are varying quality levels of information available to people living with COPD. Although the evaluated websites contain reliable, unbiased information, many fail to identify their aims or refer to areas of uncertainty. In addition, the majority of websites score low on items in the tools related to treatment options, treatment risks, and support for shared decision making.

**Conclusions:** This study will identify strengths and limitations of existing online patient education resources regarding COPD. The results will be beneficial for both physiotherapists and people living with COPD.

### **39012: Enseignement de l'échographie pulmonaire en physiothérapie: comparaison de la charge cognitive et de la satisfaction entre deux activités pédagogiques**

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**Historique :** L'échographie pulmonaire étant en émergence en physiothérapie respiratoire, une formation aux étudiants est nécessaire pour développer leur raisonnement clinique et intégrer l'outil à leur pratique. Il n'est pas clair si une activité pédagogique en format théorique ou pratique doit être privilégiée pour favoriser cet apprentissage.

**Objectifs de recherche :** Comparer la charge cognitive et la satisfaction entre une activité pédagogique théorique et une activité pédagogique pratique chez des étudiants en physiothérapie.

**Pertinence :** Cette étude permettra d'élargir les connaissances sur la planification des activités d'apprentissage pour faciliter le développement du raisonnement clinique en physiothérapie.

**Méthodologie :** Soixante-quinze étudiants à la maîtrise en physiothérapie ont été répartis aléatoirement pour participer à une première séance d'apprentissage théorique ou pratique. L'effort mental investi a été évalué pendant l'activité d'apprentissage et lors d'un test de raisonnement clinique post-apprentissage à l'aide d'une échelle subjective de cotation validée (de 1 à 9 points). La satisfaction des participants a été évaluée après la séance d'apprentissage par un court questionnaire (4 questions cotées avec échelle de Likert à 4 niveaux; Fidélité acceptable:  $\alpha$  Cronbach=0.77).

**Résultats :** L'effort mental investi lors de la séance pratique (moyenne  $\pm$ écart-type :  $5,1 \pm 1,0$ ) est inférieur (Test-t :  $p < 0,001$ ) à la séance théorique ( $6,3 \pm 0,9$ ). L'effort mental investi au test post-apprentissage est similaire ( $p > 0,05$ ) entre les deux activités (pratique :  $6,1 \pm 1,0$ ; théorique :  $6,4 \pm 0,9$ ). La satisfaction des étudiants est similaire ( $p > 0,05$ ) entre les deux activités (pratique :  $13,6 \pm 2,0$ ; théorique :  $12,9 \pm 1,8$ ).

**Conclusions :** L'activité d'apprentissage pratique montre un avantage pédagogique en exigeant moins d'effort mental des apprenants par rapport à l'activité théorique.

## Pain Science

### Poster Presentations

#### **39154: The effects of exercise on sleep quality in adults aged 50+: A systematic review**

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**Background/Rationale:** Sleep disturbances increase with age. Pharmaceuticals are the primary therapy - an estimated 6 to 10% of US adults took a hypnotic drug for poor sleep in 2010 (Kripke) - and they are associated with increased risk and cost. Exercise has the potential to improve sleep however, reviews exploring the impact on sleep quality in this population are limited and narrow in scope.

**Purpose/Research Objectives:** To investigate the effects of regular exercise on a population aged 50+ with sleep disruption, including any dose-response relationships.

**Relevance:** Exercise could provide a viable alternative to sedative hypnotics to alleviate complaints of sleep disturbances in middle-aged and older adults. We examined the effects of diverse modes and volumes of exercise on individuals with sleep disruptions to determine evidence-based exercise prescriptions to optimize health outcomes.

**Methods:** PubMed, Cochrane, CINAHL and EMBASE databases were searched and articles reviewed by four independent authors. Publications meeting inclusion/exclusion criteria underwent data extraction and quality assessment using the PEDro scale and the Oxford Levels of Evidence.

**Results:** From an initial search, 1,777 papers were identified, with 20 meeting inclusion/exclusion criteria. Seventeen studies found a positive effect of exercise. A dose-response relationship of aerobic exercise was reported in a single study. Two papers provided evidence that resistance training may improve sleep, although specific parameters cannot be recommended due to the heterogeneity of interventions. Combined forms of exercise, social activities and/or sleep hygiene may positively influence sleep quality.

**Conclusion:** There is a strong trend toward exercise intervention improving sleep quality for those aged 50+ who experience sleep disruptions.

# Global Health

## Abstract Presentations

### **38643: Physiotherapy Interventions May be Influenced by Racial and Ethnic Differences of Patients: The Results of a Scoping Review**

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**Background/Rationale:** Although physiotherapists provide care to people in multicultural environments in many parts of the world, research focused on racial and ethnic differences of patients and its impact on outcomes of physiotherapy interventions has been limited.

**Purpose/Research Objectives:** To provide an overview of the existing knowledge about the role of racial and ethnic differences in physiotherapy interventions and related outcomes delivered to individuals from racial and ethnic minority groups.

**Relevance:** Despite the importance of cultural knowledge and sensitivity in physiotherapy, the role of racial and ethnic differences in physiotherapy outcomes is often overlooked.

**Methods:** Scoping review guidelines by Arksey and O'Malley and Levac were followed in searching through CINAHL, Ovid MEDLINE, PsycINFO and PEDro databases, using relevant keywords. Studies in English were selected if they included a description of physiotherapy interventions in the Global North countries (e.g. North America, and Europe) with individuals from racial and ethnic minorities. Numerical analysis and thematic analysis were conducted with the extracted data.

**Results:** 34 articles were found that matched the inclusion criteria. The studies differed in purpose, geographic locations, and patient population. Individuals with cardiovascular diseases were included in 10 studies. Eight studies addressed physical activity and six studies addressed the access and use of rehabilitation services.

**Conclusion:** There may be important differences in outcomes of physiotherapy interventions for individuals from racial and ethnic minority groups due to their cultural diversity than for people from the general population. The results of this scoping review found that these differences need to be considered in future studies related to specific physiotherapy interventions.

## **38652: Développement de la physiothérapie en Haïti : Exploration des besoins pour soutenir la formation clinique et le développement professionnel**

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**Historique** : Les deux premiers programmes universitaires haïtiens ont débuté récemment. En 2018, les premiers stages cliniques haïtiens seront effectués. Une formation de deux jours a été offerte aux futurs superviseurs de stage.

**Objectifs de recherche** : Évaluer les retombées de cette formation et identifier les perceptions des haïtiens concernant le développement de la physiothérapie.

**Pertinence** : Il est important d'inclure la perspective des acteurs haïtiens afin de soutenir le développement de la collaboration entre les universités québécoise et haïtiennes.

**Méthodologie** : Afin de documenter les retombées de la formation, un devis mixte pré-post-suivi est utilisé. Les participants ont rempli un questionnaire avant et après la formation. Des scores sur leurs connaissances et leurs pratiques ont été comparés, et une analyse thématique a permis d'identifier leurs perceptions de la supervision et de la profession. Un sondage auprès de l'ensemble des acteurs en physiothérapie et des entrevues téléphoniques permettront de bonifier les résultats en lien avec le développement de la profession en Haïti.

**Résultats** : La formation a permis d'augmenter la perception qu'ont les superviseurs de leurs compétences. Les thématiques influençant la capacité de supervision incluent le soutien en continu, le développement de critères de qualité visant l'accréditation de milieux de stage, l'importance de reconnaître l'encadrement et la profession.

**Conclusions** : La formation a permis d'augmenter les compétences pédagogiques des superviseurs de stage en réadaptation à Haïti. Il est nécessaire de soutenir en continu les superviseurs et d'adresser certains enjeux systémiques pour faciliter le développement de la réadaptation en Haïti.

## **39148: Disability and Climate Resilience; a qualitative analysis field study and subsequent recommendations**

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**Background/Rationale:** The world has seen a significant increase in both the severity and frequency of disasters, and the link between climate change and extreme events is increasingly being recognized. Research has shown that disasters have a disproportionate impact on some groups in situations of risk. Within protection strategies, inclusive climate-change resilience presents a potential long-term solution to climatic shocks and stresses for at-risk groups, including persons with disabilities.

**Purpose/Research Objectives:** This project therefore sets out to identify evidence-based recommendations for good practice in the area of disability-inclusive resilience to climate change.

**Relevance:** It is essential for rehabilitation professionals to be aware of specific risk situations experienced by the populations they work with and being able to provide evidence-based recommendations for adaptation.

**Methods:** This is a qualitative study, where methods included a literature review, policy analysis, in-country interviews and focus groups and subsequent thematic analysis. Field components took place in Kenya and Bangladesh.

**Results:** Gaps in monitoring and evaluation limit policies implementation. More focus on Disaster Risk Reduction than climate Change Adaptation. Disability issues became invisible in mainstream programmes. Households of persons with disabilities have limited support and less capacity to accommodate changes. Over-reliance to single economic model and activities is decreasing resilience. Barriers to accessing social protection and finance and participation are present. Need for better data gathering in both countries.

**Conclusions:** There needs to be more emphasis on a rights-based approach, more cross-sectoral linkages, increased linkage between climate change adaptation and disaster risk reduction, diversification of livelihood strategies, targeted social protection and twin-track approach to disability.

## **42484: Do No Harm – Sustainable Involvement Overseas and Building a Lasting Connection**

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Do you have an interest going abroad to make lasting change? As residents of a first world country we have access to travel around the world. How does one get started and choose from the many opportunities? This session will help participants become an informed consumer and understand the implications of overseas opportunities and the intent to “do no harm”.

### **Poster Presentations**

## **38538: A case study of rehabilitation providers using the Knowledge Translation Triad to collaborate with community members and policymakers to influence disability policy in a global health setting**

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**Background/Rationale:** There is a clear need for more responsive disability policies, particularly in the global South. Despite the recognition of this need, persons with disabilities are often excluded from the policy process. The Knowledge Translation (KT) Triad has been developed as a framework to facilitate collaboration among communities, policymakers and researchers. We are complementing our ongoing research collaboration with Zambians with disabilities through the addition of a KT Triad initiative.

**Purpose/Research Objectives:** To identify lessons learned from a disability policy KT Triad Initiative in Zambia.

**Relevance:** This study simultaneously contributes to opportunities for the increased involvement of Zambians with disabilities in the development of policy and to knowledge about the potential of the KT Triad framework.

**Methods:** As researchers, we are approaching twenty-five to thirty-five Zambian disability community advocates and policymakers to participate in a workshop in May 2018 on the use of evidence in the development of disability policy. We have designed the workshop according to the principles of the KT Triad, with considerations for the activity’s structure and process and the relationships between participants. We will conduct two follow-up telephone interviews with participants, after one week and four months, to solicit perspectives about the effects of the workshop. These interviews will be audio recorded and transcribed.

**Results:** We will present the results of qualitative content and thematic analyses of the transcribed interviews and discuss recommendations for enhancing collaboration around disability policy.

**Conclusions:** The KT Triad is a promising framework for global health physiotherapy researchers striving to influence policy.

### **38900: A qualitative study of barriers and challenges to implementation of Advanced Practice Physiotherapy (APP) roles in Ghana**

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**Background/Rationale:** Different health professionals currently perform tasks that were previously within the exclusive domain of physicians. APP roles were developed to address the rising prevalence of chronic diseases, aging population, patients expectation of timely access to care, and cost containment. No study has examined the challenges and barriers of introducing an APP model of care into a clinical setting in a developing country.

**Purpose/Research Objectives:** To identify the potential challenges and barriers to the implementation of Advanced Practice Physiotherapy roles in Ghana.

Relevance: The successful introduction of APP in Ghana could augment the delivery of care, enhance patient experience with care, and reduce cost.

**Methods:** A basic interpretive qualitative study with a semi-structured focus group comprising 8 physiotherapists and a one-to-one interview with the director of orthopedic surgery. Participants were sampled purposefully to ensure they had a clear understanding of APP. Discussions were audio recorded, transcribed and coded, and thematic analysis was performed.

**Findings:** The four themes identified were:

1. **Jurisdictional Disputes:** Physiotherapists and physicians had different views on acceptance of APP roles.
2. **Management Support:** Management of workplace culture and liability issues.
3. **Legislation and Policy Changes:** Lack of legislative support and policies for APP roles.
4. **Post-graduate training:** Inadequate post-graduate training in Ghana.

**Conclusions:** Unique barriers to health care programs are often not identified and addressed prior to implementation in developing countries, leading to program failure. Addressing these challenges a priori could ensure effective implementation of APP roles in Ghana.

### **39153: Reliability of community rehabilitation worker case identification and prevalence of developmental delay among children under 6 in rural Tamil Nadu: a cross-sectional study**

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**Background:** Children in rural India are normally diagnosed with developmental delay at healthcare appointments or when they start school. Early identification and intervention is key in the prevention and progression of developmental disability. To prioritize early identification and intervention in rural India, a proposed strategy is for trained non-specialist Community-based Rehabilitation Worker's (CRW) to perform developmental screening with follow-up evaluation from professionals, using a validated assessment tool, such as the TDSC.

**Purpose:** The two objectives of this study are to 1) determine whether non-specialist CRW's can reliably identify developmental delay in children less than 6 years old in rural South India, and 2) to estimate the prevalence of developmental delay in this population.

**Relevance:** CRWs (non-specialists) may allow for earlier identification and intervention (including physical therapy) for developmental disability in young children in rural India.

**Methods:** This cross-sectional study assigns 3-4 CRWs to 4 weekly hours of identification/screening of all children in 7 blocks of the Tirunelveli District using the TDSC. Rehabilitation specialists follow up the same day, assessing all children identified as positive and 30% of those identified as negative.

**Anticipated results:** We expect that the TDSC used by the CRWs will have high sensitivity and specificity in identifying developmental delay compared to rehabilitation specialists.

**Conclusion:** The findings of the study will help determine if CRWs are a reliable means of screening children with developmental delay in the community. This will support rural South Indian communities in improving early identification and intervention services to prevent progression of developmental disability.

# Neurology

## Poster Presentations

### **32539: The Fukuda Stepping Test is influenced by stepping height and by a concurrent cognitive task**

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**Background/Rationale:** The Fukuda Stepping Test (FST) is used to assess patients with vestibular disorders. It consists in stepping in place without vision for 50 steps. The FST outcome is likely influenced by the height at which the knees are lifted and by distractions, but these effects have not yet been established.

**Research Objectives:** To compare the FST outcome (unperceived linear and angular body displacements) between comfortable and high stepping, and to determine the influence of a concurrent cognitive task on the FST outcome in healthy participants.

**Relevance:** Specific instructions regarding knee height and careful control of distractions may be needed when patients perform the FST to ensure unbiased results.

**Methods:** This study is a repeated measures within-subject design. Sixteen healthy participants (mean 22 years; 12 women and 4 men) performed the FST under 4 conditions: at comfortable stepping height (approx. 45° hip flexion) and at high stepping (approx. 90° hip flexion) with or without a concurrent continuous digit counting task. Antero-posterior (A-P), medio-lateral (M-L) and rotational body displacements were recorded with a 3-D motion analysis system (Vicon512™). Comparisons among conditions were made with the Friedman test and Wilcoxon Signed Rank tests.

**Results:** A-P and M-L displacements were significantly larger at high than at comfortable stepping height ( $p < .0125$ ). A-P displacements were significantly smaller with the concurrent cognitive task than without ( $p < .0125$ ). No significant difference among condition was found for body rotation.

**Conclusion:** Stepping height and a concurrent cognitive task were found to influence linear body displacements during the 50-step FST.

## 38465: Using the Theoretical Domains Framework to Identify Barriers and Facilitators to Exercise Among Older Adults Living with HIV

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**Background:** People with HIV are living longer. However, co-morbidities are often more prevalent and severe than in the general population and have greater adverse impacts on health status. Although compelling evidence exists about the health benefits of exercise in the HIV literature, many people living with HIV (PLWH) tend to be physically inactive.

**Objectives:** The purpose of this study was to use the Theoretical Domains Framework to investigate the barriers and facilitators to participation in exercise of older PLWH with cognitive challenges.

**Methods:** This qualitative study involved in-depth, semi-structured interviews with 12 adults aged 45 years and older recruited from HIV organizations and health centres in Halifax, Nova Scotia. Data were analyzed thematically using the Theoretical Domains Framework, and two investigators independently coded transcripts.

**Results:** Six prominent domains were identified from the interviews: Social influences, environmental context and resources, reinforcement, intentions, social and professional role, and knowledge. The participants had a working knowledge of exercise and its health benefits but were unfamiliar with specific exercise parameters. The majority identified environmental or resource constraints as salient barriers for participation in exercise programs. Co-morbidities, injuries, and the side effects of HIV disease and medication were also acknowledged as barriers. Participants spoke of the importance of social support to facilitate participation in exercise programs. Other facilitators included using technology and combining exercise with day-to-day activities.

**Conclusion:** People aging with HIV experience many barriers to exercise. Those designing exercise interventions for people aging with HIV should incorporate strategies to address these obstacles.

### **38508: Manual wheelchair users gradually face fewer challenges in postural stability and control with increasing rolling resistance while maintaining a rear-wheel wheelie**

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**Background:** Teaching manual wheelchair users to perform and maintain wheelchair wheelies over surfaces of progressively decreasing rolling resistances is expected to facilitate the acquisition of this advanced wheelchair skill in clinical practice. However, limited scientific evidence supports this clinical approach.

**Purpose:** To compare postural stability and control requirements when maintaining a stationary wheelie on surfaces having different rolling resistances.

**Relevance:** This study will provide the first evidence to confirm or not the relevance of this clinical approach by physiotherapists to facilitate skill acquisition.

**Methods:** Eighteen manual wheelchair users with a spinal cord injury randomly performed and maintained four 30-second wheelies on four surfaces having different rolling resistances: natural hard floor (NAT), low-density foam (LOW), moderate-density foam (MOD), and rear wheels blocked by wooden blocks (HIGH). A large instrumented force plate was used to continuously record the centre of pressure. To quantify postural stability, time- and frequency-domain centre of pressure measures were computed and compared across all four rolling resistances.

**Results:** All resultant time-domain measures confirmed increased postural stability from NAT to LOW and from MOD to HIGH rolling resistances. Most time-domain measures confirmed a shift in postural control from an anticipatory to a predominantly reactive strategy, especially from NAT to LOW and from MOD to HIGH rolling resistances.

**Conclusion:** Blocking the rear wheels is recommended when physiotherapists first teach this advanced wheelchair skill to manual wheelchair users. Rapid progression on foam and natural surfaces is advocated to refine learning and enhance proper postural control strategies.

## 38990: Pilates as a Primary Treatment Modality in a Patient with a Glioma: A Case Study

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**Background/rationale:** Pilates has been used effectively in improving balance, coordination and core stability however its utilization in a clinical setting remains limited. The purpose of this case study was to explore the effectiveness of Pilates when used as the sole modality for a patient with a glioma.

**Research Question:** What are the effects of using Classical Pilates as a treatment modality in improving balance, function and quality of life, for a patient with a Glioma?

**Relevance:** Pilates as a modality can improve balance and function for neurological patients. It promotes active participation; empowering the patient rather than relying on passive treatment techniques to improve their function and/or decrease pain.

**Methods:** 43yo male with a Glioma was enrolled in a 3-month program comprising 20 x 1hr Pilates sessions. The Berg Balance Scale (BBS) and FACT-G (Version 4) were administered pre- and post-intervention. Video/ photography was used to compare quality and precision of specific movements prior to and throughout the study.

**Results:** BBS Score improved from 26/56 at baseline to 43/56 in the final session. FACT-G Score improved from 39 to 49. Quality, coordination of movements and core strength also improved.

**Conclusion:** Pilates as a primary treatment modality resulted in improvements in balance, coordination, core strength, and quality of life. Further investigation on its use with neurological patients should be explored.

## 39081: Understanding the causes of step length changes after repeated exposure to a split-belt treadmill gait protocol post-stroke: a pilot study

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**Background:** Step length (SL) asymmetry post-stroke is considered as particularly resistant to conventional gait therapy. The use of a split-belt treadmill with asymmetrical belt speeds revealed promising effects when the short step is trained on the faster belt.

**Purpose:** This pilot study investigated the feasibility and effects of repeated exposure to split-belt treadmill walking on gait ability and biomechanics post-stroke.

**Relevance:** Preliminary data are required to support the relevance of large-scale randomized clinical trials. This study allowed better understanding of the immediate and medium-term effects of repeated split-belt treadmill walking.

**Methods:** Twelve individuals with a first cerebral stroke presenting initial SL asymmetry (ratio=1.10-2.05; 10 males; mean age 52 (SD 9.3 years); mean time post-stroke 23 (SD 24.7 months); 9 left-sided stroke) were included. They were trained during 6 sessions of split-belt treadmill walking using an error-augmentation protocol. Clinical and 3D laboratory outcomes allowed the assessment of training effects.

**Results:** The training resulted in a reduction in SL asymmetry during walking over ground retained over one-month post-training ( $p=0.002$ ) with improvement in gait speed ( $p=0.009$ ). Changes in joint moments were particularly pronounced on the side trained on the fast belt and reached significance when comparing pre-training to follow-up data ( $p\leq 0.037$ ). No changes were significant in average muscle activity with high inter-participant variability.

**Conclusion:** Improvement in SL symmetry is achieved by a variety of biomechanical and muscle activity changes in a group of individuals post-stroke. The side trained on the fast belt, and more specifically the plantarflexors, seem to be among the important underlying causes to SL symmetry improvements.

### **39114: A starting point to optimize physical activity implementation in the management of Multiple Sclerosis**

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**Background/Rationale:** Physical activity (PA) is the most important non-pharmaceutical intervention for persons with Multiple Sclerosis (PwMS). Less than 20% of PwMS engage in sufficient amounts of PA to accrue health benefits. PA promotion is effectively supported when combined with behaviour change strategies (BCS). However, this is not routinely done and perhaps attributed to health care professionals' (HCP) lack of understanding and confidence in applying BCS.

**Purpose/Research Objectives:** To increase our understanding of current practice and perspectives of Saskatchewan HCP with respect to their use of BCS to promote PA among PwMS.

**Relevance:** Physiotherapists are optimally positioned to facilitate PA for PwMS. Future interventions based on the current needs and perspectives of HCP will enhance applicability, minimizing knowledge-practice gaps and maximizing clinical implementation.

**Methods:** Semi-structured focus groups were conducted with physical and occupational therapists, nurses and physicians (n=31) working with PwMS in Saskatchewan. Inductive thematic analysis, triangulation and member checking were used. Data were coded individually by three researchers, who then collaboratively developed themes.

**Results:** Five main themes were established - 1) Prescribing, promoting and impacting wellness with PA; 2) Coordinating communication and continuity in practice; 3) Time, access and relevant care; 4) Underserved population, and 5) Reconciling perspective, theory and practice. These themes highlight the current limitations and priorities of participants.

**Conclusions:** HCP want more information on applying BCS and value PA, but due to acute and reactive health care system environments, cannot prioritize this in practice. Systems-level change is needed to support consistent and effective use of BCS for PA promotion for PwMS.

### **39130: The effects of a 12-week strength training program on skeletal muscle impairments and physical limitations in men with myotonic dystrophy type 1**

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**Background/rationale:** Myotonic dystrophy type 1 (DM1) is a genetic multisystemic degenerative disease and represents the most prevalent myopathy in adults. Skeletal muscles are particularly affected, as demonstrated by muscle weakness and atrophy experienced by affected people, which limit their social participation.

**Purpose/research objectives:** The aim of this project is to determine the effects of a 12-week strength training program on skeletal muscle impairments and physical limitations in men with DM1.

**Relevance:** Strength training has been shown to be safe in this population, but it remains unknown if it can trigger muscle hypertrophy process, thus slowing or reversing the significant muscle impairments that characterize this disease.

**Methods:** In this before-after study, a 12-week strength training program (twice a week) of 6 to 8 maximal repetitions (RM) of five different lower limb exercises was completed by 11 men with DM1. The evaluation included: 10 meter walk test (comfortable and maximal speed), 30 second sit-to-stand test, quantitative muscle strength assessment of knee extensors muscle group, 1-RM test for all exercises and an interview about perceived changes.

**Results:** Results showed significant maximal muscle strength increases as well as improvement in all functional tests ( $p < 0.05$ ). Patients also reported many positive changes after the training program such as an improved confidence in their legs and that they had ceased falling.

**Conclusion:** Many positive changes have resulted from this training program showing that a well standardized strength training is an efficient and promising treatment option to reduce skeletal muscle impairments and physical limitations in people with DM1.

### **39172: Effects of gait perturbation training on dynamic balance in individuals with moderate-to-severe traumatic brain injury**

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**Background:** Individuals with traumatic brain injury often present with balance problems associated with a decrease in their social participation. An innovative approach consists in the use of perturbations on a split-belt treadmill to improve dynamic balance.

**Purpose:** Quantify the effects of a training program including perturbations on a split-belt treadmill on dynamic balance, walking speed, balance confidence and social participation in individuals with traumatic brain injury in social integration rehabilitation phase or at a chronic stage.

**Relevance:** This promising approach (1) has not been quantified or formally assessed and is not used clinically in social integration rehabilitation phase.

**Methodology:** Seven individuals with moderate-to-severe traumatic brain injury participated in six training sessions on a split-belt treadmill with self-perturbations (head movements, turns, cognitive task) and unexpected perturbations (stop-and-go, speed increase or decrease of one treadmill belt). The Mini-BESTest, Community Balance & Mobility Scale, comfortable and fast

walking speed, Reintegration to Normal Living Index and Activity-Specific Balance Confidence Scale were measured twice before and after the intervention.

**Results:** Preliminary results indicate a statistically significant improvement of 2.1 (1.5)/28 at the Mini-BESTest and 7.0 (6.9)/96 at the Community Balance and Mobility Scale. No significant change in speed, balance confidence and social participation were observed. A learning effect was observed between the two pre-intervention assessments.

**Conclusions:** This approach seems promising in balance reeducation with individuals with moderate-to-severe traumatic brain injury.

**Reference:** (1) Mansfield A et al. Does perturbation-based balance training prevent falls? Systematic review and meta-analysis of preliminary randomized controlled trials. *Phys Ther* 2015 May;95(5):700-9.

## Oncology

### Abstract Presentations

#### **38974: Preferences and barriers of health care providers in cancer clinical care practices regarding exercise counseling and referral**

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**Background/Rationale:** Exercise has been shown to have significant benefits for cancer survivors during the course of their treatment and disease into survivorship. Health care providers (HCP) are in an optimal position to provide exercise counselling and positively impact exercise behavior. Cancer survivors, however, report a lack of counselling on exercise options and available programs.

**Purpose:** To determine HCP preferences, barriers and facilitators towards exercise counseling and referral of cancer survivors to community-based exercise.

**Relevance:** As physical therapists (PTs) are the primary discipline involved in provision of exercise in the clinical setting, understanding the issues facing HCPs can inform PT's role in facilitating exercise among cancer survivors.

**Methods:** An evidence-based theory informed cross sectional questionnaire was conducted on a sample of HCPs (N=47) at the Cross Cancer Institute, Edmonton. Questionnaire responses were analyzed quantitatively. Responses were then mapped to a behavior change model inform potential future implementation strategies.

**Results:** Across all HCP disciplines: 92% recommended exercise counseling to be performed at multiple time points; 72% reported being, at most, 'somewhat' confident towards exercise counseling; and 17% reported performing daily exercise counseling with patients. The most common HCP identified barrier to exercise counseling was time, followed by a lack of knowledge regarding appropriate exercise. The most common facilitator was the 'interdisciplinary team', including access to physical therapy services.

**Conclusion:** This study has identified current exercise counseling practice and preliminary barriers and facilitators to exercise counseling of cancer survivors from the HCPs' perspective to inform future implementation strategies and improve current practice.

### **39036: Living Safely with Bone Metastases: Development of an Evidence-based Educational Resource Tool**

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**Background:** Cancer patients with bone metastases are at high risk of pathological fractures, however are frequently not equipped with fracture prevention strategies. Given the advances in treatment, an educational resource is needed to complement clinical care, in order to minimize the occurrence of preventable fractures.

**Purpose:** To create an evidence-based educational resource for patients with bone metastases.

**Relevance:** As there are limited patient education resources available, a resource on fracture prevention strategies will contribute to better management in both clinical and home settings.

**Methods:** A quality of care research project was carried out, involving collaboration between clinicians, researchers, and patient education specialists. A literature review of fracture prevention strategies, together with expert input, informed the content and design of the educational resource, which was developed in a booklet format. A patient focus group reviewed the booklet for clarity and readability, using a standardized interview script. Thematic analysis was carried out to summarize focus group results.

**Results:** The booklet “Living Safely with Bone Metastases,” available in print and online format, includes information about bone metastasis, guidelines for seeking medical care, and three sections on fracture prevention: 1) Move with care; 2) Stay safe in different environments, and 3) Follow an exercise program prescribed by a physical therapist. Themes from the focus group feedback were to ensure clarity and gender neutrality of language and images.

**Conclusion:** “Living Safely with Bone Metastases” provides a useful resource for patients and healthcare professionals. Further research is needed to confirm its clinical effectiveness in reducing fractures.

## **42902: Eye Opener: Closing the Know-Do Gap: Oncology Physiotherapy Research**

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Knowledge translation (KT) uses strategies to move research evidence into practice, and to close the “knowledge-to-action gap”. The oncology division will present a series of KT stories demonstrating the use of integrated KT, implementation practice strategies, and by disseminating results of new research to a physiotherapy audience.

### **Poster Presentations**

## **38426: Developing a patient-led surveillance program for breast cancer-related lymphedema**

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**Background/Rationale:** Strategies to increase access to prospective surveillance of BCRL are needed. One potential solution is accurate patient-led surveillance.

**Purpose/Research Objectives:** To develop and test patient-led surveillance for BCRL.

**Relevance:** While many physiotherapists would like to translate research into practice by delivering BCRL surveillance programs, barriers do exist. Patient-led surveillance programs may allow physiotherapists to deliver this service despite existing barriers.

**Methods:** A protocol for self-measured arm circumference was developed by literature review, gaining clinical expert consensus and testing the measurement points and equipment. Written resources and video guides were developed in multiple languages to assist learning of the protocol and were tested in a research setting. A study was then undertaken in a publically funded healthcare site to determine if women could accurately complete self-measurement while undergoing breast cancer treatment and surgery.

**Results:** A protocol and tools for a patient led surveillance program were developed and tested in a research setting. As a next step, forty women newly diagnosed with breast cancer are testing the intra-rater and inter-rater reliability of self-measured arm circumference in a clinical setting. Twenty-four women are enrolled to date.

**Conclusions:** Data analysis is ongoing but should be completed by May 2018. Recruitment rates illustrate that women are interested in self-monitoring arm circumference.

### **38852: A comparison of the effects of medical Qigong and standard exercise therapy on symptoms and quality of life in patients with advanced cancer**

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**Purpose:** Patients with advanced cancer frequently experience anxiety, depression and poor quality of life (QOL), as well as physical symptoms such as fatigue and weakness. Physical exercise has potential to help control these symptoms, but the optimal training prescription is still not clear. We performed a study comparing medical Qigong (QG) and standard endurance and strength training (SET) in patients with advanced stage non-small cell lung (NSCLC) and gastrointestinal (GI) cancers.

**Methods:** A randomized, cross-over study was performed in patients with advanced NSCLC and GI cancers receiving or eligible for chemotherapy. Patients received supervised QG or SET twice-weekly for 6 weeks. Psychological functioning, QOL, symptoms and physical functioning were assessed before and after each intervention period.

**Results:** Nineteen patients completed both interventions. Comparing interventions revealed no difference between QG and SET on change in anxiety or depression scores or QOL. However, SET treatment was better at improving perceived strength ( $P = 0.05$ ) and walking distance ( $P = 0.02$ ). The order in which interventions were performed had a significant impact on the improvement in certain symptoms (sleep quality, breathlessness,  $P < 0.05$ ), QOL ( $P = 0.01$ ) and walking distance ( $P = 0.008$ ).

**Conclusions:** QG and SET are equivalent in their impact on many aspects of psychological function in cancer patients. However, SET leads to greater improvements in exercise capacity and helps reduce some symptoms.

### **38928: Does vincristine chemotherapy decrease ankle dorsiflexion range of motion and lower extremity function in adults with Acute Lymphoblastic Leukemia?**

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**Background/Rationale:** Decreased ankle dorsiflexion range of motion (DF-ROM) and impaired mobility have been documented in children receiving vincristine for Acute Lymphoblastic Leukemia (ALL). Physiotherapists (PT) therefore provide these patients with routine preventative assessment and treatment. This study investigated if similar practices should occur

for adults. There is limited literature on mobility and physical function in adulthood ALL survivors.

**Purpose/Research Objectives:** To examine the effect of vincristine chemotherapy on DF-ROM and lower extremity function in an adult ALL population.

**Relevance:** PT resources are limited. Understanding the physical impact of vincristine may assist in triaging PT resources to improve mobility and physical function in adults living with ALL.

**Methods:** Active and passive DF-ROM were measured using goniometry. Participants also completed the Lower Extremity Functional Scale (LEFS) questionnaire. Assessments were made at baseline and at 26-32 days after receiving the first cycle of vincristine.

**Results:** 17 adults were analyzed in the study. No statistically significant change ( $p > 0.05$ ) was found in active and passive DF-ROM, likely due to sample size. Eight participants (47%) showed a minimal clinically important difference in function on the LEFS. Overall, participants had a median decrease of 16% in LEFS score (95% CI: -37 to 1.5), which was not statistically significant.

**Conclusions:** The data supports pursuing larger longitudinal studies in order to further examine the relationship between vincristine chemotherapy and physical function in adults living with ALL. Further investigation is also required to determine the role of physiotherapy in maintaining lower extremity function in these individuals.

### **39017: Bridging the Gap: Incorporating Exercise Evidence into Clinical Practice in Breast Cancer Care - A Pilot RCT**

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**Background:** Breast cancer (BC) and its treatments lead to numerous side effects that affect a person's life for years after treatment has ended. Research shows that regular exercise limits many of these side effects. However, less than 30% of BC survivors regularly exercise due to many barriers at both the patient and health care professional level.

**Purpose:** The purpose of this pilot trial is to assess the feasibility and effectiveness of conducting a novel KT intervention using exercise and self-management (SM) versus usual care among BC survivors.

**Relevance:** Exercise and SM education provide by physiotherapists using technology is feasible and effective for women with breast cancer during adjuvant chemotherapy.

**Methods:** *Design:* Pilot RCT. *Eligibility:* Women > 18 years undergoing adjuvant chemotherapy for BC. *Intervention Group:* 8-session multi-component intervention with a structured aerobic exercise program plus SM education supervised by a physiotherapist. *Control Group:* Usual care. *Randomization:* Participants were randomly allocated using a 1:1 ratio. *Outcomes:* The primary feasibility outcomes include recruitment, retention, and adherence rates. The secondary outcomes include physical activity level, exercise knowledge, health related quality of life (QOL), and resource utilization.

**Results:** Analysis found the intervention to be feasible (recruitment, retention, and adherence rates >75%) and effective in increasing physical activity levels, exercise knowledge and behaviour, and in maintaining QOL.

**Conclusion:** Implementation of a novel exercise intervention within the cancer institution including SM education is one strategy to close the knowledge to practice gap. Physiotherapists have a critical role to play in improving the function of BC survivors.

### **39019: Physical rehabilitation practice patterns and outcome measures in children and adolescents with cancer across Canada**

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**Background/Rationale:** Children and adolescents with cancer undergoing cancer treatment are at high risk of developing serious late and long-term adverse effects, many of which are amenable to physical rehabilitation (PR).

**Purpose/Research Objectives:** This study aimed to (1) identify the current clinical PR practice patterns of healthcare practitioners (HCPs) working with children and adolescents with cancer across Canada, and (2) collate information on clinical programs specific to pediatric oncology PR.

**Relevance:** A better understanding of the current PR practices will allow physical therapists to design, implement, and test PR protocols to improve the function and quality of life of children and adolescents with cancer.

**Methods:** A cross-sectional web-based survey in English and French languages was conducted. Participants identified were HCPs who provided PR services to children and adolescents with cancer across Canada. The survey included questions on practice patterns and service provision related to existing pediatric oncology PR programs.

**Results:** A total of 35 survey respondents were included in the study. Survey respondents reported ‘limitations in activities’, ‘alterations in motor performance’, ‘muscle weakness’ and ‘peripheral neuropathy’ as top priorities for PR services. While providers perceive interventions valuable in reducing the burden of cancer effects, issues such as space and resources were seen

as barriers to service provision. A guideline for physical exercise prescription was the only guideline reported in use clinically.

**Conclusions:** Expertise exists among HCPs working in pediatric oncology PR in Canada. Strong support exists among HCPs for the development of pediatric oncology-specific PR clinical practice guidelines.

### **39021: Understanding Exercise Needs of Cancer Survivors Residing in Rural and Remote Settings**

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**Background/Rationale:** Previous studies evaluating exercise barriers, preferences and facilitators have primarily involved survivors living in urban communities. Little is known about the challenges faced by survivors residing outside urban areas.

**Relevance:** Information gleaned can help to inform the design of cancer-specific exercise programs.

**Purpose/Research Objective:** The purpose of this study was to determine the barriers, preferences and facilitators to exercise among survivors living in rural or remote settings.

**Methods:** A cross-sectional quantitative survey was administered to 30 survivors living in rural or remote locations in the province. Data was collected on the survivor's exercise background, exercise counselling received, as well as the barriers, preferences, and facilitators to exercise. The survey questions were guided by the Theoretical Domains Framework, and then mapped to the COM-B, a framework for understanding behaviour.

**Results:** Findings suggest a majority of survivors understand the benefits of exercise, have the support, and feel confident in their ability to exercise. Only 17% of survivors reported meeting guidelines for leisure-time physical activity (PA); however, reported facilitators included high levels of PA in their day-to-day lives or occupation (e.g. farming). Barriers to exercise included cancer-specific symptoms (e.g. fatigue), winter driving and distance, and lack of access to local cancer-specific programming. Preferences included programs involving survivors with similar issues, combined supervised and self-directed exercise, and flexible scheduling.

**Discussion/Conclusion:** Findings suggest rural and remote residing survivors have the skills and capability to exercise. Objective assessment of PA levels may help to inform programming. Strategies are needed to facilitate access to cancer-specific programming.

## **39158: The Effect of Therapeutic Ultrasound on Chemotherapy Induced Peripheral Neuropathy in Colon and Colorectal Cancer Patients: A Pilot Randomized Controlled Trial**

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**Background/Rationale:** Chemotherapy Induced Peripheral Neuropathy (CIPN) is a common adverse effect of chemotherapeutic agents used in the treatment of cancer. CIPN can be disabling, and is associated with pain, reduced sensation, balance deficits, and functional difficulties. To date, interventions for CIPN focus on symptom management. Ultrasound therapy is an option to help address pain and other sensory symptoms. However, no clinical research studies have been performed examining the efficacy of therapeutic ultrasound as an intervention for CIPN.

**Purpose/Research Objectives:** The aim of this study was to determine the preliminary efficacy of adding therapeutic ultrasound to the current standard of care for patients with CIPN.

**Relevance:** Ultrasound therapy is readily accessible in physical therapy settings, may help to reduce the local inflammation and pain, and thus may positively impact the function and the quality of life of patients with cancer.

**Methods:** Colon and colorectal cancer survivors with CIPN were randomized to ultrasound intervention (N=16) or standard care (N=15). Assessment of pain, sensory disturbance, sensation, and balance were conducted at baseline, 2 and 6 weeks.

**Results:** Adding therapeutic ultrasound to standard care resulted in a statistical significant improvement in self-reported symptoms immediately following the 2-week treatment period ( $p < 0.003$ ); however, no significant differences were found at 6 weeks ( $p < 0.071$ ). The improvement in symptoms was more than double the minimal clinically important difference (10.94 points).

**Conclusions:** The findings of this study support the need for a large-scale placebo-controlled randomized study to examine the efficacy of therapeutic ultrasound for patients with CIPN.

## Orthopaedics

### Abstract Presentations

#### 32755: Early Mobilization Following Arthroscopic Rotator Cuff Repair

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**Background/Rationale:** Current evidence regarding the optimal period of immobilization after RC repair is contradictory. Early mobilization may allow faster recovery without negatively affecting patient outcomes. This study explored the 24-months outcomes of arthroscopic rotator cuff repair (ARCR) between patients who performed early active shoulder ROM and those who were immobilized for the first 6 postoperative weeks.

**Purpose/Research Objectives** This randomized clinical trial (RCT) compared the impact of early mobilization to standard 6-weeks postoperative immobilization post ARCR over the 24-months postoperative.

**Relevance:** Efforts to increase the efficiency of post-operative rehabilitation programs are needed.

**Methods:** 206 patients with full-thickness RC tear undergoing an ARCR were randomized following a preoperative assessment of shoulder pain, ROM, strength and health related quality of life (HRQL) to either early mobilization (n=103; self-weaned from sling and performed pain-free active ROM during the first 6 weeks) or standard immobilization (n=103; wore a sling for 6 weeks with no active ROM). Shoulder ROM, pain and HRQL were re-assessed at 6-weeks, 3-, 6- and 12-months postoperatively by a blinded assessor. At 6-, 12-, and 24-months, strength was re-assessed. At 12-months, ultrasound verified RC integrity.

**Results:** The groups were similar preoperatively (p>0.12). The average age of all subjects was 55.9 (minimum 26, maximum 79) years and 131 (64%) were males. 171 (83%) patients were followed to 24- months. Overall, there were no group differences in ROM (p>0.08), WORC (p=0.84), pain (p>0.06), SF-36 (p>0.2) or strength (p=0.35). 52 (25%) subjects (24-EM and 28-SR) had a full thickness tear at 12-month postoperative ultrasound testing (p>0.8).

**Conclusion:** Early mobilization did not show significant clinical benefits, but there was no compromise of postoperative strength or HRQL. Repair integrity was similar at 12-months postoperative between groups. Consideration should be given to allow painfree active ROM within the first 6 weeks following an ARCR.

## 38547: The Consequences of Youth Sport-related Knee Injury: Implications for Secondary Prevention of Osteoarthritis

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**Background:** Youth sport participants are vulnerable to knee injury and subsequent osteoarthritis. Improved understanding of the consequences of knee injuries could inform osteoarthritis prevention strategies.

**Objective:** This cohort study examines the association between youth sport-related knee injury and health-related outcomes, 3-10 years post-injury.

**Relevance:** Improved understanding of the interval between knee injury and osteoarthritis onset will inform rehabilitation programs aimed at preventing osteoarthritis.

**Methods:** Participants included 100 individuals who experienced a youth, sport-related intra-articular knee injury 3-10 years earlier and 100 age-sex-sport-matched controls. Outcomes included; Knee Injury and Osteoarthritis Outcome Score (KOOS), Intermittent and Constant Osteoarthritis Pain Score, body-mass-index (BMI), fat-mass-index (FMI), weekly physical activity, hip and knee muscle strength, dynamic balance and MRI-defined osteoarthritis. Baseline characteristics are described. Multivariable conditional regression (95%CI) was used to evaluate the association between injury history and each outcome, considering differences by sex, time-since-injury and injury-type.

**Results:** Participant median age was 22 years (range 15-26) and 55% were female. The injured group demonstrated poorer KOOS scores, more intermittent pain, higher BMI (1.8kg/m<sup>2</sup>; 95%CI 0.9,2.6), higher FMI (1.1kg/m<sup>2</sup>; 95%CI 0.5,1.6), weaker knee muscles, poorer balance and more frequent MRI-defined osteoarthritis (OR 10.0; 95%CI 2.3,42.8) than controls. Injured and uninjured females exhibited greater differences in KOOS, BMI, FMI, knee muscle strength, and balance than males. Longer time-since-injury was associated with poorer KOOS, knee extensor strength and balance outcomes in those previously injured.

**Conclusions:** Outcomes consistent with future osteoarthritis and other negative health states are more prevalent in individuals 3-10 years following a range of youth sport-related knee injuries compared to uninjured controls.

## 38645: Effectiveness of directional preference to guide management of low back pain in Canadian Armed Forces members: A pragmatic study

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**Background/ rationale:** Low back pain (LBP) is a leading cause for disability in Canadian Armed Forces (CAF) members. The effectiveness directional preference (DP) to guide management has not been tested in CAF personnel.

**Purpose/ research objective:** To determine, in clinical practice, the effectiveness of DP-guided management versus usual care (UC) physiotherapy in CAF members with LBP.

**Relevance:** Pragmatic studies are ideal to inform clinicians about the usefulness of proven interventions in real-life clinical conditions.

**Methods:** A pragmatic quasi-experimental study was conducted among 44 consecutive CAF members with LBP who received management guided by DP (n=22) or UC (n=22). Outcomes (pain intensity, location and frequency, perceived disability, medication use, perceived global effect, work loss, and healthcare utilization) were assessed at baseline, 1-month and 3-months.

**Results:** Statistically significant differences favoring the DP group were observed for pain intensity ( $\Delta$  1 month: 1.9/10; CI 95%; 0.97-2.89;  $\Delta$  3 months: 1.3/10; CI 95%; 0.35-2.31), pain location at 1-month (54.5% vs 19.0%;  $p=.02$ ) and 3-months (68.2% vs 38.1%;  $p=.01$ ), disability ( $\Delta$  1 month: 4.3/24; CI 95%; 2.12-6.38;  $\Delta$  3 months: 3.5/24; CI 95%; 1.59-5.33), perceived global effect at 1 month (pain: 86.4% vs 57.1%; function: 81.8% vs 47.6%; overall status: 86.4% vs 57.1%) and 3 months (pain: 95.5% vs 71.1%; overall status: 95.5% vs 66.7%) with  $p$ -values  $<.05$ , and improvement in work status at 3-months (54.5% vs 23.8%;  $p=.04$ ).

**Conclusion:** DP-guided management appears more effective than UC physiotherapy to reduce pain and improve function in CAF members with LBP. Rapid improvements and the patient's ability to self-manage may prove advantageous in deployed settings.

### **38964: Preliminary Evaluation of an Advanced Practice Physiotherapy Model of care for Patients with Musculoskeletal Disorders Presenting to an Emergency Department**

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**Background/Rationale:** Advanced practice physiotherapy (APP) is emerging in new settings, such as emergency departments (ED), but there is limited evidence on the benefits of these models.

**Purpose/Research objectives:** 1- To determine diagnostic interrater reliability between physicians and APPs; and 2- To compare medical imaging request, treatment options and discharge plans for patients with musculoskeletal disorders (MSKD) consulting in an ED.

**Relevance:** Implementation of APP models has the potential to increase access and quality of care for patients with MSKD.

**Methods:** Patients with a MSKD presenting to the Maisonnette-Rosemont Hospital's ED (Montreal, Canada) were recruited and independently assessed by physicians and physiotherapists. Each provider completed a standardized form indicating diagnosis, imaging requests, as well as proposed treatment and discharge plans. The Visit Specific Satisfaction Instrument (VSQ-9) was used to record satisfaction with care. Interrater reliability was calculated with Cohen's Kappas (k) and PABAKs, with associated 95% CI.

**Results:** Sixty participants were evaluated (mean age: 52±16.9 years) with twenty-seven presenting with a traumatic injury. Moderate diagnostic agreement was observed between providers (k= 0.75; 95%CI 0.62-0.87). Imaging request agreement was moderate (PABAK= 0.60; 95%CI 0.35-0.78) and physicians prescribed significantly more imagery (p<0.05). Strong agreement for discharge plans was observed (PABAK= 0.83; 95%CI 0.59-0.95). Satisfaction with care was high and no significant differences were found between providers (p≥0.05).

**Conclusions:** Concordance between physicians and physiotherapists was significant. Satisfaction with APP care was high. These initial findings support the implementation of APP models of care in EDs. Further prospective evaluations of the efficiency of these models are warranted.

### **38984: Mesures de résultats rapportés par les patients pour la gestion de la douleur chronique : les patients et les cliniciens ont-ils la même perception quant aux domaines à évaluer?**

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**Introduction :** Les mesures de résultats rapportés par les patients (MRRP) offrent une perspective unique des besoins physiques, émotionnels et sociaux des patients. Cependant, aucune MRRP liée aux domaines de la qualité de vie liés à la santé (QVLS) n'a été recommandée dans la pratique clinique pour les personnes souffrant de douleur chronique (DC). Les buts de cette étude étaient : 1) d'identifier les domaines perçus comme étant les plus affectés par la DC par les patients et les professionnels de la santé (PS) et 2) d'explorer l'intérêt, les facilitateurs et les barrières à l'utilisation de MRRP par les PS et les patients. **Méthodes :** Des PS œuvrant en DC et des patients souffrant de DC ont complété un sondage électronique comprenant des questions ouvertes et fermées. Des statistiques descriptives et une analyse inductive ont été réalisées. **Résultats :** 53% des PS et 52% des patients ont complété le sondage. Les domaines priorités étaient semblables entre les patients et les PS pour les domaines interférence et intensité de la douleur, fonction physique et anxiété. 86% des PS et 83% des patients étaient intéressés à utiliser des MRRP. Les barrières et les facilitateurs perçus étaient liés: 1) aux caractéristiques des MRRP (ex: longueur; pertinence); 2) au contexte organisationnel (ex: temps; confidentialité) et 3) aux caractéristiques des patients et des PS (ex : motivation). **Conclusion :** Les PS et les patients sont intéressés à utiliser des MRRP à condition que ces derniers soient perçus comme utiles pour guider la prise de décision clinique.

### **39042: Physiotherapists' ability to diagnose and manage patients with shoulder disorders in an outpatient orthopaedic clinic: preliminary results from a concordance study**

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**Background/Rationale:** Advanced practice physiotherapy (APP) has emerged as a promising solution to improve healthcare access. However, evidence supporting these models is scarce.

**Purpose/Research Objectives:** To establish diagnostic, surgical triage and treatment agreement between physiotherapists (PTs) and orthopaedic surgeons (MDs) for management of patients with shoulder complaints.

**Relevance:** APP care aims to improve healthcare access while containing costs and retaining patient satisfaction.

**Methods:** Patients with a new shoulder complaint presenting to the Maisonneuve-Rosemont Hospital's orthopaedic clinic (Montreal, Canada) were recruited and independently assessed by an orthopaedic surgeon and a physiotherapist. Each provider completed a standardized form indicating diagnosis, imaging tests requests and proposed treatment plans including triage of surgical candidates. The VSQ-9 questionnaire was used to record patients' satisfaction with care. Interrater reliability was calculated with Cohen's Kappas (k) and PABAKs, with associated 95%CI. Student t-tests were used to compare differences between providers in terms of treatment plans options and patient satisfaction.

**Results:** 42 participants were evaluated (mean age:  $51.3 \pm 14.5$  years). The most common diagnoses included: rotator cuff pathology (49%) and shoulder instability (21%). Only 12 patients (29%) were surgical cases. Substantial diagnostic agreement was observed between providers (36/42;  $k=0.80$ ; 95%CI:0.66-0.94). Moderate agreement for the triage of surgical candidates was observed (32/42; PABAK=0.57; 95%CI:0.26-0.79). PTs gave significantly more advice and education ( $p=0.019$ ). Patients' satisfaction with care was high and no significant differences were found between providers ( $p=0.76$ ).

**Conclusions:** Concordance between MDs and PTs was moderate to substantial. These preliminary results support further development of APP care for orthopaedic patients presenting with shoulder disorders.

### **39043: Advanced practice physiotherapist role in orthopedic surgery triage is not limited to experienced senior physiotherapists**

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**Background:** Advanced practice physiotherapists (APP) have helped improve accessibility to orthopedic outpatient care in Canada. Several studies have validated the APP practice model, demonstrating high agreement between APP and orthopedic surgeons (OS) regarding diagnosis and management. As APPs are generally experienced senior physiotherapists, a practice model involving a physiotherapy student (PS) and OSs has yet to be explored.

**Purpose:** To evaluate concordance for orthopaedic diagnoses and surgical triage between PS and OSs.

**Relevance:** Information drawn from this novel study could provide evidence to create training programs for APPs.

**Methods:** A prospective study involving a PS and seven OSs was conducted in a university hospital in Sherbrooke, Quebec after the PS had undergone a three-week intensive training. Eighty-six adult patients referred to OSs for gonarthrosis, coxarthrosis or shoulder problem were independently evaluated by the PS, and then reevaluated by an OS. Both noted their diagnoses and surgical triage recommendation. These outcomes were analyzed for agreement between the PS and OSs using percentage agreement and Cohen's kappa.

**Results:** Our sample consisted of 60.5% male (mean age=63.4 years), where shoulder problems accounted for 36.0% of consultations, gonarthrosis for 52.3% and coxarthrosis for 11.6%. The percent agreement for diagnosis was 95.3%. The agreement for surgical triage was high ( $\kappa=0.86$ , 95%CI: 0.74–0.98) with a raw agreement of 94.2%. Patient satisfaction was high.

**Conclusion:** The PS and OS made similar diagnoses and triage recommendations suggesting that clinical experience alone is not a prerequisite for physiotherapists to help increase accessibility to orthopedic care in Canada.

### **39063: A scoping review to define Advanced Practice Physiotherapy (APP) on the international stage.**

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**Background/Rationale:** Advanced Physiotherapy Practice (APP) hasn't been adequately integrated into physiotherapy practice due variation in the use of title, definition of APP, the roles, education, competences and regulation among national physiotherapy associations and the lack of a unifying policy statement by the profession (e.g. World Confederation of Physical Therapy) on Advanced Practice Physiotherapy.

**Purpose/Research Objectives:** To identify similarities and differences among national organizations on the use of the title, definition, roles, competencies, and regulations surrounding APP.

**Relevance:** Identifying a unique definition, title, scope, regulation, education, and competencies for APP will help in establishing these roles across jurisdictions and countries.

**Methods:** Data were extracted from online databases including CINAHL, MEDLINE, SCOPUS, Web of Science. Grey literature and government documents were sourced directly from organizations.

**Results:** Seven studies were judged to meet all the inclusion/exclusion criteria. There is a paucity of evidence addressing these issues. There are different titles, roles, and definition associated with APP. Roles are often described as either within or outside the scope of practice depending on the country, state or provincial definition of the scope of practice for the physiotherapy profession. There is also the development of competency-based evaluation models for advanced practice, however, these models are country-specific and not transferable.

**Conclusion:** These variations have resulted in difficulty understanding what advanced practice is by the public and other healthcare professionals, difficulty transferring skills from one hospital or province to another in Canada and among different countries. There is the need for a universal framework for Advanced Practice Physiotherapy.

### **39089: Telerehabilitation and face-to-face visits result in equivalent locomotor patterns at 4 months post total-knee arthroplasty**

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**Background:** A recent randomized clinical trial (RCT), comparing the clinical effectiveness of a home-delivered rehabilitation program using videoconference technology (TELE) or face-to-face visits (STD), has revealed equivalent outcomes at four months after total-knee arthroplasty (TKA).

**Purpose:** The aim of this subgroup analysis (43% of the whole cohort) was to determine whether the two intervention groups differed in their locomotor patterns at 4 months post-TKA.

**Relevance:** A 3D laboratory assessment might bring relevant additional information on the locomotor patterns of these participants.

**Methods:** Eighty-four individuals (mean age and standard deviation: 66 (7.5) years) who had received 8 weeks of physiotherapy (TELE: n=43; STD=41) were assessed 4 months after TKA. In addition to clinical assessment (pain, ROM and strength, 6MWT and comorbidity), the locomotor patterns during two tasks, sit-to-stand (three-foot conditions) and walking at two speeds, were evaluated in the laboratory. Statistical analyses assessed effects of tasks and group interventions (TELE vs. STD) on the biomechanical data and asymmetry of performance.

**Results:** Participants had moderate pain and ROM and strength at the knee were inferior on the operated side. They performed the STS with an asymmetrical use of the operated knee although they could perform more symmetrical when imposed. They were more asymmetrical at fast than normal speed during walking. The knee kinematic and kinetic parameters and force asymmetry did not differ between TELE and STD groups.

**Conclusion:** These results bring more evidence that TELE and STD interventions are equivalent. They also reveal that not all individuals at 4 months post-TKA have normal locomotor patterns.

### **39106: The physiotherapy preventive assessment (PPA): screening and preventing MSK injuries in asymptomatic adults**

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**Context:** Physiotherapists have an important role to play in promoting health and wellbeing. However, screening and preventing musculoskeletal (MSK) injuries in asymptomatic adults is an understudied area.

**Aim:** Explore the quality, applicability and impact of the physiotherapy preventive assessment (PPA) delivered in a private practice setting for adults without MSK pain in order to prevent MSK injuries.

**Relevance:** Clinical initiatives can guide development and implementation of MSK health preventive services in physiotherapy.

**Methods:** 30 non-athletic adults (18-65 years old) without MSK pain received the PPA. During this one-hour individual session, a questionnaire and physical examination was used to screen for risk factors (behaviors, deficiencies and limitations) of developing overuse MSK injuries in the spine or upper/lower extremities. Personalized recommendations and exercises were also given to reduce them. Participants completed a self-administered questionnaire before, after and at 4 weeks following the PPA to measure changes in MSK health preventive attitudes/ behaviors and satisfaction/adhesion to preventive exercises/recommendations. Four physiotherapists delivering the PPA received a semi-structured interview concerning competencies/attitudes towards MSK prevention, as well as facilitators/barriers to MSK health preventive services.

**Results:** Most participants were very satisfied with the PPA (70%) and perceived that it would be relevant at least once a year (84%). 35% adhered to preventive recommendations and exercises as prescribed. Physiotherapists reported improvement in their confidence, competency and interest towards MSK health prevention following their experience.

**Conclusion:** The physiotherapy preventive assessment (PPA) could improve adult MSK health and also enhance attitudes and skills of physiotherapists in MSK health prevention.

### **39133: Moving toward stronger evidence to corroborate the relevance of neurodynamic assessments and interventions for individuals with carpal tunnel syndrome: Isn't it time to adopt a standardized measurement protocol when using quantitative ultrasound imaging?**

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**Background:** Quantitative ultrasound imaging (QUI) is increasingly used amongst physiotherapists to corroborate the relevance of neurodynamic assessments and the efficacy of interventions targeting peripheral nerves such as the median nerve. Surprisingly, measurement protocols for the median nerve, including QUI, vary extensively across studies making the conduct of meta-analyses very challenging, even impossible.

**Purpose:** To synthesize the literature focusing on QUI assessment of the median nerve and propose a standardized measurement protocol.

**Relevance:** The development of an evidence-based standardized QUI assessment protocol is crucial to characterize median nerve neurodynamics and promote further investigation of nerve-gliding-type interventions, especially in individuals with carpal tunnel syndrome.

**Method:** Systematic searches of databases were performed up to December 2017. Only studies providing quantitative median nerve measures on human participants were included. The methodological quality of each study was assessed by two reviewers using the COSMIN checklist. A critical narrative analysis of the median nerve excursion assessments was performed to guide our proposition.

**Results:** Despite low-level evidence, ten studies reported reliable and valid QUI-related measurements of median nerve neurodynamics. Common methodological elements of studies with the best psychometric qualities included: 1) evaluation in supine with the arm resting alongside, 2) ultrasonographic acquisition over the carpal tunnel, 3) passive wrist extension performed to elicit nerve excursion, and 4) post-processing using speckle-tracking image analysis.

**Conclusion:** Using a standardized measurement protocol, incorporating the four aforementioned elements, is encouraged to generate aggregated data across studies and collectively strengthen evidence on neurodynamic assessments and interventions for individuals with carpal tunnel syndrome.

### **39134: Diagnostic imaging and rehabilitative ultrasound imaging in Canadian physiotherapy. A survey of physiotherapy schools and legislative bodies.**

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**Background/Rationale:** Many studies have underlined the necessity of additional knowledge in DI/RUSI to maximize physiotherapists' competencies in orthopaedic medicine. At this time, little information exists on this knowledge acquisition in Canadian physiotherapy programs and in each provincial/territorial legislative context.

**Purpose/Research Objectives:** What is the actual and projected status of both subjects in Canadian physiotherapy schools and pan-Canadian legislation?

**Relevance:** Offer useful information for future endeavours, including educational planning of content and resources.

**Methods:** Cross-sectional survey with 3 online questionnaires sent to 1) 15 Canadian PT entry-level programs 2) 12 PT provincial/territorial legislative bodies 3) Canadian Armed Forces.

**Results:** The overall response rate was 100%. Both modalities were identified as essential competencies for physical therapy graduates (DI 73.3%, RUSI 60% university respondents) and new course content was expected within the next five years in DI (60.7% of respondents) and RUSI (47.7%). Few physiotherapists can refer for DI presently, but it is projected that 58.3 % (7/12) of the provinces/territories representing more than 90% of the physiotherapy workforce will have the possibility to prescribe DI within 5 years. Only one postgraduate program granting credits offered DI material, none offered RUSI. Great variability in educational content was underlined but plain radiographs and diagnostic ultrasonography were the most mastered modalities.

**Conclusions:** DI and RUSI are rapidly evolving in Canadian PT practice at the educational and legislative levels. Establishing consensus in DI and RUSI teaching material and RUSI utilization are paramount.

## **42285: Thérapies régénératrices en musculosquelettique : du traitement à la réadaptation**

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Les techniques d'injection de plasma riche en plaquettes et de cellules souches pour des conditions de tendinopathies chroniques, d'arthrose ou de discopathies lombaires sont de plus en plus utilisés. Nous allons revoir les données probantes de la littérature sur leur utilisation et l'approche de rééducation à préconiser suite à ces nouveaux traitements. Dr. Lamy présentera "Le rôle du physiothérapeute post injection de PRP et/ou cellules souches".

## **43938: The middle of it all: Regional Interdependence and the Thoracic Spine**

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Thoracic pain and dysfunction can be a contributing factor in upper quadrant presentations. The theory of regional interdependence describes how movement in an unrelated even asymptomatic region can influence function in another region. Current evidence supporting the use of manual therapy techniques to the thoracic spine in the management of neck and shoulder complaints will be presented using a case illustration.

## **Poster Presentations**

### **32107: Can a knowledge translation implementation strategy improve the evidence-based management of lateral ankle sprains by Canadian Armed Forces Physiotherapists?**

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**Introduction:** Lateral Ankle Sprains (LAS) are the 3rd most common musculoskeletal injury among military members, resulting in considerable time loss and a substantial rehabilitation workload. The operational relevance of these consequences to the Canadian Armed Forces (CAF) should be minimized through the use of evidence-based practices. The purpose of this research project was to use a comprehensive Knowledge Translation (KT) implementation strategy tailored for CAF Physiotherapists to improve their knowledge and use of the rehabilitation interventions and outcome measures recommended in the management of LAS.

**Materials/Methods:** All CAF Physiotherapists were sent an email invitation to complete an online questionnaire investigating their knowledge and use of rehabilitation interventions and outcome measures recommended in the management of LAS. An active, multi-component KT intervention including; summarized research, practice tools and guided interaction, was then delivered to them via a distance learning platform. The primary outcome was the median change reported on the online questionnaire prior to and 3 months following the intervention.

**Results:** Response rate to the online questionnaire was 75% (n=67/89). Respondents reported excellent knowledge and use of rehabilitation interventions recommended in LAS management between baseline to three months and reported poor to good or excellent knowledge and use of outcome measures recommended in LAS management between baseline to 3 months. Respondents reported a preference for summarized research.

**Conclusion:** Our findings suggest that a KT implementation strategy tailored for CAF Physiotherapists improved their knowledge of and use of rehabilitation interventions and outcome measures recommended in LAS management.

### **32569: Characterizing tendon integrity using quantitative ultrasound imaging in individuals with unilateral Achilles tendinopathy: Are all outcome measures equally relevant?**

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**Background:** Numerous physiotherapy interventions have been proposed for the rehabilitation of Achilles tendinopathy. These interventions predominantly seek to improve the biological integrity of the Achilles tendon (AT) in order to reduce impairments, optimize abilities, and maximize social participation. Although musculoskeletal ultrasound imaging allows physiotherapists to measure *in vivo* integrity of the AT, there is no consensus on which outcome measures are most appropriate.

**Purpose:** This exploratory study aims to identify quantitative ultrasound measures that can best characterize the biological integrity of the AT.

**Relevance:** Identifying these outcome measures will guide physiotherapists on the best measures to consider for inclusion in a minimal data set in clinical or research protocols.

**Methods:** Ten individuals with a unilateral Achilles tendinopathy underwent a laboratory assessment during which longitudinal and transversal AT ultrasound images were recorded bilaterally by a trained physiotherapist. Geometrical measures (cross-sectional area, mean thickness), grayscale histogram properties (echogenicity, variance, skewness, kurtosis and

entropy) and Haralick features (contrast, energy and homogeneity) were calculated using a program developed with a MATLAB™ image processing toolbox.

**Results:** Compared to the healthy AT, the impaired AT had an increased ( $p \leq 0.028$ ) cross-sectional area (+55,4%), mean thickness (+56,2%), energy (+17,9%) and homogeneity (+8,2%), and decreased echogenicity (-18,8%) and contrast (-28,8%). Variance, kurtosis and entropy were similar between both ATs.

**Conclusion:** A subset of 6 quantitative ultrasound measures may best characterize the biological integrity of the AT. Additional research will assess the discriminative validity of these measures and their collinearities among a larger group before recommending a minimal data set.

### **38230: A Descriptive Study of Physiotherapist Use of Publicly Funded Diagnostic Imaging Modalities in Alberta**

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**Background/Rationale:** In 2011, physiotherapists (PTs) in the province of Alberta were authorized to refer for diagnostic imaging (DI) for musculoskeletal purposes.

**Purpose/Research Objectives:** To describe referral patterns for DI modalities undertaken within Alberta's public health system by authorized PTs.

**Relevance:** Results provide clinicians, regulators, and educators an overview of practicing Albertan PT's usage of DI.

**Methods:** Descriptive study of historical data for all PT-referred publicly funded DI studies undertaken between January 1, 2012 (inception) and December 31, 2016 in the province of Alberta. Data elements included: number of DI studies/therapist/month, imaging modality, geographical region and body part. Descriptive statistics were used to summarize PT-referred studies across year, modality, geographic region and body part. Yearly rates (exact 95%CI) of PT-referred studies were calculated across modality and region.

**Results:** Over the study period 20,280 PT-referred publicly funded DI studies were conducted in Alberta. The majority (94.1%) of studies were performed at community DI clinics, with the remaining 5.9% undertaken at hospitals and public health centres. X-ray (76.4%) studies were the most common followed by ultrasound imaging (19.7%) and magnetic resonance imaging (3.5%) studies. Regional variation was observed with one urban centre accounting for 76.7% of the studies. The annual number of studies per PTs over the study period was 31.4 referrals/year (95%CI 24.8,38.0). The majority (99.95%) of DI studies were of the musculoskeletal system including: spine (22.7%), knee (15.5%), and sacroiliac joint (12.0%) radiography.

**Conclusions:** PTs typically request plain X-ray and USI for musculoskeletal conditions, with less use of MRI.

### **38300: Physiotherapist-physician collaboration to help manage musculoskeletal disorders in primary care: an interprofessional model of practice in a teaching family medicine clinic**

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**Background/rationale:** Interprofessional collaboration is key to improving the management of musculoskeletal disorders in primary care. Physiotherapists and family physicians are frequently involved in the management of persons with musculoskeletal disorders. The collaboration of these two professionals in primary care settings has shown promising benefits. Yet, few family medicine clinics have integrated a physiotherapist into their interprofessional team.

**Purpose/research objectives:** The aim of this project is to describe the interprofessional education and collaboration activities implemented in an innovative model of collaboration between physiotherapists and family physicians/residents in a teaching family medicine clinic.

**Relevance:** This innovative model of practice enables physiotherapists to contribute to the management of a growing number of individuals with musculoskeletal disorders who consult in primary care.

**Methods:** We analyzed data collected in a university-affiliated Family Medicine Group in Quebec City between 2009 and 2016. We used descriptive statistics to document the number of interprofessional activities and computed linear regressions to examine the variations in the number of activities over the years.

**Results:** Residents/physicians made 220.2±44.0 direct referrals to physiotherapists, and 306.7±73.1 informal discussions occurred per year. Physiotherapists were involved in 8.9±4.5 (mean±standard deviation) teaching lessons and 36.0±17.0 half-day physiotherapy observation sessions per year for medicine residents. There were no significant changes in the number of activities overtime.

**Conclusion:** This new model of collaboration was embodied through several interprofessional education and practice activities. By learning from each other and working together, physiotherapists and residents/physicians can improve the management of musculoskeletal disorders in primary care.

### **38524: Patient-related and objective clinical factors that influence diagnostic agreement between a physiotherapist and physicians for patients suffering from musculoskeletal knee disorders**

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**Background/Rationale:** It is commonly believed that patient-related (PR) or objective clinical (OC) factors may influence clinical diagnostic ability. Formal identification of these factors is scarce.

**Purpose/Research Objectives:** To determine if selected PR or OC factors influence diagnostic agreement between health providers.

**Relevance:** Misdiagnosis may lead to delayed or inadequate care. Diagnostic error research may help improve clinician's diagnostic ability.

**Methods:** This is a secondary analysis from a diagnostic cohort of consecutive patients consulting for a knee complaint (n=279). Collected PR factors were socio-demographic, clinical and psychosocial characteristics. Complete subjective and objective evaluations were independently performed by a physiotherapist (PT) and sport physicians or orthopaedic surgeons (MDs). OC factors included number and types of physical tests performed during the evaluations. Diagnostic agreement between providers was measured. PR and OC factors in patients with a concordant diagnosis were compared to patients with a non-concordant diagnosis using  $\chi^2$  and Student's t-tests.

**Results:** 32 of 279 participants (11%) had non-concordant diagnoses. Proportions of patients with history of delayed pain and swelling onset at initial knee trauma, a final diagnosis of a meniscal disorder or osteoarthritis and presence of more than one knee disorder were significantly higher in the non-concordant group compared to the concordant group ( $p < 0.05$ ). A higher number of positive objective observational tests was the only OC factor significantly more prevalent in the non-concordant group ( $p < 0.05$ ).

**Conclusions:** Several PR and OC factors were identified in this study. Further research is needed to formally establish the influence of these factors on diagnostic agreement.

## **38542: Operationalization of the new Pain and Disability Drivers Management Model: A Consensus study**

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**Background:** We recently proposed the *Pain and Disability Drivers Management model* (PDDM), which was designed to outline comprehensive factors driving pain and disability in low back pain (LBP). Although we've conceptualized 41 elements which make up the model, we've yet to assess external validation of the elements of the 5 domains of PDDM by expert consensus.

**Research objectives:** This study aimed to reach consensus amongst experts in regard to the elements to include within the domains of PDDM.

**Relevance:** We hypothesized that the theoretical framework will assist clinicians and researchers deliver more targeted care to optimize treatment outcomes in LBP.

**Methods:** Using a modified Delphi survey, a series of online questionnaires were administered to a group of health professionals who were experts in musculoskeletal pain management. They were asked to rate the relevance of each element proposed within the model. Consensus was defined by a  $\geq 75\%$  level of agreement.

**Results:** 47 (round 1) and 35 (round 2) participants completed the survey. Following the first round, 38/41 former model elements reached consensus and 10 new elements were proposed and rated in the 2nd round. Following this 2nd round, consensus was reached for all element (10 new + 3 from first round), generating a final model composed of 51 elements.

**Conclusion:** This expert consensus-derived list of clinical elements related to the management of LBP represents a first step in the validation of the PDDM. Future studies should now identify the best assessment tools for each element of the model.

### **38627: Determinants of quality-of-life at 12-months following anterior cruciate ligament reconstruction in young athletes**

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**Background:** Athletes who sustained an anterior cruciate ligament (ACL) rupture in their youth report reduced quality-of-life (QOL). Current ACL reconstruction (ACLR) treatment focus primarily on return-to-sport with minimal consideration for QOL.

**Objective:** Examine associations between 6-month knee symptoms, kinesiophobia, and daily average moderate-to-vigorous physical activity (MVPA), and 12-month knee-related QOL following ACLR in young athletes.

**Relevance:** Identifying modifiable determinants of QOL 12-months post-ACLR may inform rehabilitation strategies.

**Methods:** Participants included 20 youth with a first-time, sport-related ACL rupture who elected ACLR. The outcome was knee-related QOL (Knee Injury and Osteoarthritis Outcome Score QOL subscale; KOOS-QOL) at 12-months post-ACLR. Exposure variables included KOOS symptoms subscale (KOOS-sx), Tampa Scale of Kinesiophobia (TSK), and daily average MVPA minutes at 6-months post-ACLR. Data was collected pre-ACLR, and at three, six, nine and 12-months post-ACLR. Descriptive statistics [(mean or proportion (95% CI) and median (range)] were calculated for each time point. Univariate linear regression (95% CI) was used to assess associations between KOOS-QOL and exposure variables ( $\alpha=0.05$ ).

**Results:** Participant mean age was 18.1 years (95% CI; 15.1, 20.6) and 70% were female. There was a significant positive linear association between 6-month KOOS-sx and 12-month KOOS-QOL scores ( $r^2=0.391$ ,  $p=0.006$ ) and negative linear association between 6-month TSK and 12-month KOOS-QOL scores ( $r^2=0.290$ ,  $p=0.021$ ). No relationship between 6-month MVPA and 12-month KOOS-QOL score was found ( $r^2=0.053$ ,  $p=0.359$ ).

**Conclusion:** Fewer knee symptoms and less kinesiophobia at 6-months post-ACLR are associated with better 12-month knee-related QOL. Rehabilitation focused on reducing early knee symptoms and kinesiophobia may improve QOL following ACLR in young athletes.

### **38843: Is Recovery in Muscle Activation and Joint Mechanics During Gait Influenced by Total Hip Arthroplasty Surgical Approach?**

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**Background:** The lateral approach for total hip arthroplasty (THA) disrupts gluteus medius. It is unclear if this results in long term muscle dysfunction during functional activities such as walking.

**Purpose:** To compare gluteus medius and maximus muscle activation, and pelvis angles during gait between patients that underwent lateral or posterior approaches for THA one year after surgery and healthy controls.

**Relevance:** THA rehabilitation program may need to be modified to treat deficits to specific surgical interventions.

**Methods:** Patients one-year post-THA for hip osteoarthritis using lateral (n=15) and posterior (n=15) approaches, and healthy adults (n=15) were recruited. Surface electromyography (EMG) recorded gluteus medius and maximus activation and three-dimensional motion capture tracked joint motion while participants ambulated at self-selected speeds. Dependent variables were mean EMG and peak pelvic obliquity angle over gait. Cohen's (d) effect sizes and one-way analysis of variance examined group differences.

**Results:** Differences between healthy and THA groups were not statistically significant for gluteus medius (p=0.06), gluteus maximus (p=0.13) EMG and pelvic obliquity angle (p=0.21) during gait. Although not statistically significant, the lateral THA group had moderately higher gluteus medius EMG (d=0.47) than the posterior THA group. The posterior THA group had higher gluteus maximus EMG (d=0.38) and higher peak pelvic obliquity angles (d=0.71).

**Conclusion:** Some differences in muscle function during gait exists between THA surgical approaches. A larger sample is required to confirm the need to modify rehabilitation programs specific to THA surgical approach.

### **38850: Four weeks of biofeedback-controlled muscle endurance training and temporomandibular dysfunction: a pilot study of a randomized control trial**

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**Background/Rationale:** Women are more prone to TMD, with excessive muscle activation. Treatment includes measures for pain and teeth protection, but endurance exercise may be a proper way to provide relief and functionality in such population.

**Purpose:** To verify the impact of 4-week training protocol on pain, muscle activation, time until fatigue, and bite force in women with TMD.

**Methods:** The Research Diagnostic Criteria (RDC)/TMD was used to select fifteen women (randomized into two groups). The control group (CG, n=8) received placebo, and the experimental group (EG, n=7) received 4-week of muscle endurance training. The chosen variables were: temporal and masseter activation (surface electromyography), pain (visual analog scale - VAS and pressure pain threshold on both muscles - PPT), bite force (strain gauge) and time until fatigue. All variables were acquired during a fatiguing biting task under 75% of maximum isometric contraction, controlled by biofeedback. The Mann-Whitney and the Wilcoxon tests were used to analyze differences.

**Results:** After the protocol, both groups showed decreased VAS. PPT assessments on the right side and the time until fatigue showed higher values for EG, compared with CG. Compared with CG and to itself at baseline, the EG showed lower bilateral masseter activation. No differences were observed on bite force.

**Conclusions:** Pain variables were improved, and the masseter muscle showed greater efficiency by performing the same amount of force with less activation and a higher time until fatigue.

### **38886: La cryothérapie gazeuse hyperbare dans le traitement des entorses aiguës de la cheville : un essai clinique randomisé à simple insu**

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**Historique :** Le traitement en aigu de l'entorse de cheville inclut habituellement l'application de glace. Or, plusieurs autres méthodes de cryothérapie existent dont la cryothérapie gazeuse hyperbare (CGH). La CGH consiste à projeter à haute vitesse du gaz carbonique comprimé sur la peau pour la refroidir.

**Objectifs de recherche :** Évaluer les effets à court terme de la CGH sur la récupération, en comparaison avec l'application de glace, chez des individus recevant des traitements de physiothérapie pour une entorse latérale de la cheville en aigu.

**Pertinence :** Améliorer l'état des connaissances sur le traitement optimal des entorses de cheville et sur l'efficacité relative de différents modes d'administration de cryothérapie.

**Méthodologie :** 41 participants ont été recrutés dans les 4 jours suivant leur blessure, soit un groupe expérimental (CGH) de 20 personnes et un groupe témoin (glace) de 21. Ils ont reçu 7 traitements de physiothérapie sur 4 semaines et ont été évalués à 5 reprises sur 6 semaines. La variable principale était le Lower Extremity Functional Scale (LEFS), et les variables secondaires, l'échelle visuelle analogue pour la douleur, la mesure en 8 pour l'œdème, et l'amplitude articulaire de dorsiflexion. Une analyse de variance à mesures répétées à deux facteurs a été effectuée pour chaque variable.

**Résultats :** Pour toutes les variables étudiées, il y a un effet du temps très fort pour les 2 groupes ( $p < 0.001$ ), mais aucune interaction temps x groupe ( $p > 0,4$ ).

**Conclusions :** Dans le contexte de notre étude, la CGH n'a pas démontré plus d'efficacité que la glace.

### **38955: The Relationship Between Measures of Knee Loading During Gait and Cartilage Thickness in Non-Traumatic and Post-Traumatic Knee Osteoarthritis**

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**Background/Rationale:** Knee mechanics during gait have been shown to differ for non-traumatic or post-traumatic knee osteoarthritis (OA). However, it is not clear if gait mechanics relate to disease status.

**Purpose/Research Objective:** This study aimed to examine the relationship between knee mechanics during gait and knee cartilage thickness in patients with non-traumatic and post-traumatic knee OA.

**Relevance:** Having a better understanding of the different walking biomechanics in these groups would provide better insight into the mechanisms affecting disease progression and help guide treatment.

**Methods:** Cross-sectional design. Participants with non-traumatic (n=19) and post-traumatic (n=12, history of ACL rupture) knee OA were recruited. Motion and force data were collected via 3D motion capture system. External peak and impulse knee adduction (KAM), extension (KEM) and flexion (KFM) moments were calculated using inverse dynamics. Cartilage thickness in the medial and lateral knee compartments, and ratio of medial:lateral compartment thickness

were measured by MRI. Multiple regression analyses examined ability of the two OA groups, gait variables, and their interaction to explain variance in cartilage thickness measures.

**Results:** OA group alone did not significantly ( $p>0.05$ ) explain variance in cartilage thickness measures. Higher peak and impulse KAM values were associated with decreased medial:lateral compartment thickness. A higher KEM was associated with greater medial cartilage thickness in the non-traumatic group.

**Conclusion:** Potential changes in muscle function and tissue damage after trauma could explain the higher KEM values found in the non-traumatic group. Higher medial compartment loading resulted in a decreased ratio of medial:lateral compartment cartilage thickness. Therefore, dynamic knee loads impact long term cartilage health.

### **38987: A systematic review of the effectiveness of weight loss programs for patients with non-specific low back pain**

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**Background/Rationale:** There is a large number of studies suggesting that high BMI or obesity are risk factor for LBP. In fact, weight loss is often suggested by researchers and clinicians as an important component of management strategies in NLBP.

**Purpose/Research Objectives:** The objective of this study was to systematically review studies evaluating the effectiveness of weight loss programs in decreasing pain and disability in patients with chronic NLBP.

**Methods:** Relevant studies were search on MEDLINE, EMBASE, CINAHL, and OVID PsycINFO. Given the scarcity of high quality RCTs, quasi-experimental designs were eligible for inclusion.

**Results:** No RCTs and only five pre-test post test studies from which 4 evaluated bariatric surgery (188 patients) and 1 non-surgical multidisciplinary intervention (46 patients) were included. Four studies evaluating bariatric surgery demonstrated that weight loss was associated with a decrease in pain in the short term (mean difference from -1.3 to -3.4 VAS on a 0-10 point scale). These studies suggest that the benefits of bariatric surgery are not maintained in the long term, likely due to a subsequent observed increase in body weight. Additionally, there is very low-quality evidence for a single one arm study that a multidisciplinary intervention decreases pain at intermediate term (MD = -1.6, 95% CI = -2.6 to -0.6) only but this change is not likely clinically significant.

**Conclusion:** Definitive conclusions cannot be drawn due to lack of high quality RCTs, however; the results of this review suggest that weight loss may play a role on the management of NSLP.

### **38994: The Encounter with the Specialist Affects the Test-Retest Reliability of Self-Image Quality of Life Questionnaires in Adolescents with Idiopathic Scoliosis**

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**Introduction:** New questionnaires address the limitations of established quality-of-life (QOL) questionnaires for scoliosis.

**Objective:** To determine the test-retest reliability over a 1-week intervals including the specialist encounter or not for three new and two established tools.

**Methods:** Thirty-five females with AIS aged 10 to 18 years were recruited from a scoliosis clinic. Questionnaires were computer-administered using REDCAP before, one and two weeks after a specialist consult. New tools included our English translation of the Italian Spine Youth Quality-of-Life Scale (one score), Body Image Disturbance Questionnaire (one domain), and Trunk Anterior Asymmetry Scoliosis Questionnaire (TAASQ 8 domains). Established tools were used for comparison: Scoliosis Research Society (SRS-22r 5 domains), and Spinal appearance (SAQ 9 or 2 domains). Intraclass correlation coefficient (ICC<sub>3,1</sub>) with 95% confidence interval (95%CI) were used to estimate test-retest reliability.

**Results:** The mean age and Cobb angle were 13±2 years and 26±8°, respectively. Treatments included observation for 49%, exercise 29%, and bracing (night 17%, part-time 3%, and full-time 26%).

For all except 4 of the 26 scores (SRS-22r function and pain; SAQ Kyphosis; TAASQ clothing specific), the test-retest reliability estimate was larger for the interval not including the clinician encounter. For 12 scores the ICC estimate of the interval without the encounter was larger than the upper limit of the 95%CI for the interval containing the encounter.

Test-retest reliability was adequate for research for all scores for intervals not including the clinician visit (ICC<sub>3,1</sub> 0.76-0.94).

**Conclusion:** New questionnaires for patients treated conservatively and capturing anterior appearance concerns have adequate reliability. The specialist visit introduced changes reducing the test-retest reliability.

### 38999: Concurrent Criterion Validity of the iPod™ in the Measurement of Shoulder Range of Motion

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**Background:** Recent smartphones are equipped with gyroscopic functions enabling measurement of joint range of motion (ROM). Previous studies have shown good reliability of the iPod™ to measure shoulder ROM. However, evidence of concurrent validity remains scarce.

**Purpose:** Investigate the concurrent criterion validity of the gyroscopic functions of the iPod™, for the measurement of shoulder joint ROM.

**Relevance:** Smartphones are affordable and accessible, easy to use and require only minimal training. Positive results could assist clinicians in their assessment and follow-up of patients.

**Methods:** We collected ROM data from 28 healthy participants. A trained examiner measured shoulder ROM for the movements of flexion, abduction, extension and external rotation. For each movement, 4 to 6 trials (repetitions) were performed at different angles to obtain values in the entire available ROM. Measures were simultaneously taken with the iPod™ (5th generation) and a digital inclinometer (gold standard). Validity was estimated using the Intraclass Correlation Coefficient (ICC), mean differences (MD) and 95% limits of agreement (LOA) with Bland-Altman plots.

**Results:** We found excellent criterion validity for all four movements studied (ICCs = 0.907-0.996). In terms of accuracy, the mean difference (MD) between both instruments for all movements was between -1.9° and 2.0°, except for extension (MD = 3.80° - 4.70°).

**Conclusions:** This study provides evidence of validity of the gyroscopic functions of the iPod™ for the measurement of the shoulder joint mobility in a wide-range of amplitudes for shoulder ROM. Future studies should investigate ways to improve accuracy of extension measurements.

### 39047: Rotator cuff disorders in workers: a systematic review of existing clinical practice guidelines

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**Background/Rationale:** Clear recommendations are needed in order to improve diagnosis, treatment and return to work in workers with rotator cuff (RC) disorders.

**Purpose/Research Objectives:** To perform a systematic review of clinical practice guidelines (CPGs) for the management of RC disorders in workers.

**Relevance:** Several CPGs have been developed, however systematic appraisal of these CPGs is lacking.

**Methods:** A literature search in nine bibliographical databases was conducted up to May 2017. CPGs on the management of RC or shoulder disorders in adults and/or workers were included. Standardized data extraction was performed. The methodological quality of the CPGs was assessed with the AGREE II tool. Qualitative synthesis of the evidence was performed.

**Results:** The mean overall quality score of the eight included CPGs was 33%±30% (range 8%-88%). Three of the eight CPGs were based only on expert consensus. No CPG were developed in Canada. Four CPGs made recommendations on the clinical exam components (history, observation, range of motion and strength testing). Based on five CPGs, ultrasound and MRI may be recommended if a full-thickness RC tear is suspected. All CPGs recommended the prescription of an exercise program. Seven CPGs recommended subacromial injections of corticosteroids under certain conditions. Five CPGs recommended that return to work should be based on an individualized treatment plan with an appropriate time frame.

**Conclusions:** The quality of included CPGs was generally low. All CPGs recommended active treatment, such as an exercise program in the management of RC disorders. Development of more rigorous CPGs is warranted, especially in the context of the Canadian healthcare.

### **39092: Comparing the effect of widespread pain (WSP), multi-joint pain and low back pain (LBP) on measures of pain sensitization (PS) and function in people with knee osteoarthritis (OA)**

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**Background/Rationale:** Little is known about the presence of WSP, multi-joint pain or LBP and their effect on measures of PS and function in people with knee OA.

**Research objective:** To compare 1. Measures of PS in people with WSP, multi-joint pain, LBP or knee OA only in people with knee OA and 2. Results of self-reported function and physical performance tests amongst these sub groups.

**Relevance:** Understanding the impact of these common conditions on PS and function in this population will allow clinicians to tailor assessment methods and treatment goals according to the subgroup.

**Methodology:** Patients with knee OA consulting an orthopaedic surgeon were recruited from two Montreal area hospitals. A body homunculus was used to identify the presence of WSP (Y/N) using a previously validated method, multi-joint pain using a joint count (> 1 joints) and LBP (Y/N). Tests included PPT, TS, CPM, and three tests of physical performance. The KOOS questionnaire assessed self-reported function. Means were compared with Welch's ANOVA and post-hoc tests were performed.

**Results:** 90 participants were evaluated (mean age: 63.3±10.9 years, females n=51 (56.7%). Those with WSP significantly differed from those with multi-joint pain on PPT mean -9.72, 95%CI (-17.24, -2.18) and CPM 0.77 (0.19,1.36) respectively. Those with LBP significantly differed from those with multi-joint pain on PPT -12.00 (-23.49, -0.51). No differences in measures of TS or function were found.

**Conclusion:** In patients with knee OA, those with WSP or LBP demonstrated greater degrees of PS compared to those with multi-joint pain.

### **39110: Using a mixed methods approach to understand the evidence-to-practice gap in the management of common knee conditions in Canadian and Australian physiotherapists**

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**Background:** Physiotherapists' capacity for, and learning preferences to facilitate, the implementation of evidence-based treatments for knee osteoarthritis (OA) and patellofemoral pain (PFP) are currently unknown.

**Purpose:** Determine knowledge, behaviours, and confidence of physiotherapists managing knee OA and PFP and explore learning preferences.

**Relevance:** Understanding the potential evidence-to-practice gaps and how to address them will facilitate optimal design of future knowledge translation resources.

**Methods:** Phase 1: An online survey (November 2016–March 2017) of 116 physiotherapists [Canada, n=52; Australia, n=64] recruited via social media, email, and Physiopedia, evaluated knowledge and confidence in implementation of evidence-based knee OA and PFP treatments. Responses were compared against published guidelines [OARSI and International Consensus Statement]. Phase 2: 13 semi-structured Skype interviews [Canada, n=6; Australia, n=7] explored gaps identified in survey responses and learning preferences. Transcribed interviews were analyzed using a 'framework' approach.

**Results:** Awareness regarding evidence supporting exercise was good (89-96%); however, 20% and 21% reported average or lower confidence for prescribing quadriceps and proximal exercise, respectively. Numerous physiotherapists (43-65%) were confident implementing passive treatments (i.e. ultrasound, massage) despite awareness that evidence was limited (77-91%). Many physiotherapists were unaware that arthroscopy is not supported by evidence for knee OA (46%) and PFP (44%). Physiotherapists suggested a preference for combining face-to-face education with trustworthy online resources that were flexible, multimedia in nature, convenient, and conveyed clinically-relevant evidence.

**Conclusion:** Physiotherapists require access to evidence via face-to-face workshops combined with development of trustworthy online multimedia resources to bridge evidence-to-practice gaps in the management of knee OA and PFP.

### **39124: Analysis of Lumbo-Pelvic Coordination Variability during a Sit-to-Stand Task in Adults with Low Back Pain**

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**Background:** Individuals with low back pain (LBP) move differently than healthy subjects. Differences in movement variability may indicate dysfunctional motor control.

**Purpose:** To compare variability of lumbo-pelvic coordination during sit-to-stand (STS) between LBP and healthy groups.

**Relevance:** Reduced movement variability may represent an overcompensation in response to pain, while increased variability may indicate an inability to produce a robust movement pattern.

**Methods:** Participants were adults with LBP (n=16) and healthy controls (n=21). Kinematics for the upper (T12-L3) and lower (L3-S1) lumbar spine, and hips, were measured using electromagnetic motion capture during 10 STS trials. Phase angle analysis determined coordination and variability of the Hip-L3S1, and L3S1-T12L3 segments, deconstructed into 4 periods (start/up/down/end). T-tests compared coordination and variability of the full task between groups, and a mixed ANOVA compared the effects of group (LBP/healthy) and period for the two segments.

**Results:** Across the full task, the LBP group demonstrated more variable (mean difference= -6.95, 95% CI=-12.3 to -1.59) and greater out-of-phase behavior (mean difference=-22.6, 95% CI=-39.1 to -6.03) in the LHip-L3S1 segment. Group-period interaction effects revealed greater variability during start (mean difference=-.325, 95% CI=-.493 to -.156) and more out-of-phase behavior in the start (mean difference=-.350, 95% CI=-.549 to -.150) and end (mean difference=-.354, 95% CI=-.602 to -.105) periods, in the LHip-L3S1 segment.

**Conclusion:** Excessive variability may relate to reports of poor spinal proprioception in LBP; however, based on sample characteristics (low pain and disability) and lack of symptoms during STS, classifying our findings as dysfunctional may not be fully warranted.

### **39178: Understanding the user experience, barriers and facilitators of using a clinical tool-kit app to support evidence-based management of neck pain**

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**Background:** Neck pain is common and disabling. Systematic reviews suggest effective management approaches, such as exercise, improve pain and function and are underutilized in practice. A knowledge translation (KT) 'app' was developed for physiotherapists to facilitate

evidence-based practice. An understanding of the user experience, barriers and facilitators to using the app was needed to inform updates and implementation plans.

**Purpose:** 1) Understand the user experience of physiotherapists using the KT app. 2) Identify barriers and facilitators to using the app in clinical practice.

**Relevance:** This research is an evaluation of a KT tool for neck pain aimed at physiotherapists. Results will inform updates and implementation plans.

**Methods:** Qualitative interviews with nine physiotherapists and nine physiotherapy students using a combination of “think-aloud” and descriptive methods. Morville’s User Experience Honeycomb and the Theoretical domains framework informed the interview guide. Interviews were audiotaped, transcribed, and coded independently by two authors.

**Results:** Participants suggested the app was usable and valuable. Themes identified included: easy access to and credibility of evidence. Barriers to use ranged from unclear presentation of information to cultural barriers to using technology in practice. Participants identified the need for more concise presentation of information and a more intuitive legend. Practicing clinicians suggested the tool validated treatment decisions and students thought the tool would be helpful for informing management plans.

**Conclusions:** A KT app was perceived as usable and valuable by physiotherapists and students. An understanding of barriers and facilitators to using the app will help inform updates and implementation strategies.

## Paediatrics

### Abstract Presentations

#### **39035: Watch Me Move: A Program for Parents of Young Children with Gross-Motor Delays**

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**Background/Rationale:** Physical therapy programs that target responsive interaction strategies have a positive effect on motor development however this is generally not part of traditional physiotherapy.

**Purpose/Research Objectives:** This study examined the addition of Watch Me Move (WMM) parent group to standard of care physiotherapy on parent-child interactions during gross-motor play.

**Relevance:** Positive parent-child interaction promotes child development, but it is unclear how physiotherapists can best teach parents to improve their interaction in a gross motor context.

**Methods:** 40 mother-child dyads were randomly assigned to either physiotherapy only group or WMM plus physiotherapy group.

WMM parent group consisted of six consecutive weekly 2-hour education sessions focusing on interaction skills and gross motor development. All dyads were scored pre- and post-intervention using the Nursing Child Assessment Teaching Scale (NCATS), the Parent Knowledge Questionnaire (PKQ), and the Parenting Stress Index (PSI-3).

**Results:** Mean change scores using two-sample paired *t*-tests found significant results ( $p$ -value  $<.05$ ) on the NCATS indicating improved parent-child interaction, as well as, improved parent knowledge of behavioural cues and gross motor development on the PKQ. There were no significant group differences on parents perceived stress level as measured by the PSI-3.

**Conclusion:** A mother's ability to respond to their child's behavioural cues can be improved with the WMM group intervention. WMM teaches parents how to read and respond to their children's behavioural cues in order to enhance or modify gross motor home practice sessions. Watch Me Move is an effective, acceptable addition to standard physiotherapy.

## **39120: Sensitivity to Change of Measurements from a New Standardized Clinical Photographic Posture Assessment Tool in Adolescents with Idiopathic Scoliosis**

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**Background/Rationale:** Posture asymmetry is one of the main consequences of idiopathic scoliosis (IS), which can result in physical and psychological consequences. Therefore, objective assessment of posture is important to ensure optimal care. The Clinical Photographic Posture Assessment measurements (CPPAT) showed good reliability and validity but its sensitivity-to-change is unknown.

**Purpose/Research Objectives:** To determine the sensitivity-to-change of CPPAT measurements.

**Relevance:** In North America, adolescents with IS are rarely referred in physiotherapy despite evidence showing impairments in posture. An objective tool is needed to measure change of posture over time.

**Methods:** Twenty-three females with IS aged between 10 and 17 years old with Cobb angles between 10° and 60° and Risser index less than 4 were recruited at specialized clinics at two centers. Participants received physiotherapy treatments following the Schroth or Global postural re-education approach once a week. A baseline, 3 months, and 6 months, posture photos from each side were captured following a standardized procedure by a trained physiotherapist. Photos were then analyzed using the CPPAT. The Standardized Response Mean (SRM) was used to determine sensitivity-to-change of 13 posture indices

**Results:** The CPPAT indices showed large sensitivity-to-change (1.0 SRM 2.3) for all posture indices except scapula asymmetry for the baseline-6-months interval (SRM = 0.7) and anterior frontal pelvic tilt (baseline-3 months interval SRM = 0.5).

**Conclusions:** The CPPAT indices demonstrate promising moderate to large sensitivity-to-change for all posture indices. This tool could be used to measure the effectiveness of treatments or monitor natural history of postural asymmetries and scoliosis in adolescents.

## **39156: Expérimentation d'une formation sur le trouble développemental de la coordination destinée aux enseignants en éducation physique**

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**Historique :** Les meilleures pratiques sur le trouble développemental de la coordination (TDC) incluent le développement des capacités des enseignants afin de favoriser la participation des enfants dans les activités physiques.

**Objectifs de recherche :** Évaluer l'impact d'une formation donnée par une physiothérapeute sur les perceptions des connaissances, des compétences et des pratiques pédagogiques des enseignants en éducation physique (EÉP).

**Pertinence :** Sensibiliser les physiothérapeutes à l'importance de la collaboration interprofessionnelle.

**Méthodologie :** Étude de cohorte avec devis mixte pré-post-suivi incluant des questionnaires avant, immédiatement après et 3 mois post formation. Des analyses descriptives, des tests de Wilcoxon et une analyse thématique ont été réalisés.

**Résultats :** Trente-huit, trente-cinq et vingt-deux EÉP ont complété respectivement les trois questionnaires. Les connaissances, compétences et pratiques pédagogiques des EÉP étaient plus élevées après la formation comparativement aux perceptions initiales ( $p < 0.006$ ). Initialement, les EÉP rapportaient utiliser certaines stratégies pédagogiques générales (ex. : modifications de la tâche). Suivant la formation, les EÉP ont fourni des exemples plus concrets et ont rapporté utiliser de nouvelles stratégies. De plus, la majorité des enseignants ont identifié entre 1 à 5 enfants ayant possiblement un TDC non diagnostiqué, et un suivi a été fait à l'école pour mieux soutenir ces enfants

**Conclusions :** Les physiothérapeutes peuvent contribuer à l'implantation de meilleures pratiques par les EÉP.

## Poster Presentations

### **37705: Physiotherapists' use of evaluation measures to guide recommendations about ankle-foot orthoses for children with cerebral palsy**

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**Background/Rationale:** Ankle-foot orthoses (AFOs) are often prescribed to improve mobility for children with cerebral palsy (CP). Ideally, prescriptions are individualized based on clinical evaluation; however current orthotic evaluation practices by physiotherapists (PTs) are unknown.

**Purpose/Research Objectives:** To examine how PTs use evaluation measures to guide recommendations about AFOs prescription for children with CP.

**Relevance:** PTs play a key role in deciding which AFO design will optimize a child's mobility, and in monitoring the AFO's effectiveness. Understanding current orthotic evaluation practices may contribute to more consistent, effective clinical practices.

**Methods:** PTs working with children with CP in Canada were invited to complete an online survey. Questions examined PT evaluation and interpretation of findings at initial AFO prescription and re-assessment. Closed-ended responses were analyzed using descriptive statistics, and a conventional content analysis was conducted to examine open-ended responses.

**Results:** Sixty PTs from ten provinces completed the survey. While PTs evaluated similar constructs (e.g., gait, participation), interpretation of findings and prescription decisions varied. Gait was primarily evaluated by non-standardized observation, although more objective tools were used to assess hypertonicity and range of motion (e.g. goniometry). Closed-ended responses corroborated three themes that emerged from the open-ended responses: 1) Focus on impairment-level measures; 2) Lack of confidence/knowledge; 3) Inconsistent practices between therapists.

**Conclusions:** Non-standardized, observational evaluation methods, and impairment-level constructs appear to guide AFO prescription decisions. Inconsistent practices may reflect the paucity of evidence-based clinical guidelines or efforts to individualize prescriptions. Orthotic outcomes, clinician confidence, and consistency may improve by developing best practice guidelines and standardized tools to assess meaningful orthotic outcomes.

### **39039: Global postural re-education in idiopathic scoliosis: immediate effect of self-correction posture on curve reduction**

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**Background/Rationale.** Global Postural Re-education (GPR) approach consists of active stretching postures and motor control exercises to avoid scoliosis progression. Currently, there is a lack of evidence regarding the effect of GPR self-correction posture on scoliotic curve reduction.

**Research objectives:** To assess the immediate effect of GPR self-correction posture on scoliotic curves (Cobb angle) and to develop a trunk stiffness index from simulations using a finite element modeling approach.

**Relevance:** GPR self-correction posture capacity and the stiffness index may be used to set personalized physiotherapeutic objectives for posture correction.

**Methods:** Sixteen female adolescents (10-16 years old) with thoracic idiopathic scoliosis (Cobb angle 11-45°) were recruited at a specialized centre. Finite elements models were built from 3D surface scan of the trunk and 3D radiographic reconstructions taken in normal standing posture and in self-correction posture taught by a trained therapist. Cobb angles were measured on radiographs. Trunk stiffness index was computed using finite element models and defined as the global force required to stay in the posture over the thoracic curve reduction (force/Cobb angle reduction).

**Results:** Paired t-tests showed significant reduction of the thoracic Cobb angle (11° [-4°-21°], p <0.05) in the self-correction posture by an average of 33% while the lumbar curve remained unchanged. Simulated reaction force at thoracic apical vertebra was 45Newton on average, resulting in a stiffness index between 0 (low) and 21N (high)<sup>0</sup>.

**Conclusions:** GPR self-correction posture is effective to momentarily reduce the scoliotic curve. Further studies are required to determine long-term benefits of GPR on scoliosis.

## Practice Management

### Abstract Presentations

#### **38949: A Survey of Quebec Physiotherapists' and Physical Rehabilitation Therapists' perceptions on applying a board regulation delimiting practice**

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**Background/Rationale:** Section 4 of the Regulation Respecting the Categories of Permits Issued by the Ordre Professionnel de la Physiothérapie du Québec (94m) regulating the intraprofessional collaboration between physiotherapists (PTs) and physical rehabilitation therapists (PRTs) was adopted in 2011. Perceptions regarding the new regulation have never been evaluated.

**Relevance:** Since its implementation, anecdotal observations have highlighted problems with the application of Section 4 of the 94 m regulation.

**Objectives:** To identify perceptions of PTs and PRTs regarding Section 4 of the regulation and to identify facilitators and barriers regarding its application.

**Methods:** An electronic survey was sent to all PTs and PRTs in the province of Québec in January 2016. The survey included questions regarding perceptions on Section 4 of the 94m, facilitators and barriers for its application and its impact on resource use and care efficiency. We used descriptive statistics for the analysis.

**Results:** Overall, 2114 participants (response rate 24%) responded to the survey. Sixty-one percent of PTs and 53% of PRTs were satisfied with the regulation. The majority of PRTs (84%) expressed that their autonomy should be increased and that Section 4 impedes their work and

autonomy. The most frequent barriers identified were the regulation in itself, as well as its comprehension and applicability.

**Conclusion:** Satisfaction with Section 4 of regulation was moderate, with PRTs reporting more problems with the regulation and its application compared to PTs. Further research is needed to fully understand these results and their impact on physiotherapy care delivery.

## Poster Presentations

### 38655: E-recruitment for clinical trials in physiotherapy – a rising method for a modern world?

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**Background:** Recruitment is a challenge in successfully completing any studies as it affects the duration and cost and can lead to trial failure.

**Purpose:** To compare three recruitment methods for efficiency, retention, clinical characteristics and cost.

**Relevance:** Investigators are increasingly tempted to use e-recruitment. However, no data are available in physiotherapy for guiding the selection of optimal strategies.

**Methods:** We conducted a randomized clinical trial evaluating the efficacy of physiotherapy compared to topical lidocaine in women with vestibulodynia. The recruitment methods included: conventional methods (newspaper ads, posters and leaflets in public areas), health professional referrals (emails, newsletters and conferences) and e-recruitment (Facebook ads and Web). The following were evaluated: number of patients screened/enrolled, efficiency rate, retention rate at follow-up, baseline characteristics of participants and average cost per enrolled participant.

**Results:** Of the 521 women screened, 212 were enrolled. Most of the participants screened came from conventional methods (56%) followed by e-recruitment (28%) and professional referrals (16%). The number of enrolled participants was higher using conventional methods ( $p=0.012$ ). The efficiency rate (%enrolled/screened) was lower in the conventional methods ( $p<0.05$ ). Baseline characteristics and retention rate were similar for the three groups ( $p\geq 0.189$ ). The average cost per enrolled participant was higher for e-recruitment (\$118), followed by the conventional methods (\$93) and professional referrals (\$60).

**Conclusions:** Multiplication of recruitment methods appears the most beneficial. As the recruitment method influenced neither the retention rate nor the patient baseline characteristics, the use of e-recruitment is a useful strategy in a physiotherapy trial although its higher cost should be taken into account.

### **38961: Transferring paediatric pain evidence into physiotherapy practice: A context-specific systematic approach**

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**Background:** Translating physiotherapy evidence into practice remains a challenge. Effective context-specific implementation interventions are needed to change physiotherapist's behaviour to narrow this knowledge-to-practice gap.

**Purpose/Research Objective:** To pilot a systematic approach aimed at identifying context-specific determinants requiring targeting to translating pain evidence into paediatric physiotherapy practice.

**Relevance to the practice of physiotherapy:** Knowledge of context-specific determinants is vital to the selection of effective context-specific implementation interventions.

**Method:** In this qualitative exploratory project, two focus groups and three interviews were conducted with 11 participants (including paediatric physiotherapists, other rehabilitation providers and managers, youth and caregivers) using a Think Out Loud method, a process through which rich narrative data about reasoning during a problem-solving task is obtained. Following the transcription of the audio-recordings, the data were analysed using a deductive content theming process, underpinned by the Consolidated Framework for Implementation Research (CFIR) and the Theoretical Domains Framework (TDF), two multi-level implementation frameworks, which provide a lens for understanding the setting, individuals and their behaviors and the implementation processes.

**Results:** Marked variations in the perceived capabilities, motivations and opportunities within the settings and the behaviours (e.g. social influences) requiring targeting to influence implementation were identified. Context-specific determinants were linked to the particular behavioural change strategies to design the implementation intervention.

**Conclusion:** Using the CFIR and TDF in this project proved useful in improving our understanding of the determinants impacting the implementation of the paediatric pain evidence into our setting. Future evaluation is required to determine the effectiveness of our implementation plan.

## **38980: Use of Electronic Tablets in Physiotherapy: A Client Experience Survey in a Therapeutic Context**

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**Background:** To this date, few studies have assessed the use of interactive technology with clients in a musculoskeletal rehabilitation setting. The use of such technologies could greatly facilitate patient education and therefore contribute to their return to functional activities.

**Purpose:** Collect client satisfaction levels following the use of an electronic tablet in a physiotherapy context.

**Relevance:** The project represents an important step with regards to the pertinence of interactive technologies within current rehabilitation practices.

**Methods:** The participants that were recruited for this qualitative study (n=46; 40 M/ 6 W; age: min=16, max=60) received treatment in physiotherapy for a variety of musculoskeletal conditions, such as: lumbar, cervical, shoulder, knee, and ankle. Educational activities were completed with the electronic tablet (ex: education on mechanism of injury, how to complete exercises). At the end of the physiotherapy session, the participants were requested to complete a standardized satisfaction questionnaire consisting of 10 questions (2 open ended questions and 8 with the Likert scale 1-5).

**Results:** Overall, the median Likert scores varied between 4 and 5 (range: min=1, max=5), demonstrating a high level of client satisfaction. The only negative comments were in regard to the delays required to charge the tablet or to launch certain applications during the session.

**Conclusion:** The study clearly demonstrated a definite interest from clients with regards to the use of interactive technologies during their functional rehabilitation. The next step will be to assess the clinical and financial effectiveness with randomized clinical trials, comparing the use of interactive technologies to traditional educational methods.

## Sport

### Abstract Presentations

#### **39003: Immediate Effects of the Kinesiotaping on Acromiohumeral Distance and Shoulder Proprioception in Individuals with Symptomatic Rotator Cuff Tendinopathy**

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**Background:** Kinesiotaping is a therapeutic resource widely used in clinics. It is believed to reduce symptoms and functional limitations of rotator cuff tendinopathy (RCTe) and to increase subacromial space in healthy subjects. However, its effects on the acromiohumeral distance (AHD) and shoulder proprioception in individuals with RCTe have not been ascertained.

**Purpose:** To investigate the immediate effects of kinesiotaping on the AHD and shoulder proprioception in individuals with RCTe.

**Relevance:** Personal, medical and socioeconomic impacts of RCTe are well known, resulting in considerable losses to society and public resources. Therefore, effective methods contributing for rehabilitation are strongly encouraged.

**Methods:** Twenty-three individuals with symptomatic RCTe (29.0±6.6 years) were recruited for this cross-sectional study. Proprioception was measured through joint repositioning sense in low-range (45°-65°) and mid-range (80°-100°) during shoulder flexion and abduction. An inertial measurement unit system was used to quantify shoulder angles. The AHD was measured using ultrasonography images at rest (0°) and 60° abduction.

Measurements were initially taken without kinesiotaping and, thereafter, with kinesiotaping.

**Results:** No significant differences were observed with and without kinesiotaping for joint repositioning sense in both low-range and mid-range ( $p > .05$ ), and for AHD at rest ( $p > .05$ ). Kinesiotaping provided a significant increase in AHD at 60° abduction ( $\Delta\text{AHD} = 0.94\text{mm}$ ,  $p < .001$ ), exceeding the minimal detectable change (0.70mm).

**Conclusions:** The kinesiotaping application had no significant effect on joint repositioning sense in individuals with RCTe, while it led to an immediate increase in AHD at 60° abduction. Further studies should investigate whether this increase is clinically meaningful for individuals with RCTe.

## Poster Presentations

### 38494: The Effectiveness of the FIFA 11+ at Improving Sport Performance Metrics: A Systematic Review

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**Background:** Numerous systematic reviews have established the FIFA 11+ as a proven injury prevention football warm-up program; however, its potential for improving sport performance metrics (PM) has not been thoroughly examined.

**Purpose:** To conduct a systematic review examining short- and long-term effects of the FIFA11+ on sport PM (strength, speed, agility, jump height, balance, and kicking skill/accuracy.)

**Relevance:** Understanding the program's influence on PM may provide insight into its' underlying injury prevention mechanisms, as well as evidence for physiotherapists to promote program adherence to coaches and athletes.

**Methods:** Five databases were searched identifying articles published from January 1, 2008 to October 1, 2017. Eligible studies involved adolescent or adult competitive football players; had same-group pre/post-test data on PM related to performance of FIFA11+ in its entirety; and were in English. A best-evidence synthesis was conducted.

**Results:** 18 articles met inclusion criteria. Synthesis found evidence that long-term FIFA11+ exposure resulted in improvements in hamstring strength-related measures; as well as some evidence for positive influences on agility, jump height, and dynamic balance. There was limited or conflicting evidence for speed, static balance, and kicking skill/accuracy. Evidence for PM improvements after short-term FIFA11+ exposure was limited or conflicting. Overall, PM improvements were most consistent in male professional athletes.

**Conclusion:** There is evidence that long-term FIFA 11+ exposure resulted in improvements in hamstring strength. However, given the heterogeneous nature of studies, further research is warranted to understand the program's effects on PM in different populations, with consideration of program dosage and athlete's baseline skill.

### 39016: Exercise baroreflex and implication for sport concussion: A case study

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**Background:** The Consensus Statement on Sport Concussion advocates for early introduction of exercise post-injury. Few projects investigate how the brain regulates healthy baroreflexes pre- and post-exercise.

**Purpose:** To investigate the cardiorespiratory responses to a postural baroreflex, pre- and post-exercise, in a recreationally active college-aged male.

**Relevance:** The squatting and standing postural movements performed post-exercise are attempting to mimic the dynamic nature of pressure changes in contact sport (e.g. American Football linemen). This postural test also challenges the neural regulation of flow-pressure and can be objectively studied.

**Methods:** Heart rate, blood pressure, and expired gases were continuously monitored. PHASE 1: 5 minutes of seated rest with eyes open. PHASE 2: 5-minute squat-stand baroreflex test (15 cycles of 10s squatting followed by 10s of stand - 10SS). PHASE 3: 3-minute warmup, and 15 minutes of cycle ergometer exercise (70% HRmax, 140-145 bpm). PHASE 4: post-exercise 10SS test.

**Results:** Exercise increased all physiologic variables. During SS10, blood pressure and heart rate range from the peak 4-7s of squatting to the peak 4-7s of standing, was greater post-exercise for blood pressure (pre-exercise range = 68.7 mmHg, post-exercise range = 89.4 mmHg), but not for heart rate (pre-exercise range = 61.3 bpm, post-exercise range = 27.8 bpm). It also appears that the 0-6s time periods for squatting and standing have different flow-pressure dynamics pre- and post-exercise.

**Conclusions:** This study provides preliminary insight into how exercise influences the monitoring of, and adjustments to, blood pressure. These heart rate and blood pressure dynamics may have implications for early introduction to exercise post-concussion.

## Seniors' Health

### Poster Presentations

#### **32630: TUG, TUGcog and TUGman improve after 12-week balance and mobility training with or without concurrent cognitive tasks in community-dwelling older adults**

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**Background/Rationale:** Most previous studies have shown that balance exercises improve functional mobility in older adults. However, it is not clear whether these exercises can improve functional mobility under dual task conditions.

**Research Objectives:** To compare the impact of two training programs, i.e. a balance and mobility (BMT) and a balance and mobility with concurrent cognitive exercises (BMCT) on the TUG, TUG with a concurrent cognitive task (TUGcog) and a concurrent manual task (TUGman) in older adults.

**Relevance:** This study proposes two training programs that can be prescribed to improve functional mobility under single and dual task conditions in older adults.

**Methods:** This study is a pilot clinical trial. The BMT group (mean 70.2 years, n=15) and BMCT group (mean 68.7 years, n=14) trained one-on-one, 3 times week for 12 weeks on a balance obstacle course. The BMCT group performed concurrent cognitive tasks during the balance obstacle course. The control group (mean 66.3 years, n=12) received no training. TUG, TUGcog and TUGman were measured at baseline, after the 12-week training, and after a 12-week follow-up. Comparisons were made with 3-way repeated measure ANOVA and post hoc Fisher's least significant differences.

**Results:** BMT and BMCT groups, but not the control group, had significantly shorter TUG, TUGcog, and TUGman after the 12-week training ( $p<.05$ ) and at the 12-week follow-up ( $p<.05$ ). No significant difference was found between the BMT and BMCT groups.

**Conclusion:** Balance and mobility exercises with or without concurrent cognitive tasks can improve dual task TUG performance, i.e. TUGcog and TUGman.

### **38584: Lower limb muscle strength, balance, mobility and function in older women with urge and mixed urinary incontinence: an observational pilot study**

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**Background:** After the age of 65, one in two women presents with urinary incontinence (UI). A positive correlation between urge UI (UUI) or mixed UI (MUI) and falls has been reported in the literature. Yet, possible lower extremity impairments in older women with UI have not been thoroughly investigated.

**Purpose:** To describe the lower limb muscle strength, balance, mobility and function in older women with and without UUI/MUI.

**Relevance:** This study allowed a better understanding of lower extremity impairments in UUI/MUI older women. Our findings will help the development of more targeted clinical solutions for this population.

**Methods:** Twenty older women with UUI/MUI and twenty continent older women completed standardized tests to gather data on lower limb strength (knee dynamometry, 30-Second-Sit-to-Stand Test), balance (Unipodal Stance Test, Four Square Step Test, Activities-Specific Balance-Confidence questionnaire), mobility (10-Meter and 6-Minute-Walk-Tests) and function (Human Activity Profile questionnaire, SF-12 questionnaire).

**Results:** No differences between groups were identified in knee strength. Significant differences were observed between groups in balance, with shorter Unipodal Stance times and lower balance-confidence scores in women with UI. Significant differences were observed in mobility, with slower gait speeds in women with UI. Mixed results were seen in function, with UI women reporting lower self-perceived physical function.

**Conclusions:** The increased risk of falls reported in older women with UI is consistent with our findings of balance and mobility impairments. According to our results, fall prevention programs with an emphasis on balance and gait should be implemented with UUI/MUI older women. More studies are needed to confirm these results.

### **38849: Fall risk signature in Brazilian older women and balance assessment using a mobile technology**

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**Background/Rationale:** Falls in elderly have a major role in injury that lead to disability. Characteristics of high fall-risk groups and its relation with more available tools of assessment of fall risk are important aspects of effective fall prevention programs.

**Purpose:** To characterize high fall-risk group and its correlation with the YMED balance test app.

**Methods:** Thirty-five volunteers as follow: High fall-risk (HFR – N= 17) and Non fall-risk (NFR – N= 18) were submitted to the hip's Limits of Stability (LoS) test on a force plate to evaluate ten stabilometric parameters (SP). The differences between groups were assessed by Mann-Whitney test. The fall-risk signatures were analyzed applying the overall profile analysis, using the concept of low and high-postural sway.

**Results:** In general, HFR individuals had an opposite fall-risk signature compared to NFR. The high fall-risk signature was characterized by a lack of anterior-posterior voluntary sway and a high medium-lateral sway during LoS test. Interestingly, the YMED was able to distinguish the HFR and NFR under LoS test.

**Conclusions:** The innovative fall-risk signature suggest that the risk of falls are multifactorial phenomena associated with a high fear of falls and low stability and the a cheap available fall-risk assessment tool is essential to prevention and early detection of fall-risk.

### **38882: The Effects of a Short-term, Community-based Slow-stream Rehabilitation Program on Falls Rate in Older Adults Transitioning from Hospital to Home**

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**Background/Rationale:** In Canada, falls are a leading cause of injury and hospitalization in older adults, and the risk of falling increases after a period of hospitalization has occurred (Buczak-Stec et al 2013, Hill et al 2013).

**Purpose/Research Objectives:** To examine the effects of a short-term community-based slow stream rehabilitation program on fall and near-fall rates in older adults transitioning from hospital to home.

**Relevance:** Exercise decreases the risk of falling in community-dwelling older adults, but it is unclear if these effects occur for older adults who are recently discharged from hospital.

**Methods:** Participants were 60 years of age or older who had recently been discharged from hospital and were taking part in the Goldies2Home (G2H) rehabilitation program. Participants completed a fall and near-fall history at four time points- entry into G2H, discharge from G2H, three and six-months post discharge from G2H.

**Results:** Participants who fell or experienced near-falls were younger, had more chronic conditions, took more medications, were less well off financially, and had little/no supports. Fall rates significantly decreased from entry to discharge from the G2H program ( $p=0.00$ ), but no significant change was seen from entry to three-months ( $p=0.17$ ) or six-months post G2H discharge ( $p=0.13$ ). No significant effect was seen for near-falls from entry into the G2H program to each time point ( $p=0.94$ ).

**Conclusions:** A short-term community-based slow-stream rehabilitation program decreased the fall rate in older adults transitioning from hospital to home, but the effects did not carry over in the long term.

### **38913: The effectiveness and feasibility of a Nordic walking pole program for institutionalized older adults**

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**Background/Rationale:** Nordic pole walking programs are beneficial for improving mobility in community-dwelling adults. Similar programs have not been tested in much older adults.

**Purpose/Research Objectives:** Determine the feasibility and effectiveness for improving walking and balance of a Nordic pole walking program in institutionalized older adults.

**Relevance :** Physical activity helps maintain functional independence and decreases fall risk. A Nordic walking program could help enhance mobility in this population.

**Methods:** Older adults, greater than 85 years old ( $n=12$ ), living at a geriatric institution were recruited. They completed a 3-month Nordic pole walking program which included 20 minute sessions, 2 days/week. Participants required supervision or assistance. They were evaluated using a Stepscan Pedway© to obtain objective gait data before and after treatment and after a 3-month follow-up. Clinical tests of walking speed, BERG balance tests and adverse events were also captured. Friedman tests compared measures over time.

**Results:** Most participants (7 of 12) completed the program with no adverse events. Participants that did not complete the program stopped due to lack of interest (n=2) or change in medical condition (n=3) There were no significant ( $p>0.05$ ) differences in gait metrics (e.g. stride length) or walking speed over time. Participants had improved balance after the program ( $p<0.01$ ), although these changes were not maintained at follow-up.

**Conclusions:** The program is feasible and safe in older adults. In this small sample, it did not significantly improve walking performance but did temporarily improve balance. Future studies should examine effectiveness on falls prevention and cardiovascular outputs in larger samples.

### **38915: Evaluating the effect of a rehabilitation policy and service change on facility-level activity of daily living and fall quality indicators in Ontario long-term care homes**

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**Background:** A policy change designed to improve service delivery occurred for physical therapy (PT) in long-term care (LTC) in Ontario, Canada in 2013. The resultant changes were controversial and unanswered questions remained regarding the effect of the change.

**Purpose/Research Objectives:** To describe: 1) The proportion of residents receiving PT before and after the policy change? 2) The effect of the policy change on activities of daily living (ADL) and falls quality indicators (QIs)?

**Relevance:** This study examines the effect of a recent policy change for physical therapists working in LTC.

**Methods:** This was a retrospective, cohort study. Data were extracted from the Resident Assessment Instrument-Minimum Data Set from LTC homes in Ontario from 2011 to 2015 (n=589). The proportion of residents receiving PT were described for each fiscal quarter, and linear mixed regression models tested the effect of the policy change on the QIs.

**Results:** Fewer residents received PT after the policy change. The policy change was associated with improved performance on several ADL QIs. However, the proportion of residents receiving no, and low time-intense PT was associated with poorer performance on two of the QIs measuring ADL improvement.

**Conclusions:** The policy change has begun to move rehabilitation in LTC in Ontario in the right direction by increasing accountability and better targeting of services. However, more work is required to determine how to best facilitate improvement of ADLs. Policy makers must continue to dialogue with and support researchers around determining the best model of delivery for rehabilitation in LTC.

### 38967: Older workers with pain: how do they stay at work ?

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**Background:** Physiotherapists across Canada see an increasing number of people aged 55 and over presenting with musculoskeletal pain. Although at least one in five older workers suffers from chronic musculoskeletal pain, most will continue working despite pain. How can this reality be taken into account by physiotherapists?

**Objective:** Explore factors associated with staying at work with pain.

**Relevance:** There is a shortage of workers across Canada and physiotherapists have a role in helping aging workers stay at work.

**Methods:** An interpretive descriptive method was used. A transdisciplinary conceptual model was created, based on literature on work rehabilitation, ergonomics and demographics. Semi-structured individual interviews were conducted. Participants were blue collar workers, having chronic musculoskeletal pain, working 28 hours weekly or more. Analysis was performed using themes from the conceptual model; intra- and inter-case analysis was conducted using qualitative data analysis software.

**Results:** Fifteen participants (7 women) were included, ages 55-70. They ranged from self-employed to employees of large organizations, with half of them working in the private sector. Although financial factors influenced their decision to stay at work, most participants did not generally consider it the main reason. For most, the perception of being useful, having peer recognition and feeling that work contributes to health were essential drivers for staying at work. Flexibility at work was deemed essential by all but took various forms.

**Conclusion:** This study identified, for the first time, both personal and work-related factors associated with working in the presence of pain. These results will help physiotherapists in better accompanying aging workers.

### 39005: Examining the relationship between cognition and postural control in Alzheimer's disease

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**Background/Rationale:** Postural stability requires integration of information between the musculoskeletal, somatosensory and cognitive systems, specifically executive function.

Cognitive impairments are common in Alzheimer's disease (AD) and can result in postural instability that increases falls risk. Research has not quantified the amount of postural disturbance by functional level in people with AD nor how cognition is related to the amount of postural sway.

**Purpose/Research Objectives:** 1) To evaluate postural sway, and 2) to evaluate the association between cognition and postural sway in a sample of mobility aid users and non-users with AD, cognitively healthy older and younger adults.

**Relevance:** Many key risk factors for falling, including balance, are within the clinical domain of physiotherapy.

**Methods:** Ninety-six participants ( $M_{age}=62.57\pm 24.93$ ) were recruited (17 mobility aid users with AD, 24 non-users with AD, 27 cognitively-healthy older adults, 28 younger adults). Executive function was assessed using the Trail Making Test (TMTA, TMTB). Postural sway was assessed with accelerometers during performance of the Modified Clinical Test of Sensory Interaction in Balance. An analysis of covariance, adjusted for age, and multivariable linear regression were used.

**Results:** Mobility aid users with AD had greater total sway in the eyes closed foam surface ( $p=.046$ ), condition than other groups. Executive function predicted total sway in the rigid eyes open (TMTA,  $\beta=.39$ , [95%CI:  $-.002, .017$ ],  $p=.009$ ), closed ( $\beta=.32$ , [.001, .033],  $p=.001$ ) conditions and (TMTB,  $\beta=.69$ , [.010, .033],  $p<.001$ ) in the foam surface eyes closed condition.

**Conclusions:** Mobility aid users had greater postural instability than non-users. The most challenging test conditions, those with reduced sensory input, yielded the greatest deficits in postural stability which was linked to executive function.

### **39006: Balance assessment by Physiotherapists working in older adult health - survey of clinical practice in Canada and Australia**

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**Background:** Balance is a complex process and features prominently in falls evaluation of older adults. The Systems Framework for Postural Control highlights essential components for maintenance of stability. Thorough balance assessment is needed to identify impairments, develop individualized interventions, and evaluate change in function over time.

**Purpose:** To evaluate: 1) general use of balance tools (>60% of the time), influences and reasons for use; 2) the different components of balance assessed by physiotherapist in older adults.

**Relevance:** Physiotherapists have a prominent role in assessment and rehabilitation of falls risks in older adults.

**Methods:** A questionnaire was developed and electronically distributed to physiotherapists working in older adult health in Australia and Canada. A descriptive analysis of the responses was performed.

**Results:** 190 physiotherapists responded (n=123 Canada, n=67 Australia; 84.7% female). Both countries reported the same most commonly used tests – Timed Up & Go (82.8%), Berg Balance Scale (70.7%) and Single Leg Stance (49.0%). Choice of test was influenced most by functional level of the older adult (87.8%) followed by factors of test administration. Most (72.6%) respondents used more than one test to identify deficits and monitor change. Balance components regularly assessed were static balance (96.5%), dynamic balance (95.5%) and motor systems (87.9%). Components not regularly assessed were reactive control (30.0%), anticipatory control (41.6%), sensory integration (24.7%) and cognitive contributions (33.2%).

**Conclusions:** Physiotherapists regularly use a small number of balance tools. Some balance components are not explicitly assessed, creating missed opportunities for intervention. This research identifies continuing education opportunities to optimize clinical practice in older adult health.

### **39008: Combiner les exercices et la neurostimulation périphérique pour soulager la douleur chronique chez les aînés: une étude pilote**

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**Historique :** La douleur chronique est une problématique de santé importante chez les aînés, affectant la qualité de vie de près d'un individu sur deux. Des approches non-pharmacologiques comme les exercices et le TENS existent, mais sont rarement utilisées en combinaison.

**Objectif de recherche :** Évaluer et comparer l'efficacité d'un programme d'exercices combiné à des traitements de TENS réel à un programme d'exercices combiné à des traitements de TENS simulé pour réduire l'intensité de la douleur chez les aînés de plus de 65 ans.

**Pertinence :** Maximiser l'efficacité des interventions thérapeutiques pour diminuer les douleurs et maximiser la fonction physique des aînés.

**Méthodologie :** 18 femmes (âge moyen: 83±4 ans) avec douleur chronique d'origine musculosquelettique furent recrutées pour cet essai clinique randomisé à simple insu. Les participantes étaient randomisées dans soit (1) un groupe combinant exercices et TENS réel ou (2) un groupe combinant exercices et TENS simulé. Les groupes ont suivi le même programme d'exercices (aérobie, renforcement, étirements) deux fois par semaine pendant 4 semaines. La

douleur, son impact sur la fonction physique, et l'humeur étaient évalués avant et après l'intervention avec le Questionnaire McGill sur la douleur, le Bref inventaire de la douleur et l'Inventaire de dépression de Beck.

**Résultats :** Les individus du groupe exercices-TENS réel ont rapporté une plus grande diminution de l'aspect qualitatif de la douleur lorsque comparé aux individus du groupe exercices-TENS simulé ( $p=0.04$ ). Aucune différence significative n'a été détectée pour les autres variables mesurées (tous les  $p > 0,05$ ).

**Conclusion :** L'utilisation simultanée du TENS lors des exercices permettrait de soulager de façon plus importante la douleur chronique des aînés, comparativement aux exercices seuls.

### **39104: MMOVeS: Managing Mobility in Vulnerable Seniors with an Individualized, Self-Management, Home-Exercise Program.**

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**Rationale:** After hospital discharge seniors choose rest as a recovery strategy. Based on the magnitude of need, a “one senior-one physiotherapist” model will not be possible. Passive dissemination of educational material for improving disability may be perceived as a barrier. So how can we get seniors to exercise on their own?

**Objectives:** To estimate feasibility and potential for efficacy of a 6-month individualized, exercise-focused, self-management program (MMOVeS), in comparison to exercise information in improving mobility among seniors recently discharged from hospital.

**Relevance:** Clinicians may want to incorporate self-management support in their portfolio of rehabilitation approaches.

**Methods:** This randomized pilot study recruited community dwelling seniors, aged 70 years and older, recently discharged from two McGill University-teaching hospitals. MMOVeS consisted of 1) mobility evaluation; 2) goals setting; 3) exercise plan; 4) educational booklet to enhance self-management skills; 5) monthly telephone calls. Control group received a booklet including exercises targeting mobility. Mobility, pain, health status were assessed at baseline and at 6 months using indicators from DASH, LEFS, SF-36. After imputing missing data, generalized estimating equations estimated the odds of response for people receiving the intervention in comparison to the odds in the control group.

**Results:** 26 people were randomized to the intervention, and 23 to the control group. OR for mobility outcomes combined was 3.08 (95% CI = 1.65 – 5.77). ORs for pain and health perception favored the MMOVeS group; but, the 95%CI included the null value.

**Conclusions:** Exercise programs combining self-management skills appears to be more effective than exercise information in promoting mobility among vulnerable seniors.

### **39105: Knitting as a promising self-management strategy for older women with osteoarthritis of the hands: A community-based pilot randomized controlled trial**

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**Background:** Hand osteoarthritis affects a large proportion of the world population and is recognized as a significant cause of disability. Although exercise therapy has been shown effective to reduce symptoms and disability associated with hand osteoarthritis, long-term adherence to treatment programs remains low.

**Research objective:** This pilot randomized controlled trial aimed to examine the effectiveness of a 12-week supervised knitting program on morning stiffness, pain, grip strength, hand function and quality of life in older women with mild to moderate osteoarthritis of the hands, compared to a waiting list control group.

**Pertinence:** Using a meaningful activity, such as knitting, could be an interesting strategy to foster regular low-intensity exercise in older individuals suffering from hand osteoarthritis.

**Methods:** 37 women (mean age 67 ±7 years) were recruited to take part in this randomized controlled trial. Participants were randomly allocated, either to the experimental (knitting group; n = 19) or to the control group (waiting list control; n = 18). Participants in the experimental group took part in a low-intensity knitting program, involving bi-weekly 20-minute knitting sessions at a senior's club, and 20-minute daily home knitting sessions for the 5 remaining days of each week, over 12 consecutive weeks (total of 90 sessions). Morning stiffness, pain, hand function and quality of life (measured with the Australian/Canadian Osteoarthritis Hand Index), and grip strength (hand-held dynamometer) were evaluated in both groups at baseline, over the course of the intervention (4 weeks and 8 weeks), as well as 4 weeks after the end of the intervention (follow-up).

**Results:** 30 participants (15 in both groups) completed the study. No difference was observed between the two groups, at baseline. Participants in the knitting group tended to report higher pain at 4 weeks compared to the control group (p < 0,05), although the difference did not reach clinical significance. The duration of morning stiffness was lower in the knitting group at 8 weeks (1.3 hours) compared to the control group (2.5 hours; p < 0,01). No other differences were noted between the two groups for the other time measures and clinical outcomes (all p-values > 0.05).

**Conclusion:** Although knitting can slightly and transiently increase pain in the first 4 weeks, its long-term use can be beneficial to reduce the duration of morning stiffness in elderly women suffering from hand osteoarthritis. This beneficial effect is not observed at follow-up (i.e., 4 weeks after the end of the program), suggesting that this type of activity needs to be performed on a regular basis. Future studies should be done to confirm these findings and to evaluate the effect of knitting programs on other key variables.

### **39131: Goals of Older Adults Participating in a Short-term, Community-based, Slow-stream Rehabilitation Program: More than Just Physical?**

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**Background/Rationale:** Goal setting is fundamental to rehabilitation; however, older adults' goals and goal outcomes may differ due to the complexity of age-related health concerns.

**Purpose/Research Objectives:** To determine types of goals older adults have for rehabilitation; and, if a short-term, community-based slow stream rehabilitation program is effective in helping older adults achieve their goals.

**Relevance:** Although effective goal setting is pivotal in rehabilitation, there is no known consistent goal setting practice, and health care professionals and patients often have differing opinions about what is important.

**Methods:** Older adults, ages 60 years and older, recently discharged from the hospital and participating in the Goldies2Home program (Shalom Village) documented goals using the Patient Specific Functional Scale (PSFS). Goals were categorized using the International Classification of Functioning, Disability and Health. A paired t-test examined change in PSFS scores between baseline and discharge.

**Results:** The majority of goals were classified as "Activities and Participation". Goals pertaining to "Mobility" i.e., walking, were most common; other goals pertained to "Domestic Life" i.e., household tasks and "Community, Social, and Civic Life" i.e., leisure activities. There was a clinically (MCID = 2) and statistically significant change in average PSFS scores from baseline (3.18, SD = 1.83) to discharge (5.57, SD = 2.56),  $p=0.00$ .

**Conclusions:** Older adults' have a variety of goals for rehabilitation that do not solely pertain to physical function. A short-term, community-based slow-stream rehabilitation program was effective in achieving goals, however it is unknown if older adults are able to maintain their goal achievement longer term.

## **39142: Examining the Prevalence of Falls and Future Falls Risk in Adults One-Year After Total Hip Arthroplasty**

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**Background/Rationale:** One in three older adults fall each year, representing a significant public health problem which has serious consequences including fractures. People with hip osteoarthritis have an annual falls prevalence of 45%. Hip osteoarthritis can be treated with total hip arthroplasty (THA), however, the effect of THA on falls risk has received limited attention.

**Purpose/Research Objectives:** The study objectives were: 1) to estimate the prevalence of falls in the 12 months following THA surgery, and 2) to evaluate future falls risk at one year after surgery.

**Relevance:** Physiotherapists have a prominent role in THA post-operative rehabilitation, as well as assessment and treatment of adults at risk for falls in general.

**Methods:** We recruited 135 participants (average age = 68.97±9.08 years, 44.4% males) at their one-year follow-up appointment. Assessment included a falls questionnaire, gait speed, the Falls Risk in Older People in a Community Setting (FROP-Com) scale (higher scores indicate greater falls risk), 30-Second Chair Stand Test (30CST) and the Step Test. Data were summarized as means and standard deviations.

**Results:** Twenty-nine patients reported a fall, a prevalence of 21.5%, of which 14 (48.3%) reported injuries. FROP-Com score was 7.85±3.52 indicating low to moderate risk. 30CST and Step Test scores were (10.91±3.87) and (11.15±3.62) respectively. Several risk factors were identified, including leg strength and balance, which are modifiable.

**Conclusions:** Falls prevalence was lower than the general risk for older adults and individuals with hip osteoarthritis before surgery. At one year after surgery, falls risk factors were present, some of which are potentially modifiable with physiotherapy.

### **39151: Planning rehabilitation services for seniors: Can we use patient's own perception?**

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**Background:** Canadians 75 years and older represents 16% of hospital admissions. While disabilities assessment prior to discharge would be an optimal approach to identifying rehabilitation needs, in a busy acute care hospital, this is an unlikely occurrence. Could patient's perceptions be used as a marker of potential need for post-discharge services?

**Objectives:** To estimate whether self-reported health can be used as an indicator of needs among seniors.

**Relevance:** Self-reported health could be used at hospital discharge to identify a high degree of need for further follow-ups and services to promote recovery.

**Methods:** Cross-sectional survey. Age- and sex-adjusted logistic regression was used to estimate the link between functional status and fair/ poor self-reported health. Forward stepwise logistic regression was performed to identify the strongest contributors of poor health. Positive predictive value, sensitivity and specificity estimated whether health perception could be used to identify people in need of physical rehabilitation services.

**Results:** Among the 103 respondents, 40% rated their health as fair or poor. Seniors perceiving their health as fair or poor had higher odds of reporting impairments, activity limitations, and participation restrictions (OR ranging from 2.37 95%CI 1.03-5.45 to 12.22 95%CI 2.68-55.78). The strongest contributors for poor/fair health were depression, difficulty performing household tasks, pain, and dizziness (c-statistic = 0.91 and r<sup>2</sup> of 0.60). Self-rated health showed a positive predictive value of 1, sensitivity of 52%, and specificity of 100%.

**Conclusion:** Seniors participating in this study and reporting fair or poor health have indicators of need for further rehabilitation services.

### **39163: How does the health-related quality of life of Canadian Seniors Fare over a Three-Year Period? Trajectories from the NuAge Study**

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**Background:** Seniors are living longer; however, their vast majority will have some degree of impairment. In order to develop successful healthcare strategies is it necessary to understand the nuances of aging.

**Objective:** To describe trajectories of physical health over a 3-year period among Canadian seniors and to identify factors associated with deteriorating health.

**Relevance:** Obesity, inactivity and depression should be targets of preventive health strategies for seniors.

**Methods:** Between 2004 and 2009, the NuAge study recruited 1793 seniors. Participants were assessed annually, including socio-demographic characteristics, comorbidities, physical function, cognition, health behaviors, and health status. Physical health was assessed using the SF-36 Physical Component Summary. Group-based trajectory modelling was used to cluster individuals with similar physical health trajectories. Logistic regression was used to identify predictors of physical health deterioration.

**Results:** Six unique trajectories of physical health were identified. Three groups started at values well below Canadian norms but this poor physical health remained stable over time. Three groups (n=869) had values above the norm and 1 showed persistent excellent health; two groups started with very good physical health, but 1 showed a drastic deterioration. Among those starting out with excellent or very good health, three factors predicted membership in the deteriorating group: (i) heavier body weight (OR = 1.31 per 30 kg. difference; 95%CI 1.12-1.78); (ii) more depressive symptoms (OR per symptom = 1.08; 95%CI 1.03-1.15); whereas (iii) higher physical activity (PA) protected against deterioration (OR = 0.69 per 30% more PA; 95%CI: 0.48-0.97).

**Conclusion:** Inactive, seniors with excess weight and depressive symptoms do not age well.

## Women's Health

### Abstract Presentations

#### **38392: Pelvic floor muscle and sexual function in endometrial cancer survivors suffering from dyspareunia**

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**Background/Rationale:** Gynecological oncology treatments are suggested to cause pelvic floor muscle (PFM) dysfunction that could contribute to the development of pain during sexual intercourse (dyspareunia) which affects more than half of gynecological cancer survivors. However, to date, no study investigated PFM function in relation to dyspareunia in gynecological cancer survivors.

**Purpose/Research Objectives:** To explore differences in PFM function and sexual function between endometrial cancer survivors with dyspareunia and women without pain who underwent a total hysterectomy for benign conditions.

**Relevance:** The results of this study support conducting a larger study to guide the development of physiotherapy treatments to reduce dyspareunia in an oncological population.

**Methods:** In this exploratory bicentric study, survivors with dyspareunia (n=7) and asymptomatic women (n=7) were evaluated by a physiotherapist. The two groups were balanced in terms of age, body mass index and number of vaginal deliveries. PFM function was assessed with the dynamometric speculum, and sexual function by the Female Sexual Function Index. Mann-Whitney tests were used to compare the two groups on muscular and sexual variables ( $\alpha=0.050$ ).

**Results:** Survivors with dyspareunia demonstrated higher PFM tone ( $p=0.018$ ) and lower PFM endurance ( $p=0.048$ ) compared to asymptomatic women. Survivors also presented lower sexual function ( $p=0.004$ ).

**Conclusions:** The results of this exploratory study suggest impaired PFM function as well as impaired sexual function in gynecological cancer survivors with dyspareunia. A larger study is needed to confirm these findings. This preliminary evidence can be used as empirical data to better understand PFM impairments involved in dyspareunia in this population.

### 38510: Optimizing bone loading - prescribing exercise for maximum impact

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**Background:** Exercise is important for bone health. Activities resulting in mean acceleration and jerk levels above thresholds of 4.9g and 100g/s, respectively, have demonstrated positive osteogenic effects, but variability in loading has not been characterized for individual exercises.

**Purpose:** To characterize dynamic loading during exercises recommended for bone health.

**Relevance:** Creating an evidence-informed exercise battery to address bone health in premenopausal women.

**Methods:** Thirty premenopausal women ( $39.6 \pm 5.5$  years,  $24.7 \pm 4.0$  kg/m<sup>2</sup>) screened for safe participation wore ActiGraph GT3X+ monitors over the right hip (100 Hz) during a standardized protocol of exercises: jogging, running, ascending/descending stairs, jumping jacks, scissor jumps and drop jumps. Peak acceleration (g) and peak jerk (g/s) were determined for every repetition for each exercise.

**Results:** Dynamic loading values attained during all activities overlapped, however, statistical differences ( $P < 0.001$ ) were observed revealing an inequality profile where jumping exercises > running/jogging > ascending/descending stairs. Substantial inter-repetition variability (Coefficients of Variation (CV's) 6-43%) and inter-individual variability (CV's = 16-86%) were observed in dynamic loading measures. Neither acceleration nor jerk were correlated with body mass.

**Conclusions:** The results caution against using thresholds based on average loading to prescribe exercise for premenopausal women. A jump based, three-exercise battery was derived using activities with maximal likelihood to exceed dynamic loading thresholds in premenopausal women based upon repetition data. The within-exercise, and between-subject variability in dynamic loading measures is likely related to individual movement and landing techniques

### **38656: Fear-avoidance and pelvic floor muscle function are associated with pain intensity in women with vulvodynia**

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**Background:** Pelvic floor muscle (PFM) function was shown to be different in women with provoked vestibulodynia (PVD), a population in which psychosocial variables are also impaired. Their impact as well as the role of partner support on pain intensity remains unknown.

**Purpose:** To investigate the association between fear-avoidance variables, PFM function and pain intensity in women with PVD as well as the moderator effect of partner support.

**Relevance:** Since the etiology of PVD remains misunderstood, the ability to assess the variables influencing pain intensity is of great importance for evaluation and treatment.

**Methods:** A total of 173 women participated in the study. Fear-avoidance variables were evaluated with validated self-administered questionnaires. Pain intensity was evaluated using a numerical rating scale. PFM function (maximal strength, speed of contraction, flexibility and muscle tone) was evaluated with a dynamometric speculum.

**Results:** Pain catastrophizing was significantly associated with pain intensity, as were partner support and PFM flexibility ( $p < 0.040$ ). Fear-avoidance, PFM function and partner support explained 28.3% of the variance in pain during intercourse ( $p < 0.001$ ). PFM function alone explained 9% of pain intensity variance. Partner support was found to moderate the association between pain intensity and catastrophizing. When partner support was low, catastrophizing was significantly related to pain ( $p < 0.001$ ), whereas when partner support was high, catastrophizing was no longer associated with pain ( $p = 0.142$ ).

**Conclusions:** Findings of this study support that pain intensity in women with PVD is explained by PFM function and fear-avoidance variables. It also sheds light on the role of partner support and its moderating effect on pain catastrophizing.

## **38872: Do Women with Persistent Diastasis Recti Demonstrate Impaired Trunk Muscle Function?**

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**Background/Rationale:** The impact of diastasis recti abdominis (DRA) on women's health is largely unknown. While studies have focused on primiparae in the early post-partum period, dysfunction may become more evident over time.

**Purpose/Research Objectives:** To determine whether parous women (> 1 year post-partum) demonstrate impairments in trunk strength, endurance, or function when compared to nulliparae, and if the magnitude of the IRD is associated with symptoms, impairment or dysfunction.

**Relevance:** These results are important as we seek to develop evidence-informed management approaches to DRA.

**Methods:** Thirty-two women (21 parous) participated. Parous women were > 18 months after their last delivery. Inter-rectus distance (IRD) was measured using ultrasound imaging, then participants underwent physical testing by researchers who remained blinded to IRD. Outcomes included trunk force generating capacity, trunk endurance, and performance on the sit up and the sitting rising tests. Participants completed the Roland Morris Questionnaire and numeric rating scales for pain (upper and lower back, abdomen and pelvis).

**Results:** Parous women reported higher levels of abdominal pain, generated less trunk rotation force, had poorer front plank endurance, and performed more poorly on the sit-up test than nulliparae. Larger IRD was associated with lower front and side plank endurance and worse performance on the sit-up test.

**Conclusions:** Our results suggest that parous women who are >18 months post-delivery have impaired trunk rotation strength, with larger IRD associated specifically with lower capacity to perform a sit-up, hold a front plank, and hold a side plank position.

### **38874: Reliability and Concurrent Validity of Inter-Rectus Distance and Linea Alba Stiffness in Women with and without Diastasis Recti Abdominis**

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**Background/Rationale:** Inter-rectus distance (IRD), measured using ultrasound imaging (USI), is the standard by which diastasis recti abdominis (DRA) severity is described. However IRD is not associated with dysfunction. The capacity of the Linea Alba to transmit loads across the midline may be more functionally important than IRD, and this capacity can be measured in-vivo using shear wave elastography (SWE).

**Purpose/Research Objectives:** (i) To examine the between- and within-rater reliability of Linea Alba stiffness measured using SWE and (ii) to investigate the relationship between IRD and Linea Alba stiffness at rest, on head lift and on curl-up.

**Relevance:** We must understand the psychometric properties of Linea Alba stiffness measured using SWE before we use it to investigate the impact of DRA on function.

**Methods:** This study received research ethics board approval. Traditional B-mode USI and SWE were used at three locations along the Linea Alba while women were at rest and while they performed head lift and curl-up tasks. Measurements were made independently by two raters who were blinded to each other's results.

**Results:** Twenty-four women participated (11 nulliparous). Intra-class correlation coefficients for IRD and both peak and mean stiffness of the linea alba were  $>0.95$ . Peak and mean Linea Alba stiffness at rest, on head lift and on curl-up were negatively correlated with IRD ( $-0.25 < r < -0.49$ ,  $p < 0.03$ ), while linear regressions explained only 6.9-11.2% of the variance on head lift and 20.8-24.8% of the variance on curl-up.

**Conclusions:** Although IRD is associated with less capacity to stiffen the Linea Alba, other factors may influence this capacity.

### **39079: The Influence of Pelvic Organ Prolapse on Female Sexual Dysfunction and Quality of Life - A Systematic Review**

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**Background:** As physiotherapists, we treat pelvic organ prolapse (POP) and inquire about female sexual dysfunction (FSD). The relationship between POP and FSD remains unclear, as clinically, there are discrepancies between POP and reported FSD.

**Purpose:** The aim of this systematic review is to determine how POP impacts FSD and quality of life (QoL).

**Relevance:** Pelvic floor physiotherapy (PFP) is effective for the treatment of POP. Physiotherapy for co-morbid FSD is less understood. There is a gap in the education and knowledge when treating these co-morbid conditions.

**Methods:** A systematic review of four databases was conducted. All articles were published between 2012-2017. The McMaster University Critical Review Forms for Qualitative and Quantitative Studies were utilized for analysis of studies included in the final review.

**Results:** Sixty-eight studies were screened; eighteen articles were eligible for full text review. Fifteen articles were included in the final qualitative synthesis.

The studies used variable methodologies, subjects, and measures. No precise conclusive findings could be seen between studies. Some studies found that women with POP experienced FSD however, there were significant limitations to the quality of the studies. Some studies did bring attention to the difference between FSD and sexual activity, addressed many potential co-morbidities and introduced body image and genital body image as potential factors.

**Conclusions:** While POP and FSD may be co-morbid, there are more contributing factors to identify. As physiotherapists, we must understand the relationship between POP and FSD to best assess and treat the concerns of our patients.

#### **42900: Eye Opener: Urinary Incontinence in the Gynecological Cancer Survivor**

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Urinary incontinence is a common sequela among women who have been treated for gynecological cancer and is known to adversely affect the quality of life of these women. This presentation aims to describe the pathophysiology of surgical and radiation-induced bladder dysfunction, to review the different known effects of radiotherapy on the anatomical structure and function of the pelvic floor muscles, as well as overview how these muscular dysfunctions can contribute to urinary incontinence. The physiotherapy management for urinary symptoms in gynecological cancer survivors will be presented, using recent published evidence, ongoing research and representative cases to illustrate and support each treatment strategy.

## Poster Presentations

### **38859: Intravaginal Dynamometry Measures Correlate well with Manual Evaluation of Pelvic Floor Muscle Strength**

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**Background/Rationale:** While our custom intravaginal dynamometer has demonstrated excellent reliability for the assessment of pelvic floor muscle (PFM) strength and stiffness, it has not been validated against the Modified Oxford Scale (MOS), the clinical standard in PFM assessment.

**Purpose/Research Objectives:** To investigate the association between PFM strength measured using intravaginal dynamometry and the MOS.

**Relevance:** In order to use experimental findings based on intravaginal dynamometry, we must understand how these findings related to the clinical standard for PFM assessment.

**Methods:** This study received REB approval. Women who had previously undergone physiotherapy for PFM dysfunction were recruited. PFM strength was assessed using the MOS, then using the intravaginal dynamometer with the arms opened to an anteroposterior diameter of 35mm. Spearman's rho correlation coefficients were determined between MOS grade and the absolute and relative peak force values obtained through dynamometry.

**Results:** Twenty-nine women (age=  $41.8 \pm 13.0$  years, body mass index= $25.2 \pm 4.2$  kg/m<sup>2</sup>, parity= $1 \pm 1$  children) participated. The mean MOS was  $4.1 \pm 0.8$ , relative peak PFM force was  $7.21 \pm 2.59$  N and absolute peak PFM force was  $16.19 \pm 4.00$  N. MOS was moderately correlated with dynamometric measures of relative (Rho = 0.515, p = 0.004) and absolute (Rho = 0.574, p = 0.001) PFM force and did not differ (p>0.05).

**Conclusions:** While dynamometric measures correlate moderately with PFM strength evaluated by MOS, the lower than ideal correlations may reflect the dynamometer's ability to capture the squeeze but not the lift aspect of PFM contraction or the discrete and subjective nature of the MOS.

### **39025: The impact of bladder sensation on gait in continent and incontinent community-dwelling women fallers.**

Marie-Hélène Paquin<sup>0</sup>; Cyril Duclos<sup>1</sup>; Lucie Dubreucq<sup>1</sup>; Nolween Lapierre<sup>1</sup>; Jacqueline Rousseau<sup>1</sup>; Jean Meunier<sup>1</sup>; Johanne Filiatrault<sup>1</sup>; Mélanie Morin<sup>2</sup>; Marie-Hélène Milot<sup>2</sup>; Alain St-Arnaud<sup>3</sup>; Hélène Moffet<sup>4</sup>; Sylvie Nadeau<sup>1</sup>; Chantale Dumoulin<sup>1</sup>

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**Background/Rationale:** Falls are more prevalent among older incontinent women than continent women. One hypothesis is that an urgent desire to void has an influence on gait and increases the risk of falling. No study has investigated incontinent women fallers' gait when experiencing a strong desire to void.

**Purpose/Research Objectives:** To investigate the effect of bladder sensation on gait parameters in incontinent and continent women fallers.

**Relevance:** Exploring a possible explanation of increased frequency of falls in incontinent elderly women.

**Methods:** An observational pilot study of gait was undertaken in two groups of healthy community-dwelling women, continent (n=17) and incontinent (n=15), who experienced at least one fall, in the last year. Each woman attended the gait laboratory once. Analysis of the gait was undertaken using a computerised gait analysis system (GAITRite). Women drank water until they experienced a strong desire to void, then were asked to walk to the toilet during which gait analysis was undertaken. After emptying the bladder, they were asked to walk again and gait analysis was undertaken, without the strong desire to void.

**Results:** A pattern of reduced velocity ( $p=0.05$ ) and stride width ( $p=0.02$ ) was observed in both groups when they experienced a strong desire to void. At both times, women with severe incontinence had reduced velocity ( $p=0.01$ ), reduced stride length ( $p<0.01$ ) and increased stance time variability ( $p<0.01$ ) compared to continent women.

**Conclusions:** Gait parameters were influenced by bladder sensation in both groups. Severe incontinence was correlated with poor gait parameters related to a higher risk of falls, regardless of the bladder sensation state.

### **39060: Evaluation of the Clinical Impact of the Postgraduate Program in Pelvic Floor Rehabilitation at Université de Montréal: preliminary results of a web-based survey**

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**Background:** The postgraduate program in Pelvic Floor Rehabilitation (PFRP), at Université de Montréal was introduced in 2010 to address the need for better, targeted training, given that Canadian physiotherapy programs have an absence of, or limited hours dedicated to, pelvic floor rehabilitation. The PFRP's objective aimed to develop practitioners' clinical skills for evaluating and treating pelvi-perineal dysfunctions, employing evidenced-based practices across various clientele. The PFRP encompasses 15 credits over 6 trimesters. 110 physiotherapists have already graduated.

**Purpose:** To assess, through a web-based survey, the perceived impact of the PFRP on clinical practice.

**Relevance:** To document PFRP's impact on clinical practice in the province of Quebec.

**Methods:** One year after completing the program, all graduates of the PFRP were asked to complete a web-based survey to provide basic demographics and to document the impact of PFRP on their clinical practice.

**Results:** A total of 56 physiotherapists from the five first cohorts, with a mean age of 32.0 years (6.6), contributed to these results. Ongoing data acquisition is gathered from each year's graduated cohort. Over the first five years, response rates have ranged from 53.8% to 77.8%. Respondents perceived a direct impact on their clinical practices, with a significant increase in the number of patients seen one year after graduating from the PFRP (from 6.94 to 12.35 patients/week;  $P=0.03$ ) and a significant increase in the percentage of their practice dedicated to pelvic floor rehabilitation (22% to 41%;  $P=0.004$ ).

**Conclusions:** Survey results from the five first PFRP cohorts support participants' perceived impact on clinical practice.

## Other

### Abstract Presentations

#### **35448: Equity, competence and autonomy: three core values difficult to uphold in physiotherapy care for injured workers in Canada**

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**Background:** Healthcare services provided by workers' compensation systems aim to facilitate recovery for injured workers. However, some features of these systems pose barriers to high quality care.

**Objectives:** We sought to elicit perceptions of physiotherapists from three Canadian provinces, along with leaders in the physiotherapy and workers' compensation fields, regarding ethical tensions arising in the care of patients with musculoskeletal injuries and supported by a workers' compensation board.

**Relevance:** No study has conducted an in-depth examination of the ethical challenges encountered by physiotherapists when treating injured workers supported by a workers' compensation board. This investigation could help improve care for this clientele.

**Methods:** We used Interpretive Description methodology to guide this inquiry. We conducted in-depth interviews with 40 physiotherapists and leaders in the physiotherapy and workers' compensation fields from three Canadian provinces. We analyzed transcripts using concurrent and constant comparative techniques.

**Results:** We developed inductive themes reflecting participants' experiences of ethical challenges as they seek to uphold three core professional values: equity, competence and autonomy. Participants' experiences illustrate multiple facets of physiotherapists' struggles to uphold moral commitments and preserve their sense of professional integrity while providing care to injured workers within a complex health service organisation.

**Conclusion:** Until now, difficulties for physiotherapists to work in accordance with their values have not been thoroughly reported in the literature. Results from this study could help initiate dialogue among physiotherapists, clinic owners and workers' compensation boards to target specific aspects of the current models of practice where improvements could be instituted.

### **35449: Physiotherapy care for injured workers: how do current policies influence how we care for our patients?**

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**Background:** In Canada, third party payers play a significant role in financing physiotherapy care for people with musculoskeletal disorders. Para-governmental insurers such as workers' compensation boards are responsible for the care provided to injured workers.

**Objectives:** We explored the influence of 1) workers' compensation boards' policies and 2) physiotherapy clinics' policies on the care physiotherapists provide to workers with musculoskeletal injuries in BC, Ontario and Quebec.

**Relevance:** Although healthcare providers are accountable for delivering ethical care and to act according to their professional codes of conduct, policies from workers' compensation boards and healthcare clinics can affect injured workers' physiotherapy care.

**Methods:** The qualitative approach of Interpretive Description guided this inquiry. Forty participants from Ontario, Quebec and BC (30 physiotherapists and 10 leaders and administrators from physiotherapy professional groups and workers' compensation boards) were interviewed. Inductive analysis was conducted using a recursive approach to data collection and analysis, and constant comparative techniques.

**Results:** Workers' compensation board policies such as reimbursement rates, end points for treatment and communication mechanisms, and clinic policies such as physiotherapists' remuneration schemes and restriction on the choice of professionals had negative influences on care. Policies that were viewed as positive were board policies that recognize and promote physiotherapists' competencies and clinic policies that provided support for administrative tasks.

**Conclusion:** There is a need for workers' compensation boards and physiotherapy clinics to examine how their policies influence care and to revise policies where necessary in order to improve the provision of care to injured workers.

### **38501: The role of physiotherapists in health promotion and prevention: a scoping review**

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**Background/ Rationale:** Physiotherapists possess an ideal skill set to practice in health promotion and disease prevention. However, to date, there has been little research that evaluates the role that physiotherapists play in primary and secondary prevention.

**Purpose/Research Objectives:** To conduct a scoping review of the literature related to the role of physiotherapists in health promotion and prevention.

**Relevance:** This research explores an emerging area of practice for Canadian physiotherapists.

**Methods:** Electronic databases PubMed, CINAHL, EMBASE, MedLine were searched from inception to February 7, 2017 using search terms “physiotherapist” AND “health promotion” and their derivatives. Any research design was considered for inclusion, but study protocols, editorials and abstracts from conference proceedings were excluded. Only articles written in English were included.

**Results:** Of 1366 abstracts and titles reviewed, 186 were considered for full-text review and 84 were included in the analysis and thematic synthesis. Since 2010, there has been a sharp rise in publications relating to the role of physiotherapists in health promotion and prevention. The main themes related to areas of practice spanned the lifespan and included children’s health, women’s health, corporate wellness and injury prevention, reduction and management of non-communicable diseases and falls prevention. Practice-related themes were also identified and included entry-to-practice and post-graduate education, and physiotherapists’ willingness and ability to counsel.

**Conclusions:** Physiotherapists have a role in health promotion in several areas of practice across the lifespan and more research, particularly randomized controlled trials, is required to elucidate ideal methodologies and evaluate effectiveness to guide practicing physiotherapists.

### **38729: OTAs and PTAs in Canada's health care system - Stakeholder perspectives**

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**Background/Rationale:** Despite significant evolution for occupational therapist assistants (OTAs) and physiotherapist assistants (PTAs), there is no single organization/body which represents their perspectives, nor an agreed-upon vision of how these important health care team members can best contribute to the health and wellness of Canadians in partnership with occupational and physical therapists.

**Purpose/Research Objectives:** In preparation for an in-person stakeholder meeting, a survey was circulated to members of key stakeholder groups to identify barriers and facilitators to the contribution of OTAs and PTAs to Canada's health care system.

**Relevance:** As supervisors of the practice of PTAs, physiotherapists have an interest in how PTA practice will evolve in the coming 5-10 years.

**Methods:** A survey was circulated via email in the fall of 2017 to the members of eleven key stakeholder groups across Canada. Questions targeted topics such as practice context, supervision, regulation, and resources relating to current and future OTA and PTA practice. Preliminary quantitative analysis included overall proportions (%), and proportions according to discipline (PT, OT, OTA/PTA, PRT).

**Results:** Respondents submitting completed surveys (n=1549) included PT, OT, OTA/PTAs and PRTs. Analysis by discipline revealed agreement in the need for regulation, and divergent opinions about type of regulation, independent practice, national certification, and remote supervision.

**Conclusions:** Wide variation in perspectives creates challenges in how best to optimize OTA and PTA contributions. These preliminary results will be used to seek grant funding to conduct detailed analyses of the data, further explore the areas of dissent, and build consensus on a vision for OTAs and PTAs.

### **38845: More than Ten Years Later: An Evaluation of the Policy Decision to Delist Physiotherapy Services in Ontario Related to Unmet Needs**

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**Background:** Removing services from provincial health plans ('delisting') create naturally occurring health policy experiments that present opportunities to explore policy consequences by comparing pre and post delisting periods. Understanding the effect of delisting services on the quantity and distribution of care is important. Governments face continued fiscal pressures and must contemplate further reductions in publicly funded health services to meet fiscal demands

**Objective:** To investigate if the policy decision to partially remove physiotherapy services (PTS) from OHIP resulted in an increase in unmet need for physiotherapy by Ontario residents immediately following and more than ten years after implementation.

**Relevance:** This study highlights marginalized populations do not have access to PTS.

**Methods:** Semi-structured interviews with six key informants with expert knowledge about partial delisting of PTS in Ontario were completed. Transcripts were coded using directed content analysis and a priori codes of availability, affordability and acceptability for each research question.

**Results:** Informants identified unmet need occurred immediately following partial delisting of PTS in Ontario. The most common reasons identified for unmet need were reductions in availability and affordability of PTS. Additionally, unmet need for PTS was identified presently, more than ten years following partial delisting. Affordability and availability continued to be perceived as main reasons why unmet need for PTS persists.

**Conclusion:** The policy decision to partially delist PTS resulted in an unintentional consequence of unmet need for specific groups in the Ontario population. This unmet need continues to exist today, despite additional policy changes that have occurred since partial delisting.

### **38911: The ‘where’ of care: mapping physiotherapy use in Canada in relation to physiotherapist distribution**

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**Background/Rationale:** In comparison to medical services, ensuring equitable access to physiotherapy (PT) services has traditionally received less policy attention. Understanding how PT use and distribution are related and geographically dispersed is important given that most provinces have a regionalized approach to health service delivery.

**Purpose/Research Objectives:** To examine the distribution of physiotherapists in relation to self-reported PT use among Canadian health regions.

**Relevance:** Comparison of health region differences within and between provinces at a health region level may help to guide where and how access to PT services could be optimized.

**Methods:** This study is based on the PT use question from the 2014 Canadian Community Health Survey. Primary employment information was obtained from the 2015 Canadian Institute for Health Information physiotherapy database. A geospatial mapping and correlation analysis were applied to explore the association between self-reported PT use and physiotherapist ratio at health regions (n=103) across Canada.

**Results:** PT use is moderately associated with the distribution of physiotherapists (Pearson’s  $r(103) = 0.453$ ,  $p < 0.001$ ). Variables were converted into three categories using  $\pm 0.5$  standard deviations from national mean as cut-off values. Cross-tabulation between PT use and physiotherapist:population distribution (PT ratio), revealed that: 13.5% have high use/high PT

ratio; 16.5% have a low use/low PT ratio; 5.8% have high use/low PT ratio; 2.9% have low use/high PT ratio; and 61.2% have combinations of medium use and medium PT ratios.

**Conclusions:** There is variability in the distribution of physiotherapists and self-reported use across Canadian health regions, indicating potential inequities in geographic accessibility to PT services.

### **38927: Uncovering inequities in access to health care among adult Canadians with chronic back disorders**

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**Background/Rationale:** Chronic back disorders (CBD) are prevalent, costly, and among the most common reasons for seeking primary care. Little is known regarding the comparative use of family physician, chiropractic, and physiotherapy services among people with CBD in Canada.

**Purpose/Research Objectives:** To investigate patterns of primary care use and to profile factors associated with self-reported use of family physicians, chiropractors, and physiotherapists among adult Canadians with CBD.

**Relevance:** Understanding differences in self-reported use may help to identify potential gaps in access to care and inform the development of strategies to optimize equitable access.

**Methods:** Self-reported health care use among adults with CBD was investigated with the combined 2009 and 2010 Canadian Community Health Surveys conducted by Statistics Canada. This complex survey employs population weights and bootstrapping to be representative of the Canadian population. Descriptive analyses were performed, with multiple logistic regression to control for possible confounding.

**Results:** The majority of adult respondents with CBD sought care only with a family physician (53.8%) with an additional 20.9% and 16.2% seeking care with combined family physician/chiropractor or family physician/physiotherapist, respectively. Few respondents sought care only with a chiropractor (2.5%) or physiotherapist (1.0%). After adjustment, differential patterns of utilization ( $p < 0.05$ ) among those with CBD were evident between provider groups with respect to age, gender, socioeconomic status, rural/urban residence, functional limitations, and presence of co-morbidities.

**Conclusions:** This research highlights potential inequities in access to physiotherapists and chiropractors in relation to family physicians among adult Canadians with CBD, particularly among lower socioeconomic status and rural/remote populations.

## 42485: What is enhanced recovery after surgery?

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Enhanced Recovery after Surgery (ERAS®) programs represent the gold standard for systematic implementation of evidence-based practice in surgery. Physiotherapy can play a key role in enhancing recovery after surgery and supporting patients to play a greater role in their own recovery. This presentation will discuss ERAS® in general and describe the national project: Enhanced Recovery Canada.

### Poster Presentations

## 38419: Au Revoir Arthrose: a French-Canadian translation of the OA Go Away tool

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OA Go Away is an exhaustive tool that is used to measure the quantity, the nature, and the adhesion of exercise prescriptions for individuals with osteoarthritis in comparison to self-managed interventions.

**Goals:** The goals of this presentation are to create a French-Canadian translation of the OA Go Away tool in order to examine the validity of the content as well as the reliability of test-retest.

**Methodology:** A modified approach of the methodology from trans-cultural validation by Vallerand was adopted. A parallel translation of the OA Go Away tool was carried out initially by professionals and future professionals of rehabilitation. A primary committee of experts (P1) examined the translated version and created a preliminary experimental draft of the OA Go Away tool. This was then evaluated and modified by a second committee of experts (P2). Three patients with osteoarthritis of the knees evaluated the second experimental version and made minor consensual changes. Finally, a linguist examined this copy and an expert carried out a final translation. The principal co-researchers examined the problematic elements of this new version and proposed final modifications. The intra-class correlation coefficient (ICC) and the kappa coefficient have been used to examine the reliability of test-retest of the French-Canadian version of the OA Go Away tool.

**Results:** The users judged all the final comments of the final version of the OA Go Away tool, with the exception of a few expressions for which they had made consensual modifications. The reliability of test-retest is acceptable for the principal elements of the journal for the OA Go Away tool.

**Conclusion:** The five rigorous steps to the process permitted the production of a valid French-Canadian version of the OA Go Away tool. The French-Canadian version for the OA Go Away tool offers a moderate and reliable test-retest on average for all of its elements. This tool could be pertinent for people with osteoarthritis of the lower limbs and those that engage in regular physical activity, as well as for healthcare professionals treating these individuals. This innovative tool, favouring the management of osteoarthritis, could be of interest to the international Francophone communities.

### **38848: Overall stabilometric profile in chronic kidney disease patients under hemodialysis: a cross-sectional study**

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**Background/Rationale:** Patients on hemodialysis commonly have multiple comorbidities that are associated with an increased risk for falls. An atypically high postural sway is a known risk factor for falls in older adults.

**Purpose:** To assess the overall stabilometric profile in hemodialysis patients comparing with elderly with low (Group 1) or high risk for falls (Group 2).

**Methods:** A total of 108 volunteers as follow: Group 1 (N=61), Group 2 (N=14) and Group 3 (N=33) were submitted to the BTracks Balance Test on a portable force plate to evaluate ten stabilometric parameters (SP). The differences for each SP were evaluated by Kruskal-wallis test. The stabilometric profile was analyzed applying the overall profile analysis, using the concept of low and high-postural sway.

**Results:** In general, most of SP were higher in Group 2, followed by Group 3 and lower in Group 1. Furthermore, the signature analysis showed that more than 50% of the volunteers had high-postural sway in both Group 2 and 3, suggesting a risk of fall profile.

**Conclusions:** The innovative overall stabilometric profile suggest that hemodialysis patients present the putative changes in balance status that characterize risk of low-energy falls, and that sway impairment could be a marker of frailty and loss of functional independence in this population.

### **38873: The Professional Qualification Program for Internationally Trained Physiotherapists: Review of the First Three Cohorts at the Université de Montréal**

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**Background:** Internationally trained physiotherapists are among the health professionals who request the most licenses to practice in Quebec. Before 2014, accessibility to qualification courses was insufficient to meet this demand at the Université de Montréal (UdeM). Therefore, UdeM developed a Qualification Program in Physiotherapy (QPP) of 16 months duration, which leads to a graduate level certificate recognized by the OPPQ for practice in Quebec.

**Objective:** To present the results of the first three cohorts in terms of satisfaction as well graduation and placement rates.

**Relevance:** Considering the high number of internationally trained professionals in Canada, results of this program are relevant for clinicians and academics.

**Methods:** Data of internationally trained students admitted to the physiotherapy program between 1999 and 2009 were compared to data of QPP students admitted between 2014 and 2016. Surveys were also used to measure internship instructor and student satisfaction.

**Results:** Since the existence of the QPP program, graduation rates increased from 56.5% to 87.3%, the number of graduate students per year increased from 4 to 18 and the study duration decreased from 36 to 16 months. Also, 98% of QPP students claimed they obtained a good preparation for practice in Quebec and 84% of internship instructors were satisfied with the program overall. Six months after the QPP program, the placement rate of graduates was 90%.

**Conclusions:** Results from these cohorts demonstrate that the QPP program trains international physiotherapists more efficiently in the acquisition of skills required to practice in Quebec.

### **38947: Teaching and Assessing the Advocate Role: A Study Exploring Practices and Perspectives in Canadian Physiotherapy Programs**

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**Background/Rationale:** Universities are expected to help students develop the competencies associated with the advocate role. Teaching and assessing this role are known to be complex, however, concretely applying the role appears to be an effective strategy to develop its associated competencies.

**Purpose/Research Objectives:** To explore 1) how academic coordinators of clinical education (ACCEs) prepare clinical instructors (CIs) to mentor students during their placements; 2) the factors influencing teaching and assessment of the advocate role.

**Relevance:** The advocate role is essential for quality and equity of health services. It is imperative that students develop the competencies associated with this role to face the challenges of an ever-evolving health system.

**Methods:** An online survey consisting of closed and open-ended items was sent to the 15 ACCEs across Canada; 12 ACCEs responded. Quantitative and qualitative analysis were performed. Interviews with CIs will be held shortly to explore their experience of teaching and assessing the advocate role.

**Results:** Preliminary results show that, of the 12 universities represented in the surveys, all of them offer training to their CIs before student placements, though only 3 make this training mandatory and only 6 provide information about the advocate role and its assessment. The main barriers identified to teaching and assessing the advocate role were the lack of clarity surrounding the role and the lack of teaching tools. The main facilitator was the use of a standardized assessment tool.

**Conclusions:** Considering the identified barriers, it appears vital that universities systematically train CIs to ensure all students can apply the advocate role during their placements.

### **38951: Outil d'aide à la réussite de stage clinique basé sur la classification de Vaugh**

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**Historique :** Les échecs de stage sont majoritairement observés dans les stages avancés de la formation universitaire en physiothérapie. Considérant que les compétences en difficulté sont identifiées dans les stages précédents, il serait donc possible de prévenir ces échecs.

**Objectif de la recherche :** L'objectif était de développer un outil structuré d'analyse permettant d'identifier précocement les étudiants en difficulté et de remédier aux problématiques rencontrées à la suite d'une réussite minimale de stage.

**Pertinence :** Considérant les répercussions d'un échec de stage, il est important d'examiner des stratégies permettant de favoriser la réussite des étudiants.

**Méthodologie :** Après une revue de la littérature, la classification de Vaugh sur les apprenants en difficulté a été préférée puisqu'en plus de catégoriser les difficultés (cognitif, affectif, relationnel et structurel), elle s'arrimait facilement aux compétences en difficulté répertoriées en stage. Un

outil de soutien à la réussite basé sur cette classification et favorisant l'introspection, connue pour améliorer le rendement chez l'apprenant, a donc été élaboré.

**Résultats :** Le plan de remédiation comprend quatre étapes réalisées par l'étudiant : 1) relever les compétences en difficulté, 2) catégoriser ses difficultés avec la classification de Vaugh, 3) proposer des stratégies de remédiation et 4) justifier ces stratégies. Cet outil de soutien a été implanté pour tous les stages des programmes de physiothérapie à l'UdeM depuis septembre 2017. À ce jour, tous les stagiaires en difficulté (5%) l'ont utilisé. Ils confirment que le plan permet d'identifier leurs difficultés et les moyens pour y remédier.

**Conclusion :** L'utilisation de cet outil sur plusieurs années permettra d'en évaluer l'impact sur la réussite des étudiants en stage.

### **38971: An Online Problem-Based Learning Remediation Program for Physiotherapy Jurisprudence**

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**Background:** Physiotherapists (PTs) are required to demonstrate knowledge of jurisprudence by completing a mandatory exam every five years in order to maintain their license to practice. Previously, the College of Physiotherapists of Ontario offered one-on-one tutoring with a peer coach to PTs who failed the exam. An alternative online problem-based learning remediation program was implemented.

**Objectives:** Program evaluation was used to examine subjective (achievement of two learning objectives, feedback) and objective outcomes (practice tests, subsequent jurisprudence exam) for the online program.

**Relevance:** Jurisprudence knowledge is integral to the practice of all clinicians, as is the ability to identify measurable personal learning goals to guide one's professional development activities.

**Methods:** The nine-week Program involved two one-on-one meetings with a physiotherapist tutor where participants identified and addressed two personal learning objectives. Discussion of jurisprudence using clinical scenarios was undertaken during two online problem-based tutorials with all participants. Online resources included four learning modules. Participants completed two practice tests and offered feedback.

**Results:** Five participants participated in the online program. Four reported meeting both learning objectives; one met one. All participants attended every meeting. Online resource and tests were not accessed by all participants. The average scores on the practice tests were 75% (4

PTs, range 40-100%) and 83% (4 PTs, no range). All participants were successful in the subsequent jurisprudence exam.

**Conclusion:** The new program increased the participants' knowledge of jurisprudence and was well received. The increased knowledge may have been fostered by the variety of learning activities that included both individualized and group learning activities.

### **39053: Effect of Manipulative Techniques in Chronic Low Back Pain Workers: A Randomized Crossover Trial**

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**Background/Rationale:** Chronic low back pain (CLBP) can compromise postural balance and increase the disabilities across active workers. Apparently, manipulative interventions have been positive to reduce back symptoms and increase functionality including balance.

**Purpose/Research Objectives:** This study evaluated the effect of two manipulative techniques: Spinal Manipulation (high-velocity low-amplitude thrust manipulation) and Muscle Energy (post-isometric relaxation) on clinic symptoms and postural balance in male workers with CLBP.

**Relevance:** The results have implications for clinical decision making in the treatment of CLBP.

**Methods:** This randomized crossover trial treated and evaluated 10, volunteers, adult male workers (mean age: 44 years old) with CLBP. Three evaluations occurred: 1) Baseline; 2) Immediate (post 1st technique application); 3) 15days (post 3rd intervention). One force platform was used to assess the postural balance. A numeric pain rating scale was used to quantify the pain intensity. The study also assessed clinical variables such as disability, psychosomatic symptoms by clinic questionnaires (Roland Morris, Fear-Avoidance Beliefs, respectively). Lumbar spine mobility using Schober test was also evaluated. Analysis of variance and effect size (ES) were used to determine intervention effects and groups differences in the main variables.

**Results:** Both techniques were significantly ( $P < 0.01$ ) efficient to reduce pain immediately and after 15days of intervention (Spinal Manipulation =39%; Muscle Energy =56%). Not significant differences were reported for other variables, although clinical improvement observed by score changing from baseline to other time evaluations (immediate and after 15days).

**Conclusions:** The two manipulative techniques (Spinal Manipulation; Muscle Energy) were effective to reduce pain. The techniques did not change postural balance across CLBP participants.

### **39062: Use of real-time videoconferencing to deliver physiotherapy services: a scoping review of published and emerging evidence**

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**Background/Rationale:** Real-time videoconferencing may be a viable means to deliver physiotherapy services across a range of practice settings and health conditions; however, there is limited research and uptake in clinical practice of telehealth as a service delivery model.

**Purpose/Research Objective:** To examine and describe trends, gaps and opportunities in published and emerging evidence on the use of real-time videoconferencing to deliver physiotherapy services.

**Relevance:** Telehealth may be a viable means to improve access to physiotherapy services for people in rural and remote areas that have difficulties in accessing health care.

**Methods:** Eight databases (Medline, CINAHL, PsycINFO, Embase, clinicaltrials.gov and WHO ICTRP, ANZCTR, Prospero) were searched using terms for physiotherapy and telehealth. Published research or protocols were included. Title/abstract, full text screening and data extraction was completed by two independent reviewers with conflicts resolved by a third reviewer. Descriptive statistics will be used to summarize: study type; health condition; year of publication; results; technology considerations; and other factors such as identified barriers or facilitators to use of videoconferencing in physiotherapy practice.

**Results:** From 2611 articles identified in our search, a total of 116 articles were included. Data analysis is ongoing. The high proportion of protocols relative to published literature suggests that this is an emerging research area.

**Conclusion:** The research in this field is growing and becoming increasingly diverse. The findings from this study will help to identify gaps and trends in the research and inform how uptake of telehealth for physiotherapy services delivery might be enhanced.

### **39077: Assessing clinical performance in physical therapy students: which competencies differentiate an average from an above-average performance?**

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**Background/Rationale:** Most physical therapy programs assess student performance during clinical placements using a Pass/Fail grade. In 2015, the introduction of the ACP, a competency-based assessment of clinical performance for physical therapy students, provided the opportunity to assign letter grades for student performance during a clinical placement.

**Purpose:** To identify which competencies evaluated by the ACP indicate an above average performance versus an average performance for physical therapy students completing a clinical placement.

**Relevance:** Assigning a letter grade to discriminate levels of performance leads to more targeted interventions and mentoring by faculty supporting individual students through their clinical placements. In addition, monitoring the acquisition of competencies across cohorts of students is desirable for the continued improvement of a physical therapy program.

**Methods:** This descriptive project uses pre-defined criteria to assign a letter grade to clinical placement performance in two cohorts of physical therapy students (n=140 students) to demonstrate essential competency acquisition and the grade ranges observed. Statistical analysis using logistic regression was completed on the two cohorts' first clinical placement in order to identify which competencies contribute to a performance considered average and above average for this level of placement (n = 89 assessments).

**Results:** For students with similar scores for the roles of expert and professional, higher scores in competencies related to communication, collaboration, advocate, manager and scholarly practitioner result in an above average performance during a first clinical placement.

**Conclusions:** Exploratory results support the feasibility of developing letter grading criteria for students at each level of clinical placements.

### **39084: Prevalence of chronic back disorders among Canadian adults: trends in gender, age, and geography and distribution of physiotherapists**

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**Background/Rationale:** Chronic back disorders (CBD) are the leading cause of years lived with disability. Physiotherapists have much to offer those with CBD. No known research has investigated trends in the prevalence of CBD in Canada over time, across demographics and geography, as well as interprovincial differences of CBD in relation to physiotherapist distribution.

**Purpose/Research Objectives:** To examine the CBD prevalence over time by gender/age as well as to analyze its geographic distributions in relation to physiotherapist ratios across Canada.

**Relevance:** This information is relevant in monitoring the burden of CBD and may help to highlight where there is a mismatch between population health need and relative to geographical access to physiotherapy services.

**Methods:** The Canadian Community Health Survey (CCHS, 2007-16 cycles) were used to calculate the CBD prevalence across gender, age, area (urban/rural), and provinces. The number of physiotherapists and practice locations were obtained from the Canadian Institute for Health Information. Trend tests were calculated using STATA 14.1 and ArcGIS software was used for mapping.

**Results:** Prevalence of CBD remained stable between 2007 and 2016. In each survey cycle, CBD prevalence was significantly higher in population between 50 and 65 years. No statistically significant differences were found by gender, area, or province; however, mapping demonstrated variability in both CBD prevalence and distribution of physiotherapists across provinces.

**Conclusions:** CBD prevalence has remained stable over the last decade. Tailoring prevention and management of CBD should consider interprovincial differences in prevalence, access to physiotherapy services, and higher-risk demographic groups.

### **39101: Road to reconciliation: cultivating cultural sensitivity in physical therapy practice through relationship and reflection**

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**Purpose:** To explore attitudes and perspectives of physical therapy (PT) students working with a marginalized, primarily Indigenous population while volunteering in an interprofessional, student-run clinic.

**Methods:** The study used an autoethnographic design. A sample of four participants, also the researchers, were purposely recruited to write individual reflections and participate in facilitated group discussions after each completing five volunteer shifts of four hours over a year.

**Results:** Six major themes emerged: Clinical Practice, Community, Culture and Cultural Sensitivity, Racial and Socioeconomic Disparity, and Experiential Learning and Reflective Practice. Categorized within these themes, the participants developed essential clinical practice skills, such as patient centered holistic care and effective communication skills. The participants also developed appreciation for the importance of community health, as well as cultural competency and cultural humility. In addition, the realization of implicit attitudes led to an increased awareness of systemic racism and encouraged participants to be advocates for holistic care and health resource equity. Most importantly, the experience contributed to the participants' personal growth and continued practice of self-reflection.

**Conclusions:** Volunteering with a marginalized, primarily Indigenous population in an interprofessional, community-based clinic can aid PT students in the development of personal and professional aptitudes. As Canadian PT students continued to volunteer at the clinic, they became more socially conscious, self-aware, and engaged in culturally sensitive practice. It demonstrates the importance of such experiential learning opportunities as a part of PT education as we move toward reconciliation as a profession and as a part of a larger society.

### **39111: The Consolidated Criteria for Reporting Qualitative Studies (COREQ) Questionnaire: A Canadian French Version**

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**Background/Rationale:** Physiotherapy is a patient-centred profession, therefore there is a need to incorporate the patient's perspectives into evidence-based recommendations. Often time patients' perspectives are compiled through qualitative research. The COREQ is a valid and reliable tool to assess the quality of this research, but unfortunately this tool is not available in Canadian French.

**Purpose/Research Objectives:** The purpose of this study is to prepare a Canadian French translation of the COREQ questionnaire and to examine the reliability and validity of its content.

**Relevance:** As Canadian physiotherapists continue to strive to be evidence-based practitioners, they are recognizing the value of using the results from qualitative studies to optimize the care of patients. Therefore, there is a need to have valid and reliable tools in English and French to assess these qualitative research studies.

**Methods:** A modified approach of Vallerand's cross-cultural validation methodology is being used to translate the tool. As well, an additional step as suggested by Beaton, has been added, to increase the validity of the translation which involves a reverse translation from the pre-final version to English. Through these steps the reliability and validity of the translated tool is undertaken.

**Results:** Translation of the tool resulted in interesting insights into the use of both English and French terminology in qualitative research. Preliminary validity and reliability results suggest that the translated tool will be valid and reliable.

**Conclusions:** The Canadian French version of the COREQ will be an important evidence-based practice tool for physiotherapy students and physiotherapists.

### **39137: The Lighthouse pilot project: Enhancing access to physiotherapy services for people experiencing poverty and homelessness**

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**Background/Rationale:** Homelessness is a social determinant of health that negatively impacts overall health and function. Little is currently known about the impact of enhancing access to physiotherapy among individuals experiencing homelessness and poverty.

**Purpose/Research Objectives:** To reveal client and provider perspectives on the impact of enhancing access to physiotherapy services within a primary health care community-based setting.

**Relevance:** Individuals experiencing homelessness face unique barriers to accessing relevant, timely, and appropriate health care (including physiotherapy), which perpetuates health disparities.

**Methods:** Clients of the Lighthouse Supported Living facility in Saskatoon, Saskatchewan who accessed physiotherapy services over a 4-month pilot period and health care providers (physiotherapists and a nurse practitioner) provided qualitative data (through interviews and an

online discussion board). Client demographics, health condition, perceived function, quality of life and satisfaction were obtained through chart review and questionnaires.

**Results:** Forty-seven clients ranging from 21-72 years (mean 47 years) participated in the pilot. Most presented with a musculoskeletal issue (85.1%). Analysis of qualitative data revealed the following 4 overarching themes: 1) Complex Health Challenges, Unmet Needs; 2) Overcoming Access Barriers & Impact of Physiotherapy Services; 3) Respecting & Responding to Context & Environment; and 4) Moving Forward to Enhance Access to Physiotherapy Care.

**Conclusions:** Clients who accessed physiotherapy services at the Lighthouse perceived a positive impact to their overall health, function and wellness. Physiotherapists may need augmented support and professional development as we expand our practice into primary health care contexts and when working with homeless populations.

### **39147: The Role of Exercise in Gender Transition, a Scoping Review**

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**Relevance:** Physiotherapists at a local multidisciplinary, primary health clinic have received referrals for exercise programmes to assist transgender individuals to develop a gender presentation congruent with their gender identity. These therapists searched but could not find relevant clinical guidelines. They requested that the principal investigator conduct a more thorough search to assist them.

**Methods:** Comprehensive searches of medical, sports, therapeutic and social science databases were completed to identify relevant scientific and popular articles. A narrative thematic approach was used for analysis.

**Results:** Eighteen relevant articles were identified. All were from popular and social science sources. Five key themes were identified: 1. Strategies to support masculine identity, 2. Strategies to support feminine identity, 3. Benefits of exercise, 4. Exercise facilitators, and 5. Exercise barriers. Many knowledge gaps were identified, including very limited discussion of healthy strategies to support feminine identity, very limited discussion of non-binary gender identities, an absence of physiotherapy specific interventions or recommendations, and a paucity of peer-reviewed sources for exercise recommendations.

**Conclusions:** Exercise can play an important role in creating a gender presentation that is congruent with one's gender identity. Currently, transgender peers are the primary source for exercise advice; there are no scientific, peer-reviewed sources to guide physiotherapists or other health care professionals when recommending exercise to individuals in gender transition.

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