STUDENT RESEARCH SYMPOSIUM

Presentations by Occupational Therapy, Physical Therapy, Respiratory Therapy, MSc Rehabilitation Sciences and Applied Health Sciences students of their research projects.

WEDNESDAY, JUNE 19, 2019
9:00 a.m. – 4:00 p.m.
University of Manitoba, Bannatyne Campus
COLLEGE OF REHABILITATION SCIENCES
STUDENT RESEARCH SYMPOSIUM
Schedule of Events

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<td>9:00 – 9:45 a.m.</td>
<td>Keynote presentation</td>
<td>Frederic Gaspard Theatre</td>
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<td>10:00 a.m. – 12:00 p.m.</td>
<td>Concurrent poster sessions</td>
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<td>12:00 – 1:00 p.m.</td>
<td>Break for lunch</td>
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<tr>
<td>1:00 – 3:30 p.m.</td>
<td>Concurrent paper presentations and interactive sessions</td>
<td>College of Rehabilitation Sciences Building, 771 McDermot Ave.</td>
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<td>3:30 - 4:00 p.m.</td>
<td>Closing remarks and wrap-up</td>
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KEYNOTE SPEAKER

DR. PATTY THILLE

An Invitation to Care: Bridging Theory to Practice

Dr. Patty Thille is an assistant professor in the Department of Physical Therapy, College of Rehabilitation Sciences, Rady Faculty of Health Sciences. She studies health services and health professions education, especially in relation to health disparities and human suffering.

She worked as a clinical physical therapist, but questions about why we do what we do in health care led her to the social sciences. To date, her work focuses on stigmatization, clinical communication, health behaviour change, and chronic disease management in primary care and rehabilitation settings.

Dr. Thille has a physical therapy degree from the University of Saskatchewan, a Master’s degree in women’s studies from a tri-university program in Halifax and a PhD in sociology from the University of Calgary. In 2018, she joined the U of M in a position that allows her to research primary care and rehabilitation.
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<td>“Meet me where I’m at”: Clients with multiple sclerosis’ occupational therapy experiences</td>
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<td>A scoping review to inform disability simulation in allied health education</td>
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<td>Developing an educational resource for mobility scooter users</td>
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<td>Determining data variables for a community rehabilitation dataset: Developing a Delphi survey</td>
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<td>11:00 – 11:25</td>
<td>Occupational therapy intervention for wellbeing of informal caregivers for clients with dementia</td>
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<td>Perspectives of occupation-based practice in a university setting: A pilot study</td>
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<td>Exploring the knowledge of student occupational therapists on combating human trafficking</td>
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<td>Active rehabilitation effects on post-concussion syndrome symptoms in athletes 21 and under</td>
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<td>Aerobic exercise versus combined training for adults with Type 2 Diabetes Mellitus</td>
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<td>Compression versus cold therapy for reductions in swelling in TKA patients</td>
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<td>Does adding manual therapy to an exercise program improve pain and function in the treatment of subacromial impingement syndrome?</td>
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<td>The effectiveness of elastic therapeutic tape on proprioception of the ankle joint: fad, fact or fallacy?</td>
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<td>The effectiveness of FIFA 11+ on performance and injury prevention with amateur soccer players</td>
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<td>The effectiveness of mechanical traction for cervical radiculopathy: A meta-analysis</td>
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<td>Functional movement screen for injury prediction in high-performance soccer players</td>
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<td>Does Chlorhexine prevent ventilator-associated pneumonia?</td>
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<td>The effectiveness of beta-2 agonists in management of acute respiratory distress syndrome</td>
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<td>Impact of capnography in the maintenance of normocarbia in children</td>
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<td>In preterm infants with or at risk for RDS, does surfactant administration via thin catheter result in improving respiratory outcomes?</td>
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<td>In ventilated patients with ARDS, is driving pressure superior in predicting mortality?</td>
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<td>IOS and FOT versus spirometry for the early detection of COPD</td>
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<td>Is aerosolized surfactant delivery an effective alternative to bolus surfactant administration in the neonatal population?</td>
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<td>Is extracorporeal membrane oxygenation beneficial in the treatment of ARDS?</td>
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<td>Lumacaftor-Ivacaftor: Pharmacological management of cystic fibrosis</td>
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<td>Should electronic cigarettes be considered an effective tool for tobacco harm reduction in the adult population?</td>
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<td>The use of room air as an effective method for resuscitating asphyxiated infants at birth</td>
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<td>Clinical practice guidelines for knee osteoarthritis: Are physiotherapists who work in Canada following them?</td>
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<td>Computer game-assisted repetitive task practice-based upper extremity therapy protocol for a child with spastic unilateral cerebral palsy: A single case study</td>
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<td>Does use of a dual-task cognitive game-based treadmill system improve balance and gait in Parkinson’s disease? A feasibility study</td>
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### Poster Presentation, Paper & Interactive Session Schedule

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<td>Dual task interference on mobility functions in healthy ageing compared to Parkinson’s disease</td>
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<td>Evaluation of a computer game-based rehabilitation system for assessment of balance and gait impairments in individuals with Parkinson’s disease</td>
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<td>Examining the relationship between unmet health care needs and health care service utilization by immigration status</td>
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<td>I.T. for P.T.: Developing digital health core competencies for physiotherapists</td>
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<td>Innovative game-aided rehabilitation platform for rehabilitation of balance in children with cerebral palsy</td>
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<td>Perception of recovery of stroke survivors and physiotherapists</td>
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<td>Predictors of Canadian physiotherapists’ adherence to clinical practice guidelines for non-specific low back pain</td>
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<td>Cervical spine motion of patients during ambulance transport with two forms of spinal precautions</td>
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<td>Effectiveness of motivational interviewing on physical activity among older adults: A systematic review and meta-analysis</td>
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<td>Identifying occupational therapy outcomes in primary care</td>
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<td>The status of alternative level of care in Manitoba</td>
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<td>The boom of frailty screening tools in primary care: A scoping review</td>
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<td>Exploring transitional care and the role of rehabilitation and restoration</td>
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<td>3:00 – 3:25</td>
<td>Investigating virtual occupations on upper extremity motor recovery post-stroke</td>
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<td>The development of core competencies for improved direct support training: A scoping review</td>
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<td>Client centered generalists: Occupational therapists delivering mental health services in primary care</td>
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<td>The impact of an interprofessional learning experience in a First Nations community</td>
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Occupational Therapy • poster presentation

“MEET ME WHERE I’M AT”: CLIENTS WITH MULTIPLE SCLEROSIS’ OCCUPATIONAL THERAPY EXPERIENCES

TESS ROWSON, LACEY LYNES
(Study Advisor: Jacquie Ripat)

Introduction: Client centered practice is a core concept of occupational therapy, however the meaning of this essential approach to practice has not been well documented from the client’s perspective. Clients with multiple sclerosis who typically have several occupational therapy interactions, have valuable perspectives regarding what creates a successful client-therapist relationship.

Objectives: To explore the meaning clients attribute to their experiences with occupational therapy services and the client therapist relationship; and to explore client’s perspective of the facilitators and barriers that influence how they receive occupational therapy services over time and across settings.

Methods: Qualitative interpretive description methodology was used to understand clients with multiple sclerosis’ subjective experiences of occupational therapy. Seven participants engaged in semi-structured interviews, transcripts were reviewed to develop a coding scheme and data was collapsed to create larger themes.

Findings: Four themes emerged from the analysis: “I am the expert of my own experiences”; occupational therapist behaviours and attitudes; occupational therapy practice; and the healthcare system. A figure was created to illustrate the dynamic interactions between the four themes, which when optimized produces a positive occupational therapy experience for the client.

Conclusions: Clients with multiple sclerosis are able to share critical elements of the occupational therapy experience. By listening to client’s experiences and recognizing their expertise in their own condition, occupational therapists can better position themselves to “meet the client where they are at” along their multiple sclerosis trajectory.

Occupational Therapy • poster presentation

A SCOPING REVIEW TO INFORM DISABILITY SIMULATION IN ALLIED HEALTH EDUCATION

CEJAY HILHORST, DANI DIONA, JOO HEE PARK
(Study Advisor: Ed Giesbrecht)

Introduction: Disability simulation has been used as a pedagogical tool for allied health students to prepare them for clinical practice. It places people without impairments in situations designed to simulate functional and experiential aspects of disabilities. There has been some evaluation on its use, but no study has pulled the evidence together and organized the findings collectively.

Objective: The aim of this project was to conduct a scoping review to develop recommendations for disability simulation use in the College of Rehabilitation Sciences.

Methods: This scoping review followed a recognized five-step approach. The search employed three databases for publications about disability simulation use in allied health education between 1970-2019. A total of 10 articles were reviewed for data extraction by three independent reviewers. A stakeholder consultation included a synopsis of findings and recommendations.

Results: There were seven different simulation types and two different intended purposes. Some studies reported unintended negative consequences. Simulation structural components, in order of frequency were: post-simulation debrief, voluntary participation, clear objectives, incorporating the social model of disability, and inclusion of people with disabilities during the simulation development; no simulations incorporated people with disabilities during debrief. There were seven studies that quantitatively measured change, and three that qualitatively measured student experience.

Conclusion: Based on the findings, a series of recommendations were developed for presentation to our College of Rehabilitation Sciences stakeholder. Further research should evaluate which specific components contribute to pedagogical effectiveness.
DEVELOPING AN EDUCATIONAL RESOURCE FOR MOBILITY SCOOTER USERS

EPHRAIM HUI, HARDEEP DEOL, KARINE HILDEBRAND
(Study Advisor: Ed Giesbrecht)

Introduction: Mobility scooter (MS) use is rising, particularly because of an aging population. Scooters are readily available without the need to consult an occupational therapist; consequently, consumers often purchase devices without education about appropriate selection and safe operation in public spaces.

Objectives: The purpose of this study was to create an educational resource for consumers and vendors to inform device selection, safe use, and maintenance.

Methods: The resource was developed through multiple phases. To identify current evidence, a literature review was conducted using PubMed and CINHAL databases. Additional evidence obtained from vendors and insurance companies informed the resource. Andragogy theory guided resource construction, including pictures to supplement written material and increased font size and spacing to optimize suitability for the target population. For quality control, the resource was distributed to eight vendors requesting feedback via a questionnaire with Likert scale questions and narrative responses to inform revision of the final product.

Results: A 56-page resource booklet, with an eight-page summary infographic, was constructed in pdf and print format. The seven modules included: procurement; abilities required; device selection; driving skills and training; road safety rules; transportation; and maintenance. Four vendors provided feedback; two completed the survey and two provided narrative responses. Feedback on readability, content, and visual appeal was positive. Vendors expressed interest in using the resource with consumers for device selection and procurement.

Conclusion: The MS resource has potential for use among vendors and clients, addressing a knowledge gap. Future direction includes providing the resource to clinicians.

DETERMINING DATA VARIABLES FOR A COMMUNITY REHABILITATION DATASET: DEVELOPING A DELPHI SURVEY

JAMIE BESAW, MALLORY KOOP, TRISHA VERA
(Study Advisor: Kathryn Sibley)

Introduction: Although it lacks integration at all levels of health systems, the importance of community rehabilitation has been highlighted by the World Health Organization. In Manitoba, there is a lack of consistency in the data collected for community rehabilitation, which affects this integration, service delivery, and effectiveness.

Objective: A formal system of data collection in community rehabilitation would be beneficial to address these gaps. As a first step in this direction, a Delphi survey was designed to determine data variables to include in a community rehabilitation dataset.

Methods: A variable list with potential items was compiled from other sources for Round 1 of the Delphi. The variables were categorized, based on a World Health Organization Framework for health information systems. A draft of the survey was piloted. Coding the variables showed an imbalance between “individual” and “program” variables, which warrants a review of the original sources that these variables were drawn from. Challenges with coding showed that definitions of the coding categories should be revisited, and the purpose of the study should be clarified.

Results: The pilot resulted in four themes: Readability and Clarity of instructions, Survey Methods, Purpose of Study, and Need for Study, which enhanced the clarity of our survey instructions and the effectiveness of each Round. The results highlighted the difficulty involved in determining the ultimate purpose of study and the ambiguity of the sample variables provided.

Conclusion: Further discussion must be conducted to obtain an accurate representation of data to be collected in community rehabilitation.
Occupational Therapy • poster presentation

OCCUPATIONAL THERAPY INTERVENTION FOR WELLBEING OF INFORMAL CAREGIVERS FOR CLIENTS WITH DEMENTIA
CHANTAL JODOIN, JESSICA ELIAS LOPEZ
(Study Advisor: Reg Urbanowski)

Introduction: The burden experienced by informal caregivers of individuals living with dementia is an apparent theme in the literature. Occupational therapy intervention to support informal caregivers encompasses a variety of components that include person, environment and occupation factors. Interventions identified in the literature are specific to the individual with dementia or their informal caregiver, and typically do not consider the dyad within a community context. Community level intervention to support these informal caregivers has not been well defined or explored in the literature.

Objectives: To investigate the relevant literature regarding occupational therapy (OT) interventions to help minimize caregiver burden at both the individual and community levels.

Methods: Formal and informal search strategies were used in order to ensure the inclusion of all relevant literature. A formal search strategy using CINAHL and SCOPUS were conducted using search terms: “Occupational Therapy” and “Informal caregivers” and “dementia” or “Alzheimer’s.” Relevant articles supporting informal caregivers were also included to help in determining best practice intervention.

Results: Both single component and multicomponent interventions have been reviewed, multicomponent interventions demonstrated stronger evidence to reduce caregiver burden than most single component interventions. However, certain aspects of single component interventions have demonstrated strong evidence.

Conclusion: Further research regarding the implementation and evaluation of the effectiveness of interventions at a community level to enhance caregiver well-being is needed.

Occupational Therapy • poster presentation

PERSPECTIVES OF OCCUPATION-BASED PRACTICE IN A UNIVERSITY SETTING: A PILOT STUDY
SOLÈNE BORGER, CHAD BRUCE, RAMBEL PALSIS
(Study Advisor: Natalie MacLeod Schroeder)

Introduction: Occupation is central to the identity and profession of occupational therapy. The term occupation-based practice is often used in the literature as it fits with this centrality. However, there is no consensus on the definition of occupation-based practice, which affects the advancement of occupational therapy education, practice, and research.

Objective: To investigate occupational therapy students’ and department members’ definition of occupation-based practice, preference of literature definitions, and level of agreement with therapeutic activities that fits their understanding of occupation-based practice.

Methods: An electronic survey was developed and distributed to collect perspectives regarding definitions and features of occupation-based practice. Qualitative data was categorized using codes and quantitative data was analysed using descriptive statistics.

Results: Sixty-five participants completed the survey. The findings indicated that occupational therapy students and department members from the same institution do not have consensus on how to define occupation-based practice. There were varying preferences between the existing definitions from the literature where participants selected definitions based on three different categories: level of complexity, congruence with professional identity, and language. Further analyses suggested that students’ level of education and experience may play a role in which definition of occupation-based practice they prefer.

Conclusion: The study results support the literature finding that there is no consensus on how to define occupation-based practice. Further research and input from occupational therapy stakeholders is required to address the implications of this lack of consensus and whether it would be of value to clarify the meaning of occupation-based practice.
EXPLORING THE KNOWLEDGE OF STUDENT OCCUPATIONAL THERAPISTS ON COMBATING HUMAN TRAFFICKING

CARRIE MANDRYK, MEAGAN KORELL, TRUC LE
(Study Advisor: Reg Urbanowski)

Introduction: Every year, approximately 17,000 people in Canada are affected by human trafficking. This population often goes unnoticed by the healthcare systems, despite occupational therapists having the underlying frameworks (occupational justice) and approaches (trauma-informed care) to work with survivors of human trafficking. There is currently insufficient evidence in the literature on how occupational therapists can combat human trafficking.

Objectives: To explore student perspectives on the role of occupational therapy in combating human trafficking and their preparedness in doing so.

Methods: An online survey was distributed to the University of Manitoba Master of Occupational Therapy (MOT) students (n=45) via email, to gather nominal and qualitative data. Data was downloaded into Excel and analyzed into proportions and themes.

Results: The survey received a 71 per cent response rate (n=32). Nine per cent of participants reported no knowledge on trauma-informed care, 72 per cent reported some, 16 per cent reported sufficient, and three per cent reported expert knowledge. Fifteen per cent of participants reported no knowledge on human trafficking, 69 per cent reported some, and 15 per cent reported sufficient. Six themes were identified as gaps in the MOT curriculum and nine themes were identified as potential roles for occupational therapy in combating human trafficking.

Conclusion: Despite feelings of insufficient knowledge on both trauma-informed care and human trafficking, MOT students had compelling input on ways to address the gaps in the current MOT program curriculum, as well as the various ways occupational therapists can fight against human trafficking.

IDENTIFYING OCCUPATIONAL THERAPY OUTCOMES IN PRIMARY CARE

LEANNE SANDERS, KIMBERLY MOORS, CHRISTINE GINDY
(Study Advisor: Leanne Leclair)

Introduction: Primary care is defined as an individual’s first and principal contact with the health care system (Donnelly, Leclair, Wener, Hand, & Letts, 2016). Occupational therapists’ contributions to primary care teams and client care can be understood through the client outcomes they measure in practice.

Objectives: To summarize the literature related to occupational therapy outcomes and outcome measures occupational therapists are using in primary care settings.

Method: Using the Arksey and O’Malley (2005) methodological framework we gathered and synthesized the research literature. A total of three literature searches were completed and data was themed according to the Person-Environment-Occupation Model (Law et al., 1996). We described the studies based on country of origin, populations, age groups, outcome measures and gaps in the literature.

Results: Analysis revealed a distinct focus on person and occupation-centred outcomes in adult and older adult populations, as well as a heavy focus on chronic disease management. Gaps in the literature were noted in the areas of pediatrics, psychiatric disorders and measurement of leisure and environmental outcomes.

Conclusions: By identifying the outcomes being measured in primary care, Canadian occupational therapists will recognize the important role outcome measures play in demonstrating the effectiveness of their interventions, allowing other team members to recognize their unique contribution to primary care. By compiling and theming common methods of outcome measurement, therapists will have an awareness of what measurement tools exist and are commonly used. Additionally, gaps in the literature will be identified to allow for continued research.
**Occupational Therapy • paper presentation**

**THE STATUS OF ALTERNATIVE LEVEL OF CARE IN MANITOBA**

HENYA OLFMAN, CASSIE FRIESEN

(Study Advisor: Juliette Cooper)

**Introduction:** In 2017, the Winnipeg Regional Health Authority (WRHA) implemented Priority Home Services, Rapid Response Nursing, and Transitional Care Environment. These services were designed to keep seniors in the community, assist flow of patients through hospital and reduce the number of alternate level of care (ALC) patients. However, evidence has not yet been presented to indicate the effectiveness of these services.

**Objectives:** To determine if shifting services from acute care to the community has affected the demographics and number of ALC admissions.

**Methods:** For this quality improvement data mining study, data from the fiscal years 2016-17 and 2017-18 was extracted from the WRHA’s Discharge Access Database for the variable “patients designated ALC.” Descriptive statistics (counts and percentages) were used to examine the data. Categorical variables were compared between years using Chi square tests; continuous variables were analyzed using independent t-tests.

**Results:** No change was found in the demographics of ALC patients between the two fiscal years. In FY2017-18 total and mean acute length of stay (LOS), total and mean ALC LOS, number of patients with two ALC admissions, and numbers discharged to long term care (LTC) were lower than in FY2016-17. In FY2017-18, there were significantly more patients discharged home, and admitted to ALC only once.

**Conclusion:** There is preliminary evidence that the shift in service delivery from acute care to the community might reduce the number of ALC admissions and the amount of time patients spend on ALC, as well as increase the proportion of patients discharged home rather than to LTC.

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**Occupational Therapy • paper presentation**

**THE BOOM OF FRAILTY SCREENING TOOLS IN PRIMARY CARE: A SCOPING REVIEW**

EDEN KATZ, NAOMI SAWCHUK

(Study Advisor: Juliette Cooper)

**Introduction:** The concept of frailty is distinct from comorbidity and disability. Two different popular models are currently used to conceptualize frailty; however, consensus on its definition remains elusive. Lack of a clear and consistent definition has resulted in the concomitant development and use of multiple tools for screening and assessment, making research into prevalence and treatment of frailty problematic. Frailty is a manageable condition if detected early; this requires the use of a valid, reliable and efficient frailty screening tool that can be used in primary care settings.

**Objectives:** To investigate and create an inventory of existing frailty screening tools for practicing family physicians in Manitoba to increase awareness and facilitate implementation into practice.

**Methods:** A scoping review was conducted to identify frailty screening tools currently used in primary care. Medline, CINAHL, Embase, PsychINFO, and Ageline databases were searched; 44 articles were assessed for eligibility; 36 articles were included in the scoping review; and frailty screening tool information from these articles was added to a Microsoft Excel spreadsheet.

**Results:** Thirty-two screening tools were identified. Those based on the Accumulation of Deficits Model comprised 67.7 per cent, and those based on the Phenotype Model comprised 23.1 per cent of the tools. Three tools referenced both frailty models, and the one tool was unclear.

**Conclusion:** Multiple frailty screening tools are being used in primary care with no one consistent choice identified. This could lead to confusion amongst primary care practitioners when choosing a screening tool to use. Further investigation is needed to determine a gold standard frailty screening tool.
EXPLORING TRANSITIONAL CARE AND THE ROLE OF REHABILITATION AND RESTORATION
CARMINE LAO, CASSANDRA PAYNE
(Study Advisor: Juliette Cooper)

Introduction: Transitional care (TC) is a term used by many countries (Canada, USA, Australia, Europe, etc.), but the meaning and concepts applied to this term seem to vary depending on the region and context. The quality and role of rehabilitation/restoration in transitional care remains unclear and unexplored.

Objectives: To investigate the contexts of transitional care and how rehabilitation/restoration is used and defined within these contexts.

Methods: This scoping review was guided by the framework of Arskey and O’Malley (2005). Using search terms related to transitional care and rehabilitation, four databases were searched for articles published in English from 2014 – present. Countries with similar healthcare systems to Canada were included in the search. Articles were scanned twice by two reviewers for inclusion and exclusion criteria, then again by a third reviewer for final consensus. The final selection was reviewed in full and concepts of transitional care and rehabilitation/restorative care were extracted. Thematic analysis was completed by all three reviewers.

Results: Sixty relevant sources were analyzed. Our analysis revealed three contexts in which transitional care is applied: process of transitions in care, transitional care programs, and transitional care environments. The majority of literature refers to transitional care as a process from one context to another. The description of rehabilitation/restoration in TC varied.

Conclusion: These results provide a better understanding of the use of transitional care in Canada. This study highlights the importance of consistent definitions and application of terminology in health-care practice.

INVESTIGATING VIRTUAL OCCUPATIONS ON UPPER EXTREMITY MOTOR RECOVERY POST-STROKE
MEGAN FUNK, ZANDHIRSINGH NARRANDES, MICHAEL RASTAD
(Study Advisor: Brenda Semenko)

Introduction: Virtual interventions protocols were shown to facilitate functional outcomes related to upper extremity (UE) motor recovery in stroke survivors. Key criticisms of earlier work are the lack of task-specific training as part of virtual practice and absence of participation-based outcome measures.

Objectives: (1) To explore the participant’s level of performance and satisfaction specific to self-identified problem areas of daily functioning following a 4-week intervention using the Saebo Virtual Reality Rehabilitation System; and (2) to evaluate the efficacy of an intervention protocol that emphasizes task-specific and goal-oriented virtual practice, reflecting the participants’ self-identified goal priorities.

Methods: A single participant (N = 1) was recruited at discharge from an inpatient rehabilitation stroke unit. Using a single-subject pre-post experimental design, the participant participated in four 1-hour treatment sessions performing virtual occupations, specific to activities of daily living based on the participants’ identified areas of interest. Outcome measures included the Canadian Occupational Performance Measure, Arm Activity Measure, and Fugl-Meyer Upper Extremity Assessment. Outcomes measures were administered at baseline and post-treatment which occurred 1-week after the 4-week treatment phase.

Results: At post-treatment, changes in the Canadian Occupational Performance Measure satisfaction scores, and the passive and active subscale scores of the Arm Activity Measure showed notable improvement.

Conclusions: Evaluating the efficacy of using the SaeboVR system on UE functional outcomes requires an extended intervention duration in the frequency and length of each session. The SaeboVR system provides another therapy option for clients, which may limit the user experience due to system imperfections.
THE DEVELOPMENT OF CORE COMPETENCIES FOR IMPROVED DIRECT SUPPORT TRAINING: A SCOPING REVIEW

MEAGAN EMPEY, LAURA LEE LEVENICK, RACHEL SAWATZKY, MADISON STOTT, ERIN UNGER, KATIE WALSH
(Study Advisor: Charmayne Dubé)

Learning objectives for this session:
1. Understand the need and importance of having core competencies for Direct Support Professionals in Manitoba.
2. To know the most common methods and sequence to developing core competencies.
3. Understand how a modified-Delphi can establish consensus in a group.

Introduction: Core competencies are integral to developing a set of professional bound skills and can become the foundation of training standards. Currently, Direct Support Professionals working within community disability services in Manitoba do not have core competencies. To develop standardized professional core competencies to enhance the field of Direct Support Professionals in Manitoba a strategic process is needed.

Objectives: To map the various methods of developing core competencies in order to inform future development of training programs for Direct Support Professionals within disability services.

Methods: A scoping review was conducted, including evidence from CINAHL, Ovid, and Embase, to examine the breadth of available evidence. Databases were searched from April 3, 2019 to April 8, 2019. Six student occupational therapy researchers conducted this review using the six-stage Arksey and O’Malley (2005) scoping framework: identify research question, identify relevant studies, select studies, chart data, report results, and optional consultation.

Results: After screening title and abstract from 949 articles, 36 were included in this scoping review. Data extraction identified four key steps regarding the development process for core competencies: working groups; literature review; interviews, focus groups, and workgroups; and building consensus.

Conclusion: The process of core competency development is through an iterative approach. The method used the most is a modified Delphi technique, preceded by a literature review, and based on existing competencies. Limitations to consider when developing methodology include sample selection, generalizability of competencies, and time constraints.

EVALUATION OF A WORKPLACE DISCLOSURE EDUCATION MODULE FOR PERSONS LIVING WITH HIV

ANDREAA ALEXANDRESU, GABRIELLE PETERSON, RHEA SCHMIDT, LAURA TOMILIN
(Study Advisor: Gayle Restall)

Learning objectives for this session:
1. Dispel two common myths related to disclosure of HIV status in the workplace.
2. Identify two strategies and resources for working with people living with HIV.
3. Understand the factors that clinicians and clients perceive to be important as part of an educational module for individuals with HIV.

Introduction: Persons living with HIV face barriers to participation in paid employment and other productive pursuits, such as education and volunteering. Programming that addresses disclosure of HIV status in the context of productive endeavors outside the home is a gap in services for this population.

Objectives: To develop, implement, and evaluate an educational module that provides information and skills pertaining to HIV disclosure in the workplace. Feedback from the evaluation process will be used to inform future programming at a community health centre.

Methods: Student researchers conducted a literature review to understand the barriers, facilitators, and existing programs related to HIV, employment, and workplace disclosure. A module was developed based on the literature and input from community health centre staff. Survey methods were used to collect qualitative and quantitative feedback from staff (n = 5) on the utility of the module prior to implementation. Qualitative data were analyzed using inductive thematic analysis. Nine participants attending the module completed a pre- and post-module survey to assess knowledge gained from attending the module. Participants were also asked for feedback about their experience of the module.

Results: Analysis of staff feedback revealed themes including strengths, areas to improve, and tips for facilitation. Module participants reported a general increase in knowledge, as well as strengths of the module and areas to improve.

Conclusion: The module increased participants' knowledge of issues related to HIV status disclosure in the workplace. Occupational therapists are well-positioned to address barriers to engaging in productive pursuits with this population.
CLIENT-CENTERED GENERALISTS: OCCUPATIONAL THERAPISTS DELIVERING MENTAL HEALTH SERVICES IN PRIMARY CARE

URSULA KOSLOWSKY-WIEBE, JODENE NEUFELD, JENNIFER PHILLIPS
(Study Advisor: Pam Wener)

Introduction: Primary care is being called upon to bridge the gap between mental health care needs and available services. Occupational therapists working in primary care as generalists, are well positioned to make a contribution to bridging this service delivery gap. To date, occupational therapists’ contributions to mental health and psycho-social service delivery in primary care settings have not been explored.

Objectives: To explore the contribution and experiences of primary care occupational therapists delivering mental health and psycho-social services.

Methods: A qualitative case study design was used to explore occupational therapists’ experiences delivering mental health and psycho-social services in primary care settings in a central Canadian province. Data were collected via individual and group semi-structured interviews. Data were analyzed inductively and guided by Braun and Clarke’s (2006) six-step approach: 1) data familiarization 2) generate initial codes 3) develop themes 4) review themes 5) define and name themes 6) report.

Results: Occupational therapists are client-centered generalists delivering mental health and psycho-social services in primary care. Environmental influences at the micro, meso and macro level, create gaps in service. Occupational therapists use their client centered generalist lens to identify barriers and facilitators; then mitigate the barriers and use the facilitators to provide mental health and psycho-social services.

Conclusions: As client centered generalists, occupational therapists are bridging the service delivery gap by providing access to needed mental health and psycho-social services to clients in primary care settings. Occupational therapists are making a valuable contribution to improving primary care mental health and psycho-social services; thus improving client care.

THE IMPACT OF AN INTERPROFESSIONAL LEARNING EXPERIENCE IN A FIRST NATIONS COMMUNITY

KATHLEEN BERGEN, GREG TOEWS, TREVOR WILSON
(Study Advisor: Lisa Mendez)

Introduction: The Truth and Reconciliation Commission created a final report as part of The Indian Residential School Settlement Agreement in 2006 which includes Calls to Action “in order to redress the legacy of residential schools and advance the process of Canadian reconciliation” (Truth and Reconciliation of Canada, 2015, p.1). Inter-professional practice-based learning experiences in Indigenous communities may be one way in which universities in Canada can follow through with their responsibility to respond to the Calls to Action outlined in the Truth and Reconciliation Commission. In First Nations communities, an inter-professional approach can lead to culturally competent care and greater health outcomes (Purden, 2005).

Objectives: To explore the impact on students’ understanding and perspective of inter-professional collaboration and Indigenous health following a two-week inter-professional practice-based experience in a First Nations community in Manitoba.

Methods: An interpretive description design was used. Semi-structured interviews were conducted, and transcribed interviews were analyzed using thematic content analysis.

Results: Five interviews were completed with past participants of the program. Four main themes surfaced regarding the impact on students: building trust in professional roles, increasing comfort/confidence within First Nations, discovering the barriers experienced by Indigenous peoples, and discovering the assets in First Nations communities.

Conclusion: Inter-professional practice-based learning in Indigenous communities may be a meaningful and effective method in increasing the knowledge, skills and confidence of health-care students in the areas of inter-professional collaboration and Indigenous health.
Physical Therapy • poster presentation

ACTIVE REHABILITATION EFFECTS ON POST-CONCUSSION SYNDROME SYMPTOMS IN ATHLETES 21 AND UNDER

CARLY WIEBE, SHERISE KREUGER, STACEY ENNS, TASHA VOTH
(Study Advisor: Ruth Barclay)

Background: Post concussion syndrome (PCS) is an altered neurological state in which prolonged symptoms persist between 10 days and four weeks, affecting many Canadians annually.

Objectives: To determine if athletes age 21 and under experiencing post-concussion syndrome, will recover quicker with active rehabilitation as opposed to traditional passive recovery techniques.

Methods: The articles selected were found by searching a variety of web-bases, which included the following criteria: post-concussion syndrome, under 21 years of age, symptoms persisting longer than 10 days but less than four weeks, active rehabilitation, and sport related concussion.

Criteria: The risk of bias for all included studies were assessed using a physiotherapy evidence database (PEDro) scale. Nine articles were included, two were randomized control trials, size retrospective studies and one prospective case. Participants included were those ages 21 and under who suffered PCS symptoms for the designated time frame and who participated in an active rehabilitation program that could include: aerobic training, sport-specific exercises, vestibular training, visualization, coordination exercises and balance exercises.

Results: This systematic review found that there was insufficient high quality studies done on this topic. Some limitations includes small sample sizes, high risk of bias, and limited randomized-control trials as this impacted the research outcomes.

Conclusion: Our results showed that there was insufficient evidence to support that complete rest promotes recovery from concussion. Percentages of heart rate max during the aerobic exercises were inconsistent between studies and did not show a correlation between heart rate max achieved and recovery time. Regarding start time, participants who started the active rehabilitation intervention at six weeks and over established the biggest improvement in symptoms post-intervention. Overall, active rehabilitation shows to be beneficial when compared to passive rehabilitation for the improvement of post-concussion symptoms lasting equal to or greater than four weeks. However there is currently no active rehabilitation guideline in place, further research should be done to determine safe implementation of an effective protocol.

Occupational Therapy • extended session

THE DIGITAL DIVIDE: A LOCAL PERSPECTIVE

JESS MARTENS, ANGHELA SIVANANTHAN, CARMEN TAYLOR
(Study Advisor: Cara Brown)

Introduction: The digital divide refers to unequal access to the internet between social groups, including those with low socioeconomic status. Internet use is positively correlated with numerous aspects of health. Low-income populations use the internet less, however, limited evidence exists on the relationship between health and internet use among this population.

Objectives: To explore internet access and use, and its perceived impact on health in a low-income housing unit in Winnipeg.

Methods: A sequential mixed method was used whereby qualitative data informed the development of a survey. Data collection included group and individual interview (n=5) and a survey to tenants. Qualitative data was analyzed with thematic analysis; survey results were analyzed with descriptive statistics.

Results: There were three themes in the qualitative data: factors contributing to internet use, being “left out,” and positive impacts of being on the “in(ternet).” Survey data indicated that less than 50 per cent of respondents used the internet. Both sets of data indicate that the internet continues to be inaccessible for people of low income. For those that use it, it is beneficial for well-being, and those that do not access the internet at all have a lack of understanding of how it can help them.

Conclusion: People of low income are missing out on important resources that can benefit their financial, social and physical health due to the high cost of Wi-Fi and the poor accessibility of public access computers. Future research should engage people of low income in creative problem-solving and advocacy efforts.
**AEROBIC EXERCISE VERSUS COMBINED TRAINING FOR ADULTS WITH TYPE 2 DIABETES MELLITUS**

TIA ILNISKY, ALEXANDREA MURRAY, DANIEL OLIVIER, JESSE RUBEL

(Study Advisor: Ruth Barclay)

**Introduction:** Type 2 diabetes mellitus (T2DM) is a chronic health condition that affects many body systems. Typical management of T2DM includes managing blood glucose levels by eating a healthy diet and exercising. While ample research has gone into the benefits of exercise for those who live with T2DM, additional research is needed to determine the appropriate prescription of exercise to best manage blood glucose levels.

**Objectives:** To determine the physical benefits of aerobic versus aerobic and resistance exercise for managing T2DM. A second objective was to determine the positive psychological effects of combined versus aerobic exercise for those with T2DM.

**Methods:** Studies were searched and selected from CINAHL, MEDLINE, and PEDro databases. All included articles were randomized controlled trials that compared aerobic exercise and combined exercise training. The authors screened 368 articles to determine appropriateness for inclusion.

**Findings:** Ten randomized control trials were included in this review, which when combined included 531 participants. Study duration ranged from three weeks to nine months. Studies with a longer duration of intervention favoured the combined exercise for the control of HbA1c, while studies with shorter duration favoured aerobic exercise. All studies favoured combined exercise intervention for the improvement of body mass and fat mass.

**Conclusions:** Our review concluded that while both aerobic and combined exercise training provided benefits to body composition and blood glucose management, combined exercise was more effective at improving body composition and managing blood glucose levels.

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**COMPRESSION VERSUS COLD THERAPY FOR REDUCTIONS IN SWELLING IN TKA PATIENTS**

SEBASTIAN COX, KAHLIL DIAZ-HAMMOND, MADDY MARTIN, KAYLEE MCLACHLIN

(Study Advisor: Brian MacNeil)

**Introduction:** A total knee replacement (TKA) is a common surgical intervention used to relieve end stage osteoarthritis when other treatments have failed. TKA is associated with a high prevalence of post-operative swelling. Cold therapy and compression are two methods that are often used to treat swelling post-operatively. However, the effectiveness of these interventions is unclear.

**Objectives:** To investigate the use of cold therapy and/or compression to reduce swelling in adults post-op total knee arthroplasty (TKA).

**Methods:** OVID Medline, PubMed, CINAHL and Scopus databases were searched November 20, 2018. Randomized control trials (RCTs) that compared the effect of cold therapy and/or compression on swelling post TKA were included.

**Results:** Four RCTs involving 299 participants met the inclusion criteria. There were two studies comparing compression to a control, one study that compared cold therapy to compression and one study that compared cold and compression combined to a control. The primary outcome measures used were knee circumference and knee flexion. No significant difference was found between cold therapy and compression, compression and a control, or combined cold therapy/compression and a control.

**Conclusions:** Cold therapy and compression are not effective for the reduction of swelling post TKA.
Background: Subacromial impingement syndrome (SIS) is a common shoulder condition in which structures of the shoulder are compressed. Research shows that physiotherapy is both a common and effective treatment; there is strong evidence to demonstrate that conservative treatment is as effective as surgical repair.

Objectives: The primary objective of this review was to evaluate the effects of manual therapy in addition to exercise compared to exercise alone to improve pain and function in patients with SIS.

Methods: Authors of this review searched Medline OVID, CINAHL, EMBASE and SPORTDiscus up to and including January 2003 in order to reflect the recent available literature.

Selection Criteria: Randomized controlled trials that were focused on manual therapy or shoulder manipulation techniques, included interventions with manual therapy combined with exercise as well as exercise alone, and used outcome measures for pain and shoulder function.

Analysis: All four authors extracted data for the studies included in this systematic review. All discrepancies were reassessed and consensus was achieved by discussion. A predetermined, standardized template was used for the purpose of obtaining this data from each article. Each data extraction table was then double checked by at least one other author.

Main Results: There were a total of 166 subjects across the four included studies. The studies all looked at the effects of manual therapy and exercise in comparison to exercise alone in respects to pain and shoulder function in patients with SIS. A meta-analysis was conducted on the four included studies using standardized mean differences (SMD). For pain, manual therapy with exercise has a small benefit compared to exercise alone but it is not statistically significant (SMD: -0.12, 95% CI: -0.42 - 0.19, p = 0.46). As well, for shoulder function, manual therapy with exercise demonstrated an improvement in shoulder function but also was not statistically significant (SMD: -0.11, 95% CI: -0.45 - 0.21, p = 0.52). Overall from the findings, adding manual therapy to an exercise program does not improve pain or shoulder function for individuals with SIS compared to exercise alone.

Conclusions: Manual therapy in addition to exercise does not have an overall statistical significance in its ability to improve function and pain in patients with SIS. Further research studies including more participants and blinded examiners that assess the outcome measures are needed.
THE EFFECTIVENESS OF FIFA 11+ ON PERFORMANCE AND INJURY PREVENTION WITH AMATEUR SOCCER PLAYERS

DIXIE BALDWIN, ERIN JONES, JAZ GILL, TERRELL OKOTCHA
(Study Advisor: Dean Kriellaars)

Introduction: Soccer (more commonly known around the world as “football”) is widely regarded as the most popular sport in the world. It has shown to have numerous health benefits and has even been suggested to have the ability to prevent and cure health problems. Due to the high number of individuals playing soccer competitively, it is important to consider the inherent risk of injury in the sport and measures that can be applied to mitigate these risks. FIFA 11+ is an intervention program created to reduce and prevent common injuries that can occur in male and female footballers.

Objective: In this study the focus was based on the effectiveness of the FIFA 11+ program on injury rate and performance.

Methods: A literature search was performed in order to identify all studies that involved the use of FIFA 11+ in comparison to other warm-up training programs. A systematic review using PubMed was used to perform the literature search. Exclusion criteria was based on the sport identified in the study and competition level of the players. FIFA 11+ was also excluded. Inclusion of studies required the articles to evaluate FIFA 11+ compared to any other warm-up program, soccer as the sport, report on risk of injury to any lower extremity, report on performance enhancement, and amateur competition level. A PRISMA flowchart was used to screen all research articles before the final selection of appropriate articles. A Pedro scale was used to score the final selected research articles.

Results: In terms of injury prevention when combining all studies measuring injury rates, the intervention group had 486 injuries compared to the 940 injuries for the control group. Upon evaluation of the 13 analyzed articles, it was found that compliance to the program was the main determinant. Most articles concluded that the higher the compliance rate to FIFA 11+ the lower the injury rates. One study found an injury reduction of 35% in teams with high compliance versus teams with intermediate or low compliance. It was also found that between the intermediate and low compliance group, there was no significant injury reduction rate. Overall between the studies selected, no consistency in performance measure improvement was found. Some articles found significant improvements while others found no significant differences when comparing the performance of a standard warm up program to FIFA 11+. It should be noted, no one standard warm up program was established to be compared to FIFA 11+.

Conclusion: The FIFA 11+ program seems to be effective at reducing lower body injury rates in adolescent and young adult soccer players when performed at least two times per week. It is inconclusive whether performance measures affected by the program translate to improved performance on the soccer pitch. It is important to note that the control groups used in the studies were asked to perform their ‘regular warm-up routine. 

THE EFFECTIVENESS OF MECHANICAL TRACTION FOR CERVICAL RADICULOPATHY: A META-ANALYSIS

MELANIE LAVALLEE, JESSICA NESS, BRENNA POMANSKI, JENNA SENENSKY
(Study Advisor: Brian MacNeil)

Background: Mechanical traction is a common physical therapy intervention used to supplement the standard rehabilitation of cervical radiculopathy. A consensus of the effectiveness of the addition of this treatment modality for improving radicular pain and patient function has not yet been established. This systematic review and meta-analysis aims to consolidate the current evidence in order to determine the clinical effectiveness of mechanical traction.

Objectives: To assess the effectiveness of the addition of cervical mechanical traction to a conventional rehabilitation program for adults with cervical radiculopathy in comparison to conventional physical therapy treatment alone.

Methods: We searched PEDro (1996 to October 2018), Sport Discus (1993 to October 2018), Medline (1996 to October 2018), Cinhal (1997 to October 2018), Embase (1996 to October 2018) and the reference lists of the selected articles.

Results: We included five studies involving 263 participants (148 intervention; 115 control). All participants were adults diagnosed with cervical radiculopathy. All studies contained at least one intervention group that received mechanical traction combined with a standard rehabilitation program consisting of exercise, manual therapy and/or other modalities. Data collected upon the completion of each treatment program was analyzed. Two studies determined that mechanical cervical traction is effective at reducing pain when accompanied by conventional rehab (p=0.037 and p=0.001). One study determined that mechanical cervical traction is effective at improving function when accompanied by conventional rehab (p=0.032). Two studies determined that mechanical traction is not effective at improving pain or function when added to a standard rehab program (p=0.76 and p=0.33). Two studies determined that the addition of cervical traction does not yield any significant improvements in function (p=0.36 and p=0.42). One study determined that the addition of cervical traction to standard rehab was not effective at improving grip strength (p=0.64). A meta-analysis of four studies determined that the addition of cervical traction to a standard rehab program was not effective at improving pain with a p-value of 0.20, -0.19 (-0.47, 0.10). A meta-analysis of three studies determined that the addition of cervical traction to a standard rehab program was not effective at improving patient function with a p-value of 0.61, -0.08 (-0.39, 0.23).

Conclusions: The addition of cervical traction to a standard rehabilitation program is not an effective method for improving pain and function in individuals with cervical radiculopathy.
**FUNCTIONAL MOVEMENT SCREEN FOR INJURY PREDICTION IN HIGH-PERFORMANCE SOCCER PLAYERS**

PHIL AYELE, HILLARY PRESCOTT, TYLER SWERDYLIAK, KALLIOPI VASILARAKIS, JASMINE WELGAN
(Study Advisor: Brian MacNeil)

**Introduction:** The FMS is a screening tool that is widely used to help predict future injuries in athletes (Hammes 2016; Kolodziej 2018). Particularly, the FMS consists of a scoring system that ranges 0-3 measuring an athlete's movement patterns, stability, and motor control (Physiopedia 2018). Deficits in these areas can predispose an athlete to injuries. Injuries can have an impact on the athlete's participation, income with time away from sport and team outcomes. With the FMS is not a validated test (Bonnazza 2017), it is important to review the predictability since it is a cost for teams to use.

**Objective:** The aim of this review is to examine the effectiveness of FMS in predicting injury in high performance soccer players.

**Methods:** A literature review from multiple databases was conducted and six observational studies of high performance soccer players over the age of 18 were included for analysis.

**Results:** Four studies compared composite FMS scores of players who were injured vs uninjured (Kolodziej 2018; Schroeder 2016; Smith 2016 & Zalai 2015). These found no significant difference in injury rates between groups (Mean FMS for Injured: 14.7 +/- 1.1; Mean FMS for Uninjured: 15.3 +/- 1.3). Four studies looked for a relationship between lower FMS scores (below 14) and higher injury rates (Kolodziej 2018; Mokha 2016; Philip 2018; & Smith 2016) and found that all 4 studies reported more injuries when the player scored higher than a 14 compared to lower than a 14. A meta-analysis was conducted and found a high heterogeneity value, indicating that the result varied widely across all studies (I²=86%; Risk ratio: 1.35 (0.58, 3.15).

**Conclusion:** This review suggests that there is currently inconclusive evidence to support the notion that the FMS has no predictive value in evaluating the risk for injury in high performance soccer players. Further research needs to be done with a more detailed scoring system for more meaningful results and less subjectivity between assessors.

**HOW ACTIVE IS ACTIVE VIDEO GAMING AND DOES IT AFFECT BODY COMPOSITION?**

KATIE DALMAIJER, DIANA FRAILICK, KEIKO KOBAYAKAWA, NATHAN WONG
(Study Advisor: Dean Kriellaars)

**Introduction:** Childhood obesity is increasing at an alarming rate. There has been an increase in sedentary activity, including sedentary video gaming, which may be a contributing factor to the increase in childhood obesity. This systematic review looks at how much energy expenditure Active Video Games (AVG) can produce and how they may influence body composition in youths. This study focuses on console AVG, with the important caveat that this platform is diminishing and the degree of carry over to the mobile devices is unknown at this time.

**Objectives:** The objective of this study was to examine how much energy expenditure is elicited through AVG and its effect on body composition.

**Methods:** A search of “active video gaming” was conducted using PubMed. Studies included needed to research AVG in youth exclusively and also in a controlled setting. Articles were included in a data extraction table and were narrowed down to six each of energy expenditure and body composition.

**Results:** Four of the six studies that examined body composition concluded that active gaming led to decreased BMI. All six studies that examined energy expenditure indicated that active video games could result in increased physical activity and a reduction in sedentary time among children.

**Conclusions:** AVG does reach moderate intensity levels, leading to increased physical activity time and decreased sedentary time in children. However, AVG may not lead to significant BMI changes independently. The future of AVG may be successfully integrated into broader fitness management or weight-gain prevention programs.
Physical Therapy • poster presentation

PHYSICAL ACTIVITY FOR THE PREVENTION OF BREAST CANCER RECURRENCE

DANIELLE KLASSEN, AMBROSE COX, MATTHEW SHORT, BRYAN KRAMER
(Study Advisor: Ruth Barclay)

Introduction: Regular physical activity has a wide variety of health benefits and potential preventative effects. It has been hypothesized that living a more active lifestyle will not only improve quality of life, but also help to prevent the recurrence of cancers.

Objectives: This systematic review aimed to compile current evidence regarding physical activity and the effect that it has on the likelihood of breast cancer recurrence in women who have since gone into remission from their initial diagnosis.

Methods: The search was aimed at cohort studies that focused on female breast cancer survivors and their physical activity history. The primary outcome of the studies had to be breast cancer recurrence or breast cancer recurrence rate. The search strategy was applied to the databases Medline Ovid, CINHAHL, and SportDiscus. Studies were divided up among the authors and abstracts were screened. Full text of potential articles were screened by a minimum of two of the authors before being accepted for the review. Data was collected by three authors. These authors then confirmed the accuracy of the data extraction.

Results: Six studies, involving 10,605 female breast cancer survivors were included. Each study measured physical activity with a different self-reported questionnaire. No study reported exclusively on breast cancer recurrence, but often it was included in the assessment of all-cause or cancer-related mortality. Three of the studies claimed that increased amount and intensity of physical activity lead to decreased risk of recurrence. One claimed that there was a slight benefit in terms of recurrence to adding to the amount of physical activity the person was doing. And two claimed that there was no benefit in regards to recurrence for doing physical activity to prevent recurrence.

Conclusion: Participation in recreational physical activity, or exercise, at a moderate to vigorous intensity level may be associated with a decreased risk of recurrence.

Physical Therapy • poster presentation

REACTIVE BALANCE TRAINING FOR FALL PREVENTION IN HEALTHY OLDER ADULTS

SAMANTHA ALLEGRO, ERICA BEST, CARLENE PYZIAK
(Study Advisor: Ruth Barclay)

Background: In older adults, falls are the leading cause of injury, disablement and hospitalizations. These falls that occur can cause a variety of trauma that could potentially lead to surgical interventions and a strain on the health care system. It has been thought that falls could be preventable and that there are many strategies to prepare an individual for them. Reactive Balance Training (RBT) is a strategy that is used to prevent falls as it causes individuals to react to unexpected perturbations.

Objectives: To determine whether RBT is an appropriate and effective preventative measure for an older adult (60+) population as a strategy for fall reduction and prevention.

Search methods: A systematic search was done using five databases including PubMed, CINAHL, Embase, Ovid, and Scopus. The population searched for included keywords such as older adults or age 60+ or elderly or senior. The intervention searched was reactive balance training or reactive balance recovery or reactive balance control or perturbation. Outcomes searched were fall reduction or fall prevention or improved balance or risk reduction and the study design was randomized controlled trial or clinical trial or random or double or blind or placebo.

Selection criteria: Studies that were conducted on healthy individuals over the age of 60 without co-morbidities affecting balance. Interventions included were ones that used RBT, specifically perturbation training using treadmills or moving platforms. The risk of bias for each study was determined using the PEDro scale and the Cochrane Risk of Bias, only higher quality studies were selected for inclusion.

Data collection and analysis: The articles were chosen by conducting a search using the terms found in Search Strategies in the Appendix. One review author screened titles from PubMed, Scopus and Embase. Another review author screened titles from Ovid. Two review authors screened abstracts from PubMed and Scopus while two other review authors screened abstracts from Embase and Ovid. If there were any disagreements, the articles were reviewed by another review author. Next the data was extracted and risk of bias assessed.

Main results: In one study it was found that participants in the control were 2.3 times more likely to experience falls than the training group over the following 12 months. In another, it was found that both of the groups were able to show retention of all outcome measures, although the dual session group presented better control of stability and reduced balance loss. While in another study it was acknowledged that compared to the control group, there was no significant difference in the fall efficacy scale, self-reported late life function and performance-oriented mobility assessment. In the final study it was noted the training group was found to have a greater reduction in frequency of multi-step reactions and foot collisions in comparison to the control group.
Respiratory Therapy • poster presentation

C-MAC VS. GLIDESCOPE: WHICH IS MORE SUCCESSFUL AT INTUBATING DIFFICULT AIRWAYS?
LUKE BOUCHER
(Study Advisor: Sandra Biesheuvel)

**Background:** Endotracheal intubation is a very difficult skill to master. When a patient presents with a difficult airway, the traditional method of intubation using direct laryngoscopy becomes extremely difficult and near impossible. Video laryngoscopes help both experienced and un-experienced clinicians intubate by negating the need for a direct line of sight through the glottis as the airway is displayed on a screen via a live camera recording. The C-Mac and Glidescope are two commonly used video laryngoscopes in Canada and they are both designed differently, which requires the clinician to approach intubation differently depending on which device they are using. Because of this, each device may have different intubation success rates.

**Objectives:** To determine if the C-Mac or Glidescope is more successful at intubating difficult airways on the first attempt.

**Methods:** A primary search was conducted in November 2018 using PubMed and CINAHL as databases. Articles were included in this review if they were randomized clinical trials. A secondary search reviewing the reference lists of relevant studies was performed.

**Results:** After the primary search was performed, 52 articles were found. After screening for duplicates and applying all inclusion and exclusion criteria, four trials were selected for review. The age of patients involved in the studies had to be over 18.

**Discussion:** The four included studies looked at the rate of successful first attempts at intubation for both video laryngoscopes, the time to successfully intubate, and the glottic view obtained graded with the Cormack-Lehane classification system.

**Conclusions:** The Glidescope is more successful at intubating difficult airways on the first attempt when compared to the C-Mac. More research needs to be conducted in the emergency room setting to ensure the research done in the operating room can carry over to an uncontrolled environment.

Respiratory Therapy • poster presentation

DOES CHLORHEXINE PREVENT VENTILATOR-ASSOCIATED PNEUMONIA?
EMMA BOISVERT
(Study Advisor: Puck Mai)

**Background:** Ventilator-associated pneumonia (VAP) is the most frequent infection that a ventilated patient can acquire while in the ICU. Part of its prevention is a VAP bundle, which includes the use of a mouthwash called chlorhexidine. Chlorhexidine is the gold standard for mouth care but there are many speculators that say it may not be as effective as originally thought.

**Objectives:** To determine whether or not chlorhexidine mouthwash helps to prevent ventilator-associated pneumonia.

**Methods:** A primary electronic search was completed in November 2018 using the following databases: PubMed, Ovid, and Cinahl. All studies selected were randomized controlled trials.

**Results:** Three out of four studies had the primary outcome of the prevention of VAP, which showed two out of three results in favour of the use of chlorhexidine. One of the four studies had colonization as the primary outcome, which showed that chlorhexidine did significantly reduce colonization.

**Discussion:** The studies showed that chlorhexidine did reduce VAP and colonization of bacteria in the mouth. There was no decrease in mortality when using the mouthwash, and it was unclear whether or not there was a decrease in length of ICU stay. More research is needed to determine whether or not there is a better alternative to chlorhexidine that will deliver better results in the mortality and length of stay outcomes.

**Conclusions:** The use of chlorhexidine reduces the incidence of VAP. Although two out of four studies directly link chlorhexidine with decreasing the incidence of VAP, and two out of four saw that chlorhexidine decreases the colonization of bacteria more studies are required to determine if chlorhexidine is the best choice for mouth care.
**Respiratory Therapy • poster presentation**

**THE EFFECTIVENESS OF BETA-2 AGONISTS IN MANAGEMENT OF ACUTE RESPIRATORY DISTRESS SYNDROME**

HANNA KILAS  
(Study Advisor: Denise Mackey)

**Background:** Some recent studies showed that the use of β2 agonists may be effective in resolution of extravascular lung water and pulmonary edema. Based on these findings, there has been an increased interest in the use of β2 agonists in treatment of acute respiratory distress syndrome (ARDS), where pulmonary edema together with inflammation produce a serious disease process with mortality rate as high as 46 per cent (Siegel, 2017). Multiple studies have been conducted to determine the effectiveness of the use of β2 agonists in treatment of ARDS.

**Objectives:** The objective of this systematic review was to determine the effectiveness of β2 agonists in treatment of ARDS.

**Methods:** A detailed electronic search was conducted in 3 databases for randomized controlled trials (RCTs) that studied the effectiveness of beta agonists on clinical outcomes in ventilated patients with ARDS. After applying specific inclusion and exclusion criteria, a total of three articles were selected to be included in the systematic review.

**Results:** All three studies selected were double blind RCTs that investigated the effectiveness of the use of β2 agonists in ventilated ARDS patients. A total of 648 patients were included in the three studies. The sample of each study was divided into the intervention group receiving salbutamol and placebo group receiving saline.

**Discussion:** It was determined in the BALTI trial that a continuous infusion of salbutamol significantly reduces extravascular lung water in ARDS patients. Two studies (BALTI and ALTA) found no significant difference in the number of ventilator free days between the salbutamol and placebo groups. One study (BALTI-2) found that the number of ventilator free days was significantly lower in the salbutamol group, compared to the placebo group. Two studies (BALTI and ALTA) found no significant difference in mortality rate between the intervention and placebo groups while BALTI-2 found a significant increase in mortality (increase of 8.4 per cent) in the salbutamol group. The ALTA trial had to be stopped due to futility and the BALTI-2 trial had to be stopped due to increased mortality rate and safety concerns. Such differences in findings among studies may be explained by varying concentrations of salbutamol used, varying disease severity in patients between studies and varying study designs.

**Conclusions:** Based on the findings of the three studies, it may be concluded that continuous administration of β2 agonists in ventilated patients with ARDS causes either no difference or worsens the outcomes. At this point, routine use of continuous β2 agonists cannot be recommended for ventilated patients with ARDS.

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**Respiratory Therapy • poster presentation**

**IMPACT OF CAPNOGRAPHY IN THE MAINTENANCE OF NORMOCARBIA IN CHILDREN**

JOHN FIGUEROA  
(Study Advisor: Cory Campbell)

**Background:** Carbon dioxide monitoring also referred to as capnography, is a non-invasive measuring tool which detects the partial pressure of carbon dioxide in the exhaled breath. Some of the clinical applications of EtCO2 monitoring include: quality of CPR and ventilation, and detection of ROSC during resuscitation, verification of ETT placement, and determining appropriate ventilation during mechanical ventilation.

**Objectives:** To determine the effectiveness of end-tidal carbon dioxide monitoring in keeping normocarbia in the pediatric population.

**Methods:** The primary search of databases (CINAHL, and PubMed) was done in November 2018. Searches were limited to human studies, and randomized controlled trials. Search studies are published between 2000 and 2018, and only English studies are included. The patient age group was under 16 years of age.

**Results:** The initial search in the primary databases of PubMed and CINAHL yielded a total of 211 results. After the application of the inclusion and exclusion criteria, five articles were included to be reviewed.

**Discussion:** The outcomes measured in the studies are: time spent above and below safe PaCO2 levels, and oxygen desaturation event frequency. Four of the studies looked at the effectiveness of the ventilation with and without capnography. Two of the studies looked at the frequency of oxygen desaturations, one of the studies included also looked at ventilation effectiveness (based on PaCO2 values).

**Conclusion:** The studies included in the report suggest that capnography is an effective form of reducing time spent in the unsafe levels of carbon dioxide levels, further studies are needed for evidence in long term health outcomes and rates of oxygen desaturation.
Respiratory Therapy • poster presentation

IN PRETERM INFANTS WITH OR AT RISK FOR RDS, DOES SURFACTANT ADMINISTRATION VIA THIN CATHETER RESULT IN IMPROVING RESPIRATORY OUTCOMES?

NATALI AGBAYEV (Study Advisor: Puck Mai)

Background: Premature infants who develop respiratory distress syndrome (RDS) at birth are strongly associated with high morbidity and mortality rates. Up to date, the most useful therapy for RDS is the delivery of exogenous surfactant to the airways. Traditionally, RDS is treated with surfactant administration via intubation and brief duration of mechanical ventilation. However, there is growing evidence that intubation and mechanical ventilation to the immature lungs can be linked to many adverse outcomes in the neonatal population. It is now recognized, that less or minimally invasive surfactant therapy (MIST) through a thin catheter during noninvasive ventilation may be an effective alternative to intubation and mechanical ventilation.

Objectives: To determine whether surfactant administration via a minimally invasive technique can improve the outcomes for premature infants who has or exhibit signs of RDS at birth.

Methods: A scoping review of the grey literature was conducted, recommendations were extracted from the literature, and common themes were developed.

Results: The need for mechanical ventilation (MV) in the first 72 hours was significantly lower in the LISA group in three of the four included studies (P<0.05). The duration for both MV and Non-invasive continuous positive airway pressure (NCPAP) demonstrated to be statistically significant in the LISA group in all included studies (P<0.05). However, only one of the four studies showed significant difference in the rates of BPD in the LISA group. There were also no significant differences in the rates of other neonatal morbidities or major complications such as death, pneumothorax incidences, and intraventricular hemorrhage.

Discussion: The primary outcome of this systematic review was the need and the duration of mechanical ventilation post-surfactant therapy. The LISA technique has demonstrated to be effective in lowering the need and the duration of mechanical ventilation in all studies when compared to the standard method. There is also a trend towards lower rates of BPD when using LISA technique for surfactant administration. However, some limitations were present in all included studies.

Conclusions: Surfactant therapy with LISA for RDS in preterm infants was associated with significant lower rates and duration of mechanical ventilation (MV) but without a significant reduction of BPD or neonatal complications. Because intubation and duration of MV are related to pulmonary complications, LISA may be a promising technique for preterm infants with RDS.

Respiratory Therapy • poster presentation

IN VENTILATED PATIENTS WITH ARDS, IS DRIVING PRESSURE SUPERIOR IN PREDICTING MORTALITY?

MICHELLE O’NEIL

(Study Advisor: Denise Mackey)

Background: A diagnosis of Acute Respiratory Distress Syndrome (ARDS) can quickly be life threatening so ICU management of these patients is of particular importance. It is currently considered best practice to follow ARDSNet protocol, a guideline focused on lung protective invasive ventilation as a method to limit ventilator induced lung stress and strain. Recently it has been postulated that driving pressure (DP) might be the strongest predictor of mortality in this patient population. DP is easily determined by calculating plateau pressure (Pplat) – (minus) positive end expiratory pressure (PEEP); is believed by some to be the most important monitored value for ARDS patients.

Objectives: This literature review was designed and strategically executed in order to determine if there is sufficient evidence to support the proposed prognostic importance of driving pressure as a monitored value when providing mechanical ventilation to patients with ARDS.

Methods: A literature search was conducted using databases PubMed and CINAHL and after careful inclusion and exclusion criteria was applied; five articles remained for analysis.

Results: Although there were various outcomes across the studies, there was a substantial amount of evidence indicating that increases in DP were strongly correlated with mortality. In one instance, increments of roughly 7 cm H2O of DP associated with increased mortality (relative risk [RR], 1.31 to 1.51; P<0.001). Some studies were able to offer suggested cut of values based on findings, one example being that DP was strongly and linearly associated with mortality when values were above 10 cm H2O. One study paid particular attention to prognostic power of DP, where they concluded that DP was not the strongest predictor of death as compared to VT, Pplat and compliance (Crs).

Discussion: Careful analysis of all the data throughout the five studies only served to confirm that driving pressure has great potential to play an important role in ICU care for ARDS patients. However, due to a lack of generalizability, low population numbers in some studies and poor randomization; causality cannot be assumed with absolute certainty.

Conclusion: Each study provided evidence showing that limiting driving pressure decreases the risk of mortality, but it could not be concluded with certainty that DP was the most important monitored value in comparison to other ventilator variables such as plateau pressure. The lack of randomized control trials (RCTs) on this topic is of particular concern but the mounting evidence in support of monitoring driving
**Respiratory Therapy • poster presentation**

**IOS AND FOT VERSUS SPIROMETRY FOR THE EARLY DETECTION OF COPD**

ANTON KAPUSTIN  
(Study Advisor: Denise Mackey)

**Background:** Chronic obstructive pulmonary disease (COPD) is a progressive disease exhibiting rapid decline. The period of most rapid decline in lung function is speculated to occur much earlier than previously thought, and it is during this period that aggressive testing, smoking-cessation efforts, and the initiation of treatments may be most beneficial. In Canada, 2.0 million (and rising) live with COPD resulting in issues in the health, social and economic branches of society. Spirometry is considered the gold standard method in diagnosing and monitoring COPD. However, this method has limitations. One proposed alternative to spirometry was impulse oscillometry (IOS) and forced oscillation techniques (FOT). Unlike spirometry, the method requires minimal patient effort and can be done easily in subjects unable to perform spirometry at an acceptable level. Additionally, IOS/FOT measurements can identify early anomalies in patients who report symptoms of COPD but do not yet have abnormal spirometry. Currently, IOS/FOT are not routinely used in Canada and are subject to further research.

**Objective:** Collate the usefulness of IOS/FOT to spirometry for the early detection of COPD.

**Methods:** A systematic literature search of computerized databases PubMed, Scopus, Medline: Ovid and CINAHL was conducted in November 2018. Studies included were randomized controlled trials, case-control studies or cross-section studies conducted under clinical settings. A secondary search was conducted by reviewing the references of relevant publications.

**Results:** Primary search yielded 108 publications and an additional two articles were identified through a secondary search. After applying all inclusion and exclusion criteria through abstract and full-text review, four publications were included in the present literature review.

**Discussion:** The primary outcome considered in the first two studies was sensitivity of IOS vs spirometry for the detection of early COPD. The third study looked at the use of IOS in the assessment of air trapping and airflow limitation in geriatric COPD patients. Finally, the forth study evaluated the ability of IOS to detect smoking-induced respiratory alterations, with special emphasis on early alterations; and to compare the diagnostic accuracy of IOS and spirometric parameters. All four studies showed that IOS/FOT may have additional benefit to that of spirometry.

**Conclusion:** While all publications included in the present review revealed that IOS/FOT may serve as a viable compliment to spirometry through early information and greater sensitivity and specificity, further evaluation is necessary to determine its use for improving patient outcomes.

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**Respiratory Therapy • poster presentation**

**IS AEROSOLIZED SURFACTANT DELIVERY AN EFFECTIVE ALTERNATIVE TO BOLUS SURFACTANT ADMINISTRATION IN THE NEONATAL POPULATION?**

NIRUSAN JAYARANJAN (Study Advisor: Cory Campbell)

**Background:** Neonatal respiratory distress syndrome (RDS) due to surfactant deficiency is associated with high morbidity and mortality in preterm infants. Approximately seven per cent of all infants are born prematurely and half of them develop RDS due to lung immaturity and lack of lung surfactant (Walther, Hernandez-Juvel, & Waring). Standard clinical practice indicates that premature babies at risk of RDS should receive prophylactic surfactant in the delivery room via Intubation-SURfactant-Extubation (INSURE). Most recently, aerosolized surfactant delivery as an alternative to bolus surfactant administration has been a topic of great interest.

**Objectives:** To determine whether aerosolized surfactant is an effective alternative to bolus surfactant administration in the neonatal population.

**Methods:** A systematic literature search was conducted in November 2018 using the computerized databases, PubMed and CINAHL. Publications used were limited to studies that were randomized controlled trials. A secondary search was conducted by reviewing the references of relevant publications.

**Results:** A third-year respiratory therapy student conducted the primary and secondary search, and 67 publications were identified. After applying all inclusion and exclusion criteria through abstract and full-text reviews, five publications were included in the present literature review.

**Discussion:** Duration of mechanical ventilation and the requirement for intubation are the variables identified as the most reliable for detecting the efficacy of aerosolized surfactant. One of the studies found that early post-natal nebulised surfactant may reduce the need for intubation in the first three days of life compared with nCPAP alone. Other studies investigated the impact of aerosolized surfactant on specific hemodynamic parameters and dynamic lung compliance when compared to bolus surfactant administration.

**Conclusions:** Overall, the majority of the publications included in the present review concluded that aerosolized surfactant avoided the negative transient hemodynamic effects of bolus surfactant administration in addition to being as effective as bolus surfactant administration. While the majority of publications included in the present review reported that aerosolized surfactant administration is as effective as bolus surfactant administration, further evaluation of aerosolized surfactants use in the neonatal clinical setting remains vital.
Respiratory Therapy • poster presentation

IS EXTRACORPOREAL MEMBRANE OXYGENATION BENEFICIAL IN THE TREATMENT OF ARDS?

FILIP DJUKIC (Study Advisor: Cory Campbell)

**Background:** In current practice, acute respiratory distress syndrome (ARDS) is a severe lung condition, which affects countless individuals. Current standardized treatment options include supplementary oxygen therapy with low-volume and low-pressure mechanical ventilation strategies. However, due to the gradually increasing mortality rate, new therapies have been sought out. Extracorporeal membrane oxygenation (ECMO) has been considered to be an alternative treatment option for ARDS. ECMO works via bypassing the patients cardiopulmonary and respiratory system while delivering fresh oxygenated blood to the body allowing the heart and lungs to rest and adequately heal. Therefore, ECMO in conjunction with mechanical ventilation may be beneficial in the treatment of ARDS by allowing protective lung ventilation and a sufficient healing process.

**Objectives:** To examine if ECMO paired with mechanical ventilation may be considered a standard treatment strategy for people suffering from ARDS.

**Methods:** A primary literature search was conducted in November using PubMed, CINAHL and OVID databases to retrieve the literature for the systematic review. Randomized controlled trials, cohort and observational design studies were retrieved through primary and secondary searches using current literature and reference lists from primary articles selected.

**Results:** After the primary and secondary search was completed, a total of 33 records were obtained between all databases. Once the inclusion and exclusion criteria were applied in the abstract and full-text review phase, four articles (two randomized controlled studies, one cohort design, and one observational study) were selected to be included in the quantitative synthesis of the systematic review.

**Discussion:** In a majority of the selected studies, the primary outcomes selected were mortality rate and effectiveness of ECMO treatment. It was found that patients required less days of ECMO support when compared to mechanical ventilation strategies alone to treat ARDS. A greater improvement in ECMO subject’s vitals, respiratory needs and health status was recorded when compared to the mechanical ventilation group. Another study also provided information of high success rate when ECMO is used to treat pregnant and postpartum patients suffering from severe ARDS. However, in a great number of patients, ECMO therapy was actually more harmful and provided no improvement in condition.

**Conclusions:** ECMO has shown considerable evidence in treating patients suffering from ARDS, however some complications seen with the therapy procedure may hinder effectiveness and potentially be detrimental. Therefore, further research should be conducted in order to better understand the maximum capabilities of ECMO when utilized in the treatment of ARDS.

Respiratory Therapy • poster presentation

LUMACAFTOR-IVACAFTOR: PHARMACOLOGICAL MANAGEMENT OF CYSTIC FIBROSIS

DANAE KAITA (Study Advisor: Puck Mai)

**Background:** Cystic fibrosis (CF) is a genetic disease in which thickened mucous creates multi-system complications, often respiratory in nature. The underlying cause of these symptoms is most commonly the homozygous F508del mutation. Lumacaftor-ivacaftor is the first combination drug therapy to address this mutation and its associated protein dysfunction.

**Objectives:** To determine if lumacaftor-ivacaftor is an effective and safe treatment option for cystic fibrosis patients with homozygous F508del mutation.

**Methods:** A search of the following databases was conducted in November 2018: CINAHL, Ovid, PubMed and Scopus. Only randomized controlled trials underwent further review. A secondary search of the references from the four chosen articles was conducted.

**Results:** Lumacaftor-ivacaftor use results in a significant improvement in lung function, pulmonary exacerbation rates and sweat chloride levels and may improve body mass index and quality of life. Upon initiation, it may cause respiratory symptoms which normally subside after approximately two weeks.

**Discussion:** The primary outcome measured in all four studies was lung function represented by forced expiratory volume in one second (FEV1) and lung clearance index (LCI2.5). All four studies showed improvement in this domain.

**Conclusions:** Lumacaftor-ivacaftor may be an effective alternative treatment with minimal safety concerns for CF patients with homozygous F508del gene mutation. Further evaluation of lumacaftor-ivacaftor in large patient studies should be conducted to solidify these findings.
Respiratory Therapy • poster presentation

SHOULD ELECTRONIC CIGARETTES BE CONSIDERED AN EFFECTIVE TOOL FOR TOBACCO HARM REDUCTION IN THE ADULT POPULATION?

HAILEY GRABOWESKI
(Study Advisor: Sandra Biesheuvel)

Objective: Electronic cigarettes have been gaining popularity over the last few years for their potential as a tool in tobacco harm reduction. As these devices are relatively new, research defining the effects for their application on health is limited. This systematic review aimed to target a study selection focusing on the implications of electronic cigarettes on a user’s cardiopulmonary health in order to determine if this product should have a role in tobacco harm reduction.

Methods: Five articles employing randomized control trials were selected to be included in the present systematic review. Outcome measures investigated include: smoking reduction and quit rates, systolic and diastolic blood pressure, heart rate, transcutaneous oxygen tension, club cell protein16 (CC16) serum levels, fractional exhaled nitric oxide, exhaled carbon monoxide, forced expiratory volume-one second (FEV1), forced vital capacity (FVC), FEV1/FVC, forced mid-expiratory flow rate (FEF25-75 per cent), and respiratory symptoms.

Results: The application of an electronic cigarette device lead to an average reduction of ~9 cigarettes per day compared to users baseline and ~15 per cent quit rate. Small reductions were noted in vital sign measurements, and baseline symptoms including shortness of breath, cough and phlegm significantly improved. When participants made the switch to electronic cigarettes, significant reductions in exhaled carbon monoxide (eCO) and significant increases in fractional exhaled nitric oxide (FeNO) levels were observed. Some conflicting results were found in regards to pulmonary function and FEF25-75 per cent. Acute exposure to high intensity vaporization lead to significant reductions in this value whereas extended exposure to lower intensity vaporization lead to significant increases in this value.

Conclusions: Whether or not electronic cigarettes should be considered an effective tool for tobacco harm reduction remains unclear. Further research-involving users with longer exposure times are required to see true effects.

Respiratory Therapy • poster presentation

THE USE OF ROOM AIR AS AN EFFECTIVE METHOD FOR RESUSCITATING ASPHYXIATED INFANTS AT BIRTH

NICOLE FYKE (Study Advisor: Cory Campbell)

Background: Understanding the potential danger of hyper-oxygenating neonates during resuscitation is an emerging area of research today. One-hundred percent oxygen has growing evidence of adverse effects on respiratory functions, cerebral circulation and risk of tissue damage due to oxygen free radicals. The efficiency and safety of room air has been researched for safety and effectiveness measures.

Objectives: To determine if room air is an effective method for resuscitation of asphyxiated infants at birth.

Methods: An initial electronic search was performed in November 2018 using the online databases, PubMed and Embase. In this review, randomized and quasi-randomized controlled trials were the only form of publications included. A secondary search was performed by looking at all references of publications found in the preliminary search.

Results: The primary and secondary searches retrieved 203 results. After applying applicable inclusion and exclusion criteria to both abstract and full text review, four randomized and quasi-randomized controlled trials were included in this literature review. Using the Cochrane Collaboration risk of bias evaluation framework, high risk of selection, detection and performance bias was present in three studies, yet there was low risk of attrition and reporting bias for all studies.

Discussion: Mortality is the primary outcome as it is the most powerful measurement to detect the efficiency of room air during resuscitation. All four studies included this outcome in their studies. Overall, mortality in all studies and centers did not vary significantly for either group. Other studies that looked at the effect of room air for neonatal resuscitation looked at secondary outcomes of interest– Apgar scoring, heart rate, and incidence of hypoxic-ischemic encephalopathy (HIE) showing no statistical significant improvement for either room air or oxygen for resuscitation. To prevent incidents related to high concentrations of oxygen, studies correlated oxygen levels with signs of oxidative stress, inflammation and clinical outcomes.

Conclusions: The use of room air for asphyxiated neonatal resuscitation has been proven to show no benefit when compared to 100 per cent oxygen. Lack of blinding and randomization of participants are the major source of bias in the chosen studies. It is recommended that further research be done to reveal long term effects and specific percentage of oxygen for resuscitation measures.
**MSc Rehabilitation Sciences • poster presentation**

**Clinical Practice Guidelines for Knee Osteoarthritis: Are Physiotherapists Who Work in Canada Following Them?**

Brenda Tittlemier  
(Study Advisor: Sandra Webber)

**Background:** Clinical practice guidelines (CPGs) for people with knee osteoarthritis (OA) suggest that education, exercise and weight-loss advice are core interventions that should be offered to individuals diagnosed with this condition. This study examined the extent to which physiotherapists followed CPGs when treating people with knee OA, if there were any differences in core treatments prescribed between those who reported they did and did not follow CPGs and investigated the predictor variables which influenced the utilization of these interventions.

**Methodology:** We conducted an online survey with physiotherapists licensed to work in Canada. Physiotherapists who reported they regularly treated individuals with knee OA were eligible to participate. The survey included questions about an individual with knee OA. We used descriptive statistics to examine the core interventions physiotherapists reported they used, chi-square to determine differences in these interventions utilized and logistic regression to predict variables that would influence the likelihood of physiotherapists' prescribing an intervention. Statistical significance = p < 0.05.

**Results:** We used data from 388 respondents from Canada in our analyses. Most physiotherapists provided leg strengthening exercise (96 per cent) and education (94 per cent), whereas 60 per cent of physiotherapists prescribed aerobic exercise and 56 per cent discussed weight-loss. Between those who followed and did not follow CPGs, aerobic exercise demonstrated a statistically significant difference. Physiotherapists who worked in a hospital setting were less likely to prescribe aerobic exercise. Physiotherapists with a MSc degree and post-graduate training related to knee OA were more likely to discuss weight-management.

**Conclusion:** Physiotherapists who practice in Canada provide OA care that is consistent with the CPGs. Education and strengthening exercises are the most frequently prescribed core interventions. There are few differences in the utilization of core interventions between physiotherapists who do or do not follow CPGs. The application of some interventions is influenced by the place of employment, level of education and post-graduate training.

**MSc Rehabilitation Sciences • poster presentation**

**Computer Game-Assisted Repetitive Task Practice Based Upper Extremity Therapy Protocol for a Child with Spastic Unilateral Cerebral Palsy: A Single Case Study**

Anuprita Kanitkar  
(Study Advisor: Tony Szturm)

**Background:** There is a need for innovation to improve rehabilitation programs for children with cerebral palsy. For this purpose, we have developed and validated a computer game-assisted repetitive task practice platform (G-RTP) to facilitate recovery of the hand-arm function of young children with sensory-motor impairments of the upper extremity.

**Purpose:** Case study to provide evidence of the feasibility, acceptance, and benefits of the G-RTP in the rehabilitation of Upper extremity (UE) motor function of a child with Cerebral Palsy (CP).

**Methods:** A four-year-old child with spastic cerebral palsy of the left upper extremity was provided an individualized game-assisted therapy program of 16 weeks, three times per week. Outcome measures included PDMS-2 and QUEST and a computerized assessment of a broad range of object manipulation tasks.

**Results:** Findings demonstrated the feasibility and acceptability of the G-RTP program for use by young children with Upper Extremity (UE) motor impairment. The present preliminary results show substantial improvements PDMS-2, QUEST and in performance metrics (success rate, movement error and response time) of a broad range of goal-directed object manipulation tasks.

**Conclusion:** The findings are positive and support further developments and a future definitive randomized RCT is needed to prove the efficacy and applicability of the G-RTP in those with cerebral palsy.
Introduction: There is an early deterioration of balance and gait functions in Parkinson Disease (PD). Additional to this, PD participants also show deterioration in one or more cognitive area. Combination of these deterioration has resulted in more than 60 per cent of PD participants reporting recurrent falls. Most of the falls occur during walking, and consequences of these falls are often severe, leading to disability, loss of independence and social isolation. Since physical and cognitive decline both equally contribute to increased fall risk in PD, there is an urgent need to develop and validate affordable approaches to combine walking and executive cognitive activities. To answer this need, we have developed and validated an engaging, game-based treadmill platform (GTP), which provided an integrated approach to assess and treat a decline in balance, mobility, visuomotor control and visuospatial executive cognitive function. We have used a standard treadmill equipped with a pressure mapping system and a miniature motion computer mouse which can interact with a wide variety of common commercial computer games. This miniature motion mouse can be secured over a helmet, which can be worn during treadmill walking and computer games can be controlled by easy neck rotations, providing in the engaging and enjoyable hands-free dual-tasking environment while walking on a treadmill. Purpose of this Pilot study is to examine the feasibility and acceptability of an intervention program using GTP to target mobility and cognition in people with PD.

Methods: Twenty participants diagnosed with PD, stage 1-3 on Hoehn and Yahr scale were a screen for the study. Fifteen participants completed 10 weeks, two times a week dual-task intervention program with GTP to improve standing balance and DT walking. We observed excellent feasibility regarding recruitment, retention to program, study procedures and study management for conduction RCT with GTP. Also, medium to large effect sizes for all significant improvements in standing balance, ST and St walking, and cognitive performance were observed after the intervention. All participants improved in over-ground walking speed measured over 25m and walking endurance measured by 6MWT.

Results: We obtained favourable results for the feasibility of GTP to conduct RCT with an appropriate control group. The embedded semi-structured interviews also showed that GTP was highly appreciated among patients with PD. The substantial improvement in standing balance and gait of patients with PD shows the effectiveness of GTP for targeted rehabilitation.

Background: In older adults, decreased levels of physical activity together with increased prevalence of chronic disabilities can result in significant mobility limitations, decreased cognitive function and increased risk of falling. A new tool for fall risk assessment measures balance and gait function while performing a secondary mental or cognitive task referred to as dual tasking (DT). For example: talking or navigating in busy environments, avoiding obstacles while walking on a street or looking around while shopping.

Objective: The purpose of this study is to examine the effects of aging on balance, gaze stability, walking and cognition during single and DT conditions in healthy older adults. This will help in advancing our understanding regarding the decline in mobility functions with age. This data sample will be compared to a group of individuals diagnosed with Parkinson Disease (PD) to examine how engagement with different visuomotor cognitive activities differs between the groups.

Methods: Thirty healthy active older adults (aged 60-80) will be recruited. The study will be conducted at HSC, Rehabilitation Hospital. Each participant will be tested only once. This session will be of 90 minutes consisting of: a) background information and consent; b) Cognitive abilities using Montreal Cognitive Assessment (MoCA); c) Six-minute walk test; and d) DT standing balance and treadmill walking protocol. Participants will be asked to play a few computer games while: a) sitting on a chair; b) standing on a flat surface; c) standing on a 6” thick compliant foam pad; and d) walking on a treadmill at a comfortable self-selected speed.

Conclusion: A better understanding of the interactions between physical demands, cognitive load and type of task will help in identifying high-risk scenarios that people will encounter in their daily life activities. It will also help to design effective and personalized exercise programs suitable for community settings. This interactive gaming platform will not only allow the differentiation of fallers from non-fallers but also identification of older adults who are at a higher risk of falling. This will help in reducing institutionalization and hospitalization, thus reducing the economic burden.
**MSc Rehabilitation Sciences • poster presentation**

### EVALUATION OF A COMPUTER GAME BASED REHABILITATION SYSTEM FOR ASSESSMENT OF BALANCE AND GAIT IMPAIRMENTS IN INDIVIDUALS WITH PARKINSON’S DISEASE

**MAYANK BHATT, BHUVAN MAHANA, JONATHAN MAROTTA**  
(Study Advisor: Tony Szturm)

**Introduction:** Impairments to standing balance, gait and executive-cognitive functions are commonly observed in Parkinson’s disease (PD) population. These problems are often exacerbated during the dual-task (DT) conditions that require simultaneous processing of executive-cognitive functions and sensorimotor resources. Lack of a reliable and valid instrument is a major limitation in DT assessment for PD population. A Computer Game Based Rehabilitation System (CGBRS) has been developed for simultaneously assessing balance, gait and executive cognitive functions in individuals with PD.

**Methods:** Twenty-six individuals with PD (stage-2 and 3, Hoehn and Yahr scale) were recruited for this study and examined on two separate occasions (one week apart).

**Objectives:** The main objectives of this study were to examine test-retest reliability and construct validity of CGBRS for evaluating the balance, gait, visuo-motor and visuo-spatial executive cognitive functions under both single and DT conditions in individuals with PD. The present study also compared the effects of DT-interference on gait and executive-cognitive functions for stage-2 (mild) and stage-3 (moderate) individuals with PD. Twenty-six individuals with PD (stage-2 and 3, Hoehn and Yahr scale) were recruited for this study and examined on two separate occasions (one week apart).

**Results:** Moderate to high test-retest reliability was observed for performance measures of standing balance, gait, visuo-motor and visuospatial executive cognitive functions. A significant DT-effect was found on the majority of standing balance, gait, VMT and VMG performance measures in individuals with PD. Significant differences between stage-2 and stage-3 PPD were observed during single and DT-walking conditions. This study demonstrated the reproducibility and validity of the CGBRS for studying DT-interference and fall risk assessment in PD population.

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**MSc Rehabilitation Sciences • poster presentation**

### EXAMINING THE RELATIONSHIP BETWEEN UNMET HEALTHCARE NEEDS AND HEALTHCARE SERVICE UTILIZATION BY IMMIGRATION STATUS

**DIMPLE BHOJWANI**  
(Study Advisor: Shahin Shooshtari)

**Introduction:** Immigrants have 18 per cent lower risk of reporting unmet healthcare needs compared to non-immigrants. This can be explained by the ‘healthy immigrant effect’, whereby the health of immigrants is better at the time of arrival and gradually deteriorates and converges with the Canadian-born population. It is observed that people who have reported high unmet healthcare needs are high users of health services. There is currently no information on how (and if) unmet healthcare needs predict use of health services among immigrant populations and if the relationship varies by length of stay in Canada. Our study addressed this existing gap in the literature. The two main objectives of the study were to: 1) estimate and compare reported unmet health care needs and its reasons by immigration status; and 2) examine the relationship between unmet healthcare needs and health-care service utilization by immigration status.

**Methods:** This was a secondary analysis of cross-sectional data from the annual component of 2014 cycle of the Canadian Community Health Survey. Confidential micro-level data from the master data file for a nationally representative sample of individuals, who were 18 years of age and older (n=58982) were used. The study population consisted of three groups: 1) recent immigrants (foreign born population who lived in Canada for ≤ 5 years), 2) non-recent immigrants (foreign born population who lived in Canada for > 5 years) and 3) Canadian-born population. The key independent variable was self-reported unmet health care needs and its reasons by immigration status; and dependent variables were different types of healthcare services used.

**Results and conclusion:** Canadian-born population reported the highest proportion of unmet healthcare needs (12.1 per cent) followed by recent-immigrants (11.8 per cent) and long-term immigrants (10.5 per cent) and the difference was found to be statistically significant (p-value <0.001). Individuals who reported having unmet healthcare needs were significantly more likely to use hospitalization services or physician services. The high proportion of reported unmet healthcare needs among recent immigrants suggests presence of barriers accessing health-care services. This study has the potential to inform policy implications to address these barriers accounting for health inequity.
MSc Rehabilitation Sciences • poster presentation

I.T. FOR P.T.: DEVELOPING DIGITAL HEALTH CORE COMPETENCIES FOR PHYSIOTHERAPISTS
KATIE DYCK
(Study Advisor: Barbara Shay)

Introduction: As electronic medical record use increases within the physiotherapy community, development of digital health core competencies is necessary to promote digital health literacy. The purpose of this quantitative exploratory survey study is to act as an environmental scan of digital health use in Manitoba physiotherapists.

Method: Respondent data was used to generate a baseline profile including knowledge, use and attitudes of digital health systems. Analysis of the data will serve as a needs assessment and gap analysis tool to target areas for education on digital health concepts and themes identified will facilitate development of a digital health core competency framework aligned with the role-based Competency Profile for Physiotherapists in Canada.

Goals: The long-term goal of this work is to better enable physiotherapists in Manitoba to adopt, implement and optimize use of digital health systems and applications in clinical practice to enhance patient care and support advocacy for physiotherapy services.

MSc Rehabilitation Sciences • poster presentation

INNOVATIVE GAME-AIDED REHABILITATION PLATFORM FOR REHABILITATION OF BALANCE IN CHILDREN WITH CEREBRAL PALSY
KAVISHA MEHTA, SANJAY PARMAR
(Study Advisor: Tony Szturm)

Background: Cerebral Palsy (CP) affects a large number of children and is the leading cause of disability worldwide. Substantial balance impairments are common and this results in limitations in mobility function necessary for activities of daily living and participation in social events. We have developed a low-cost, interactive, computer game-aided rehabilitation platform (GRP). It is extremely flexible; can combine many engaging, balance exercises with fun (cognitive) game activities.

Methodology: Children diagnosed with CP (N=50) between the ages of three to eight years and Gross Motor Function Classification System (GMFCS) levels 2 and 3 will be recruited. These participants will be randomly assigned to the active control arm (N=25) who will receive typical conventional balance training program or the experimental group (N=25) who will receive the game-assisted dynamic balance training program. Each program would be carried out for 12 weeks with the frequency of three therapy sessions per week. Time per session approximately 45-60 minutes. Parents’ and treating therapists’ experiences and views will be recorded by a research therapist at the end of the treatment period using semi-structured interviews.

Outcome measures: The participants of both the groups will be assessed pre and post intervention implementation on Peabody Developmental Motor Scale-2 (PDMS-2) and Gross Motor Function Measure (GMFM). Also, the participants dynamic balance performance would be assessed using analysis of center of foot-pressure (COP) via FSA Mat during performance of mCTSIB tasks and during dual-task conditions.

Expectation and outcomes: This proposal is a paradigm shift that will lead to efficient and pragmatic interventions and will transfer new knowledge into clinical practice that will advance treatments of chronic neuro-developmental disorders for young children. This program will build capacity in the emerging area of rehabilitation using computer-aided and game-assisted strategies aimed at assessing and treating CP.
PERCEPTION OF RECOVERY OF STROKE SURVIVORS AND PHYSIOTHERAPISTS
TOLULOPE ATAMA, LEANNE LECLAIR, SEPIDEH POOYANIA
(Study Advisor: Ruth Barclay)

**Background:** Stroke is a disabling condition affecting millions across the globe. Varied neurological deficits may result in impairment and activity limitations, thus affecting the individual’s perception of recovery. The purpose was to examine perceptions of recovery among stroke-survivors and their physiotherapists at an inpatient rehabilitation program.

**Methods:** A multiple-methods design used data from chart review: Functional Independence Measure (FIM) and Chedoke McMaster Stroke Assessment Activity Inventory. A self-reported measure, the Stroke Impact Scale (SIS) recovery domain was collected. Pearson correlations between SIS-recovery and observed measures were completed. Patients had a short interview and physiotherapists answered two written questions about recovery. Responses were coded and categorized.

**Results:** A total of 31 stroke-survivors with mean age 67 years (SD 11) and 6 physiotherapists participated in the study. Nineteen patients were interviewed. The patients’ SIS-recovery scores correlated with FIM-motor change ($r = 0.41; p = 0.019$), FIM-total change ($r = 0.37; p = 0.039$) and the physiotherapists’ SIS-recovery ($r = 0.50; p = 0.004$). The physiotherapists’ focus was therapeutic while the patients’ responses were broad, including being able to achieve recovery goals and nutrition. However, both perceived recovery to include being able to walk, being able to perform self-care and motivation to improve. All of these areas aligned with the content of outcomes measured during rehabilitation.

**Conclusion:** The SIS recovery scale is a quick to use patient-reported-outcome and can be used to document patients’ views of their recovery during the rehabilitation process as well as indicate perceived satisfaction with interventions during their rehabilitation stay.

PREDICTORS OF CANADIAN PHYSIOTHERAPISTS’ ADHERENCE TO CLINICAL PRACTICE GUIDELINES FOR NON-SPECIFIC LOW BACK PAIN
TAMİRES DO PRADO
(Study Advisor: Joanne Parsons)

**Introduction:** Incidence and prevalence of low back pain (LBP) are higher in Canada than world-wide, and associated psychosocial demands often lead to long-term disability, increasing the individual and socioeconomic burden of LBP in the country. In spite of continuous efforts to develop and update evidence-based clinical practice guidelines (CPG), a significant gap remains between research findings and physiotherapists’ use of CPG in practice, as well as in how to best fill such gaps. In Canada, information on this topic is outdated, and derived from studies based on obsolete CPG. The aim of this study was to identify predictors of Canadian physiotherapists’ current adherence to CPG for the management of LBP clients with associated psychosocial demands.

**Methods:** Registered Canadian physiotherapists completed a cross-sectional online survey including demographic characteristics, constructs from the theory of planned behaviour, a clinical scenario, a questionnaire to assess back pain beliefs, and a scale to measure self-efficacy in implementing evidence-based practice. Treatment choices related to the clinical scenario were scored according to recent CPG, and respondents were classified into lower- or higher-adherence groups. A binary logistic regression model was developed to identify predictors of group membership.

**Results:** A total of 519 cases were included in the regression analysis, which was weighted by province of practice to account for regional differences. Physiotherapists’ intention to use CPGs, normative beliefs regarding use of CPGs, biomedical beliefs, and post-graduate training were significant predictors in the multivariate model. The strongest predictor of higher-adherence was having at least one area of post-graduate training.

**Conclusion:** Canadian physiotherapists seem to largely adhere to CPG recommendations for clients with LBP; and their back pain beliefs, post-graduate training, intention to use CPGs, and normative beliefs about CPGs are significant factors in predicting their adherence to recommendations. These factors should be considered in the development of implementation strategies aimed at enhancing adherence.
CERVICAL SPINE MOTION OF PATIENTS DURING AMBULANCE TRANSPORT WITH TWO FORMS OF SPINAL PRECAUTIONS

NEIL MCDONALD, DEAN KRIELLAARS, ERIN WELDON, ROB PRYCE (Study Advisor: Dean Kriellaars)

Background: As spinal motion restriction guidelines continue to evolve, practitioners require clinically relevant evidence that is generalizable to field use. Given limited research on patient motion during ambulance transport, this study aimed to quantify the cervical kinematics of trauma patients receiving two types of spinal precautions during this phase of prehospital care.

Methods: Three miniature, wireless inertial measurement units (sampling rate: 128 Hz) were attached to the head, sternum and stretcher of patients with suspected spine injuries during transport (n = 9; SI = 4; female = 6). Patients were treated with either a cervical collar (SMR) or traditional spinal immobilization (SI) with a cervical collar, head blocks, and a long spine board. Cervical motion was characterized in terms of angular displacement, linear acceleration, and angular velocity. Results were analyzed in terms of blocks, and a long spine board. Cervical motion was characterized in terms of angular displacement, linear acceleration, and angular velocity. Results were analyzed in terms of treatment type and patient compliance.

Results: Transport durations (16.7±2.1 mins) and ambulance accelerations (0.27±0.01 m/s²) did not differ between spinal precaution methods (p>.17) and compliant vs non-compliant categories (p>.58). There was no difference between SI and SMR in flexion/extension (F/E) and axial rotation (AR), but more side flexion (SF) was detected in SI (22.5±5⁰) compared to SMR (10.7±2.6⁰, p<.05). In calm/compliant patients, F/E (7.2±1.0⁰), AR (5.8±1.0⁰) and SF (10.6±3.3⁰) were substantially lower than non-compliant patients (F/E 22.2±7.3⁰ p<.05; AR 13.9±4.4⁰ p = .08; SF 18.1±5.8⁰, p =.16). Similarly, compliant patients had lower accelerations (4.2±0.9 m/s²) than non-compliant patients (10.1±2.6 m/s²)(p<.05).

Conclusion: This study used innovative technology to provide novel, clinically relevant data. Results suggest that patient presentation might potentially be a more significant determinant of cervical motion than treatment type. Future studies should investigate this possibility and other potential influences with more participants in diverse settings.

EFFECTIVENESS OF MOTIVATIONAL INTERVIEWING ON PHYSICAL ACTIVITY AMONG OLDER ADULTS: A SYSTEMATIC REVIEW AND META-ANALYSIS

OLAYINKA AKINROLIE, SHAELYN STRACHAN, AKANKSHA GUPTA, UNYIME. S. JASPER, SAMUEL. U. JUMBO, NICOLE ASKIN, RASHEDA RABBANI, RYAN ZARYCHANSKI, AHMED M. ABOU-SETTA (Study Advisor: Ruth Barclay)

Background: Despite the extensive evidence of the benefits of physical activity, most older adults do not meet the physical activity guidelines. Motivational interviewing has recently been shown to increase physical activity. This systematic review aimed at determining the efficacy of motivational interviewing on physical activity in older adults in the community. However, treatment fidelity and personnel competency may play a key role in increasing the efficacy of motivational interviewing. Also, there is a need for more research as only three trials with 88 participants were included in the meta-analysis.

Methods: We identified randomized controlled trials (RCTs) in MEDLINE, EMBASE, CINAHL, AgeLine, PsycINFO and Cochrane Library from inception until January 2019. Trials that used motivational interviewing as a standalone intervention for improving physical activity in older adults aged 65 years and more were included. We screened citation, extracted data and assessed for risk of bias using the Cochrane Risk of Bias Tool.

Results: From 3,226 citations identified after duplicates were removed, four trials (five publications) were included with 747 participants. Three of the trials have high risk of performance bias and only three trials were included in the meta-analysis. The result showed no difference between the effect of motivational interviewing and usual care on physical activity levels in older adults (SMD= -0.02, 95% CI -0.05 to 0.46, p=0.93, I²=16%; 3 trials; 84 participants). Similarly, subgroup analysis of face-to-face (SMD= -0.23, 95% CI -0.75 to 0.28, p=0.37, I² =0%; 2 trials; 59 participants) vs telephone-based (SMD= 0.48, 95% CI -0.32 to 1.28, p=0.24; 1 trial; 25 participants) delivered motivational interviewing showed no difference on physical activity levels in older adults.

Conclusion: There is no evidence to support the effectiveness of motivational interviewing on improving physical activity levels among older adults living in the community. However, treatment fidelity and personnel competency may play a key role in increasing the efficacy of motivational interviewing. Also, there is a need for more research as only three trials with 88 participants were included in the meta-analysis.