Queen's University

Rehabilitation Research Colloquium
Welcome to the 21st Annual Rehabilitation Research Colloquium

Organizing Committee:

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Alicia Hodgins
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Julie Pétrin
Malcolm McNeil

The organizing committee would like to thank Marcia Finlayson, Kathleen Norman, Sharon Davis, Svetlana Rytchkov, Michael Ferguson, Tim Rosillo, Anne Linscott, and Nora Fayed
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Message from the Director

Welcome to Queen’s University for the 21st Annual Rehabilitation Research Colloquium. This exciting event brings together emerging rehabilitation researchers who are asking and answering important questions to advance practice and policy related to rehabilitation delivery in Canada and beyond. The scheduled sessions address a wide range of topics in rehabilitation research. Certainly there is something for everyone over the course of the day’s activities.

I hope you will take the time to become acquainted with people you have not met before, initiate potential research collaborations, and learn about new methodologies and methods being used by your peers. I also hope that you will be able to enjoy our campus and lakeshore while you are in Kingston. We are fortunate to have such a beautiful setting to inspire our thinking and doing in rehabilitation research.

For the past six years, the School of Rehabilitation Therapy has been focused on meeting several strategic goals, all of which direct us to lead and inspire positive changes that transform lives through rehabilitation research, education and practice. Through our research, education and service we seek to advance knowledge, inspire practice and transform lives. Thank you for being part of the colloquium and helping us move toward these goals.

Best wishes for a successful and inspiring day.

Marcia Finlayson, PhD, OTR, OT Reg (Ont)
Vice Dean (Health Sciences)
Professor and Director, School of Rehabilitation Thearpy
Keynote Speaker

Biography:
Jay Shaw is a Scientist at Women’s College Hospital’s Institute for Health System Solutions and Virtual Care, and Assistant Professor (Status) at the Institute of Health Policy, Management and Evaluation at University of Toronto. His research brings insights from the social sciences to key topics in health services and policy. More specifically, he looks at how and why changes in health care are implemented in Canada and abroad. Jay has a particular interest in comparative health systems research to understand innovations in health policy and to identify strategies for the successful implementation of research and policy. Jay’s interdisciplinary research is currently focused on the implementation of health system innovations such as virtual care technologies and new models of integrated care. Jay is trained as a Physical Therapist.

Title of Presentation:
The Value of Rehabilitation to Health Innovation: Critical Perspectives on the Future of Care

Description of Presentation:
This talk will outline the current dimensions of health innovation in a global context, presenting a definition of “innovation” and the activities that are dominating attention in the effort to innovate in health systems in Canada and internationally. A commentary on the role of rehabilitation in informing health innovation, and the unique offerings of rehabilitation to the future of health systems, will be provided. Emerging critical perspectives on rehabilitation will then be described, and they will be brought to bear on the innovation discourse in health care. This talk will conclude by presenting three key challenges facing rehabilitation science in order to promote a positive future for health systems and population health more generally.

Dr. Jay Shaw, PT, PhD
Scientist, Women’s College Research Institute and the Women’s College Hospital Institute for Health System Solutions and Virtual Care Assistant Professor (status only), Institute of Health Policy, Management, and Evaluation, University of Toronto
Keynote Speaker

Biography:
Dr. Linna Tam-Seto is a Post-Doctoral Research Fellow with the Health Services & Policy Research Institute (HSPRI) at Queen’s University. Her post-doctoral work involves the development of the #Here4U Military Version, mobile app to support the mental health and well-being of military member, Veterans, and their families. The #Here4U Military Version app is a multi-organization, multi-disciplinary project that includes Queen’s University HSPRI, Queen’s University Centre for Advanced Analytics, IBM Canada, the Canadian Institute for Military and Veteran Health Research, Department of National Defence, and the Canadian Armed Forces. Dr. Tam-Seto’s primary research area focuses on the health and well-being of military members, Veterans, and their family members including work on resiliency, mental health difficulties, access to health care services, and the identification and implementation of cultural competencies for health providers working with families. Her research interests have also expanded to understanding the military-to-civilian transition in servicewomen and ill/injured members as well as the health and well-being of Public Safety Personnel families. Dr. Tam-Seto teaches in the Master of Science in Occupational Therapy and Doctor of Science in Rehabilitation and Health Leadership programs in the School of Rehabilitation Therapy at Queen’s University. The same School, which she graduated from with an Occupational Therapy degree nearly 20 years ago.

Title of Presentation:
From Research to Practice: Applying Rehabilitation Science to the Health and Well-being of Military Members, Veterans, and their Families

Description of Presentation:
This lecture will provide an overview of the unique health needs of military members, Veterans, and their families and how research from a rehabilitation science perspective has been used to understand those health challenges and inform development of supports. This talk will conclude by presenting three key challenges facing rehabilitation science in order to promote a positive future for health systems and population health more generally.

Linna Tam-Seto, OT, Ph.D
Post-Doctoral Research Fellow, Health Services & Policy Research Institute, Queen’s University; Adjunct Faculty, School of Rehabilitation Therapy, Queen’s University; Chair, Student & Post-Doc Engagement Committee, Canadian Institute for Military and Veteran Heath Research.
Thursday at a Glance

Thursday May 23rd

8:00 - 8:55 Registration & Breakfast

9:00 - 9:30 Opening Remarks
Richard Reznick – Dean of Health Sciences

9:30 – 10:30 Session 1: Tools & Tech
Tovi Ander - Listening to the experts: The importance of involving clients in assistive technology co-design
Shuangxi Li - Expanding our understanding of children within their context using wearable technology
Stephan Dobri - Robotic exoskeleton use to assess motor function, cognitive function, and proprioception in child development (5-18 years old)

10:30 – 10:45 Nutrition Break

10:45 – 11:45 Keynote Speaker – Dr. Jay Shaw
The value of rehabilitation to health innovation: Critical perspectives on the future of care

11:45 – 1:00 Lunch Break & Poster Judging & Viewing

1:00-2:20 Session 2: Special Topics
Amanda Mofina - The role of health administrative data in rehabilitation therapy
Ashley Williams - From Canadian Forces health services to provincial primary care during transition to civilian life
Ashleigh Forsyth, - The effect of a wilderness adventure program on stigma among Canadian Veterans
Shawna Burnett - How do I say what I’m feeling: A program to enable immigrant and refugee clients’ healthcare access

2:20 - 3:00 Nutrition Break & Poster Viewing

Session 3: Pain and Rehabilitation Across the Lifespan

3:00-4:40
Samantha Noyek - Scoping systematic review: Available methods for capturing emotional well-being (EWB) directly from children with severe motor and communication impairment.
Zoe Letwin - Determining future physical therapist’s professional identity in regard to pain
Emily Hladkowicz - The PREHAB Study: A prospective randomized clinical trial of exercise therapy for people living with frailty having cancer surgery
Kyle Vader - Prescribing physical activity and exercise for adults living with chronic pain: implications for rehabilitation providers
Christine Mills - Using the social ecological model to explore nutritional risk in community-dwelling older adults

4:40-4:45 Conclusion of the Day

Social Event

Date: May 23, 2019
Time: 6:00-9:00pm
Where: Stone City Ales, 275 Princess St. Kingston ON

One drink ticket and a variety of hors d’oeuvres will be provided.

This is a seperately ticketed event. Please see a registration desk attendant if you have not registered and would like to join us!
Day 2- Friday May 24th

10:00 - 10:30  Registration & Breakfast

10:30 - 11:30  Keynote Speaker – Dr. Linna Tam-Seto
From research to practice: Applying rehabilitation science to the health and well-being of military members, veterans, and their families

11:30 – 11:45  Nutrition Break & Poster Viewing

Session 1: Neurology

11:45 - 1:30  Mitchell Brenton - The Oasis seniors supportive living model of aging-in-place: comparing baseline mobility and physical activity outcomes between original and new sites.

Alicia Hodgins - Validity of wearable sensors in evaluating post-stroke gait quality

Muhammed Zaman - People with Parkinson’s disease face significant barriers to access healthcare services

Julie Petrin - Perspectives of Ontarians with Multiple Sclerosis on accessing healthcare services for managing their condition

Olivia Manning - Embracing complexities when designing health interventions: A proposed study of a community-based exercise transition program for community-dwelling individuals with chronic stroke.

1:30 - 2:15  Lunch Break

2:15 - 2:30  Closing Remarks & Presentation of Prizes

Posters for Viewing Both Days

Askari, Soraya - Protocol for a feasibility study of an evidence-based interactive website plus coaching for managing fatigue in multiple sclerosis: A pilot randomized controlled trial

Bobbette, Nicole - Adults with intellectual and developmental disabilities & interprofessional team-based primary health care: The development of a scoping review protocol

Empey, Jackson - Distance sensing in exoskeletal applications

Johannessen, Erika - Performance enhancing psychological skills in medical simulation

Neff, Evan - Roll with it: Increasing global accessibility to assistive technology by rethinking design, distribution and production

Rajachandrakumar, Roshanth - Progress update for a multi-site randomized controlled trial of MS INFOm: An interactive fatigue management resource for persons with multiple sclerosis

Sharma, Yashoda - Health care provider utilization and barriers to access for people with Multiple Sclerosis

Sulaiman, Surjo - Exploring the meaning of quality of life among polio survivors in Northern Nigeria

Vader, Kyle - Experiences participating in physical activity and exercise among adults living with chronic pain: An interpretive description qualitative study
Listening to the experts: The importance of involving clients in assistive technology co-design
Ander, T., & Donnelly, C.

**Background:** By 2036, older adults will represent an estimated 25% of the population of Canada. The vast majority of older adults want to continue to live at home and independently for as long as possible and are aided by the support of assistive technology. However, studies have found that between 18-53% of assistive technology prescribed to older adults are not used, and the rate of non-use increases over time.

**Objectives:** The aim of this study was to understand the experience of the end-user in the assistive technology design process in order to maximize their participation in this process and ensure a product that meets their needs.

**Methods:** The CIHC framework was used to design a course where biomechanical engineering students and occupational therapy students worked with end-users to design assistive technology over a six-week timeframe. During this time, the researchers conducted interviews with each of the end-users to gain an in-depth understanding of their experiences engaging with students in the design process and their perspectives on the usability of the final assistive devices. The interviews were analyzed using NVivo software.

**Results:** Four broad themes were identified. The first two are about the participants’ working relations with the students. The second two are about the devices themselves.

**Conclusions:** To be determined.

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Protocol for a feasibility study of an evidence-based interactive website plus coaching for managing fatigue in multiple sclerosis: A pilot randomized controlled trial
Askari, S., Davies, S., & Finlayson, M.

**Background:** Fatigue is one of the most debilitating symptoms in multiple sclerosis (MS). Our team is currently in the mist of a randomized controlled trial (RCT) of MS INFOrm - a website that supports self-directed MS-fatigue management. The trial excludes people with severe fatigue which is averaging around 25% of all people screened for the study. We believe that individuals with high fatigue need greater support to effectively manage their fatigue. Therefore, we are conducting an add-on study to our main trial to test whether adding 1-to-1 coaching to MS INFOrm can better help this population managing their fatigue.

**Objectives:** This study aims to: (1) test the feasibility of intervention (MS INFOrm plus coaching), and (2) examine if the intervention can reduce fatigue impact, and improves self-efficacy for managing MS fatigue.

**Methods:** For this pilot RCT, 24 severely fatigued people with MS (Fatigue Severity Scale score $\geq 5.4$) will be randomly assigned to the intervention group ($n=12$) and control group ($n=12$). Participants in the intervention group will have access to MS INFOrm for 3 months that will be supplemented with up to 6 coaching sessions. Feasibility of intervention will be measured using process, resources, management, and efficacy assessments. All participants will complete a general questionnaire, MS Self-Efficacy Scale, and Modified Fatigue Impact Scale prior to and upon completion of the program.

**Discussion:** This pilot study will provide necessary information to determine whether a larger trial is warranted and how the methods and procedures of current protocol should be modified.
Abstracts

Adults with intellectual and developmental disabilities & interprofessional team-based primary health care: The development of a scoping review protocol

Bobbette, N., Donnelly, C., Weatherbed, E., Duggan, J., & Ufholz, L.

**Background:** Adults with IDD have complex health needs, and consequently a greater need for health care resources compared to the general population. The delivery of quality primary health care is critical; as the World Health Organization notes, primary health care can meet 80-90% of an individual’s health needs over their lifespan. Primary health care services are becoming increasingly comprehensive to address global health trends such as aging and chronic disease, as well as meet the needs of complex or underserved populations such as adults with IDD. Interprofessional primary health care teams have become more prominent over the last decade and are recommended as an approach to meet the needs of adults with IDD. Although supported in principle, there is a lack of understanding of how these models of care are specifically impacting the health of adults with IDD.

**Objectives:** To examine the state of the evidence for interprofessional team-based primary health care and adults with IDD. This review sought to specifically answer, what are the aims and characteristics of interprofessional team-based primary health care services for adults with IDD? What types of health or health service outcomes have been reported in the literature in the implementation of interprofessional team-based primary care interventions for adults with IDD?

**Methods:** The scoping review protocol was developed in accordance with the Joanna Briggs Institute methodology for scoping reviews.

**Results:** A review of the literature will be presented along with a description of key concepts and process for completing the review.

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How do i say what i’m feeling: A program to enable immigrant and refugee clients’ healthcare access

Burnett, S, MScOT (candidate, 2020), & Ghahari, S., PhD, OT Reg. (Ont.)

**Background:** Navigating the Canadian healthcare system (CHC) has proven to be a monumental obstacle course to immigrants nationwide due to barriers such as cultural differences, lack of confidence, and an unawareness of health options. Further, research has identified a need for immigrant health education across many facets of well-being from physical health management, vaccinations, mental health stigmatization, and options for contraception.

Therapists need evidence-based tools to provide their newcomer clients with adequate healthcare access. Therefore, the research team has created ACHIEVE (Accessing Canadian Healthcare for Immigrants: Empowerment, Voice, & Enablement).

**Objectives:**

* Measure the effectiveness of the ACHIEVE program.
* Identify in-demand areas of health literacy for newcomer clients.

**Methods:** The ACHIEVE program consists of 2.5 hour workshops conducted once a week for 7 weeks. Immigrant and refugee participants partook in lectures, group discussions, and activities related to CHC. The current study pilot tested the program using a pre-post study design using the heIQ validated scale. Both open-ended and knowledge questionnaires were also utilized by the research team.

**Results:** Participants (n= 46, 21 female, 21 male, 4 unknown, aged 20-74) demonstrated significantly higher rates of self-reported confidence in health navigation after the program (p= 0.001). Significant increases in health knowledge were reported after all 7 sessions.

**Conclusions:** These results provide evidence for the effectiveness of ACHIEVE as a health literacy program for immigrant clients and offers insight into specific areas of CHC requiring further health literacy. Implications for therapists may be to refer newcomer clients to health literacy programs to improve access and empowerment.
Content validation of Kamath and Stothard questionnaire: A cognitive interviewing study

Dabbagh, A., MacDermid, J. C., Packham, T., & Macedo, L.

**Study design:** cross-sectional cognitive interviewing study

**Introduction:** Accurate diagnosis of CTS is essential for directing appropriate treatment; and also can be important for making decisions about work injury claims. The Kamath and Stothard questionnaire (KSQ) is diagnostic patient questionnaire. Clarity and specificity of these items is critical to diagnostic performance.

**Purpose of the study:** To describe how potential respondents, clinicians and measurement researchers interpret items on the KSQ, to identify and resolve potential sources of misclassification.

**Methods:** Clinicians (n=4), measurement researchers(n=4), participants with CTS (n=5) and a control group (n=5), were interviewed using cognitive interviewing techniques (talk aloud, semi-structured interview probes). A thematic analysis was conducted on the verbatim transcribed cognitive interviews using a cognitive interview framework and classification.

**Findings:** areas where items were unclear to some participants were recorded for each of the nine items. The most common issues errors were categorized into two themes: “clarity and comprehension (51%)” and “relativeness (38%)”. Respondents also identified several symptoms of CTS that are not covered by the KSQ, e.g. weakness and dropping items.

**Discussion:** The problematic items identified in the study have been found to have low specificity and negative predictive values in a previous study. Recommendations were made to modify the wording of the questions and the addition of three new items in the KSQ.

**Conclusion:** Cognitive interviewing guided options for potential improvements in the wording of the KSQ items. Future studies should determine whether modified items, and a revised scale have better diagnostic accuracy.

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Robotic exoskeleton use to assess motor function, cognitive function, and proprioception in child development (5-18 years old)

Dobrić, S.C.D.T., & Davies, C

**Department:** 1: Mechanical and Materials Engineering

**Background:** Quantification of function with clinical populations using robotics has become more common in recent years. Robots offer the benefits of highly repeatable tasks and precise numerical output to quantify participant performance. Meaningful interpretation of the robotic results, however, can be challenging as the output is often only a list of numbers that may be difficult to interpret by clinicians and patients. Models of “typical” performance can be created from robotic data and the information can be converted into a numeric scale which can be easily interpreted. A range of “typical” values can be generated and the distance from these values can be used track improvements during therapies.

**Rationale:** Robotic measures are very precise, allowing patients to see smaller, incremental gains from therapies that may not be detected from conventional assessments. The evidence of small gains may help to motivate patients and keep them from getting discouraged.

**Objective:** To create models of “typical” performance of motor function, cognitive function, and proprioception in children and youth from 5-18 years old.

**Methods:** Two-hundred and eighty-eight participants from 5-18 years old (mean: 13 ± 3 years, 190 male) performed nine tasks on the KINARM Exoskeleton Robot. An algorithm to generate models of “typical” performance has been created. The algorithm creates a mathematical relationship between the participant age, sex, and handedness, and a range of “typical” performance values. Models of “typical” performance will be compared with models generated from clinical populations, such as children with developmental coordination disorder or cerebral palsy, to quantify differences in performance.

**Progress to Date:** The algorithm is currently being analysed to determine its accuracy and repeatability. Once the algorithm has been analysed completely it will be used to generate models of “typical” performance from the KINARM tasks.
Abstracts

Distance sensing in exoskeletal applications

Empey, J., & Chorney, H.

**Background:** Queen’s Assistive Bionics Systems (QABS) is a proposed design team which builds assistive exoskeletal prototypes.

**Objectives:** The current scope of the project involves actuation of the elbow joint in order to assist individuals with low muscular strength.

**Methods:** The initial prototype consisted of a servo actuated elbow brace. The system tracked the wearers movements using a potentiometer and matched them, thereby reducing the passive resistance of the brace. An EMG placed on the wearer’s bicep monitored the muscle potential spikes, which advanced the servo motor at the elbow joint in order to provide torque on the wearer’s arm. The second iteration consisted of a metal brace with a high strength linear actuator. The second prototype used filtering and predictive methods to reduce the resistance of the unit. This version still utilized the same EMG strength activation as prototype 1.

The next prototype varies from previous iterations as it does not connect to the users arm at all points. The device is intended to only be connected to the user at the bicep and shoulder. The rest of the device, is free floating around the forearm, with a light amount of foam used to maintain the arm at the center line. It then uses distacing sensors to track the arm and maintain a constant distance away from it. The force of the device is transmitted by the user to their environment by a force plate above the palm of the user. This system drastically reduces the complexity of the device and should increase the effectiveness for the user.

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The effect of a wilderness adventure program on stigma among Canadian Veterans

Forsyth, A. MSc, Lysaght, R. PhD., Aiken, A. CD, PhD, & Cramm, H., PhD.

**Background:** Operational stress injuries (OSI) are an increasing concern for Canadian Armed Forces (CAF) personnel, particularly those returning from conflict zones. Specialized programming has become available to help this population get the help they need, though stigma remains a barrier to seeking help. Adventure-based wilderness education has shown to have a positive impact on well-being among the Veteran population. This study explores how the Outward Bound program facilitates a stigma-free environment which allows participants to more fully benefit from the therapeutic wilderness setting.

**Methodology:** This exploratory mixed-methods study used a pre-, post-, concurrent-nested mixed-methods design. This small-scale study evaluated the experience of participants (n = 20) in the 2016 program. The Endorsed and Anticipated Stigma Inventory (EASI) was administered at three times followed by a single semi-structured interview (n=6) covering themes related to the OBCV program and perceptions of self- and public-stigma.

**Results:** The Endorsed and Anticipated Stigma Inventory (EASI) was selected to explore constructs of stigma beyond barriers to care. Of the 25 individuals who participated in the program, 20 completed the surveys and 6 completed the interview process. This study found that the program process of the OBCV program facilitated an environment that was perceived by participants to be stigma-free.

**Conclusion:** This study found that the process of the OBCV program facilitated an environment that was perceived by participants to be stigma-free. Evidence from interviews suggests aspects of self-stigma, such as gaining a sense of personal empowerment, may be positively influenced by participation in wilderness or adventure programs.
Abstracts

The PREHAB study: A prospective randomized clinical trial of exercise therapy for people living with frailty having cancer surgery

Background: Frailty is a well-established predictor of adverse postoperative outcomes in older surgical patients. The complexity and risk profile of patients with frailty make them a population who may significantly benefit from exercise prehabilitation.

Objective: To test the efficacy of exercise prehabilitation to improve postoperative functional outcomes for people living with frailty having elective cancer surgery.

Methods: We will conduct a single center, parallel-arm, randomized controlled trial of home-based exercise prehabilitation vs. standard care among patients ≥60 years having elective cancer surgery (intraabdominal/intrathoracic) and who are frail (Clinical Frailty Scale ≥4). The intervention consists of ≥3 weeks of exercise prehabilitation (strength, aerobic, and stretching). The primary outcome is the 6-minute walk test at the first postoperative visit and will be analyzed by intention to treat using analysis of covariance. Secondary outcomes include the short physical performance battery, quality of life and disability free survival. Patient experience will be explored through qualitative interviews.

Results: 165 of 200 participants have been enrolled and randomized into the study and 80% have completed the primary outcome. Seven qualitative interviews are completed, and the Theoretical Domains Framework was used for preliminary analysis. Thus far, participants have found the program easy to follow, well-suited to be completed at home, but more flexibility with the program would be valued.

Conclusions: Home-based exercise prehabilitation is feasible/acceptable to older people with frailty preparing for surgery. Areas for future research include understanding the predictors of adherence to exercise prehabilitation programs for older adults with frailty.

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Validity of wearable sensors in evaluating post-stroke gait quality
Hodgins, A.¹, Lin, Y.¹, Manning, O.¹, Wang, L.³, Ritsma, B.⁴, Bagg, S.⁴, Li, Q.², DePaul, V.³ & Brouwer, B.¹

¹School of Rehabilitation Therapy, Queen’s University, Kingston, Canada
²Department of Mechanical and Materials Engineering, Queen’s University, Kingston, Canada
³State Key Laboratory of Fluid Power and Mechatronic Systems, College of Mech, Hangzhou, China
⁴Providence Care Hospital, Kingston, Canada

Background: Regaining the ability to walk in the community is an important aspect of post-stroke rehabilitation, yet they are commonly evaluated in controlled environments which do not reflect the natural conditions and challenges associated with community ambulation. Wearable sensors can measure spatiotemporal parameters of gait in healthy adults but to our knowledge none of these devices can accurately measure the quality (spatiotemporal indicators) of post-stroke gait in community.

Objective: To determine the validity of wearable sensors with a custom gait analysis algorithm in assessing gait quality on different sloped surfaces in adults with hemiparesis following stroke.

Methods: Healthy and adults with stroke will walk across the GaitRite walkway on level, inclined, and downward surface grades while wearing the Inertial Measurement Units (IMU’s) and GaitUp IMU’s. Intraclass correlation coefficients (ICCs) will be used to determine agreement between the spatiotemporal parameters for all three devices.

Results: Preliminary results will be presented at the conference.

Significance: Wearable sensors that can accurately assess gait quality will enable evaluation of community ambulation aiding in transitioning stroke survivors to function independently in the community.
Measuring the effectiveness of performance enhancing psychological skills in medical simulation

Johannessen, E., Gilic, F., & Davies, C

The Queen's Department of Family Medicine runs a "Nightmares" course each year in the Clinical Simulation Centre to teach emergency medicine fundamentals to first year resident physicians. The simulations throughout the course are designed to challenge participants to make critical decisions for patient care under time and situational pressures that mimic those of a real-world clinical setting. The cognitive load literature suggests that there is an optimal level of stress required for learning; once exceeded, however, this stress can place a strain on working memory and can cause performance and quality of learning to decline. As such, recent literature has focused on techniques for mitigating the negative effects of cognitive load on learning quality using “performance-enhancing psychological skills” (PEPS). One such PEPS recently studied in the emergency medicine literature is the “Beat The Stress, Fool” protocol, which consists of a series of exercises aimed at reducing operator stress during acute care situations. Although each of the components of this protocol has been shown to be effective individually, the tool in its entirety has not been studied in a clinical simulation setting. This study aims to measure the effectiveness of BTSF in clinical simulation using a combination of psychometric and physiologic measures of cognitive load, including heart rate and galvanic skin response.

Determining future physical therapist's professional identity in regard to pain

Letwin, Z.¹, Walton, D.², & Kinsella, A.E.²

Background: Pain education for health care professionals has traditionally been suboptimal. Through the Master of Physical Therapy program, an elective course, Understanding Pain in Rehabilitation (PT9551b) available for physical therapy trainees. As there is little evidence on how physical therapy students experience the course and determining if the course has shaped their professional identities as ‘pain management providers’, we plan to engage directly with students in the program.

Objectives:
- Interview learners on their lived experience of learning about pain.
- Identify if participants understanding of pain has changed.
- Determine participant’s perceptions of pain.
- Interview participants to determine if they experienced challenges while taking the course, Understanding Pain in Rehabilitation.

Methods: Following an interpretive phenomenological philosophy. Interpretive phenomenology, also referred to as hermeneutic phenomenology, aims to uncover the lived-experiences of a person. Single in-depth interviews will take place after the course Understanding Pain in Rehabilitation has been completed and final grades have been released to students. When transcribing the data, reflection will take place intensely. Themes will develop as well as commonalities between each interview. Differences will also be recorded.

Future Directions/Implications: In conducting this study, we believe this may also inspire a more empathic approach to teaching and learning in physiotherapy education as we unveil intrapersonal tensions and offer educators approaches oriented towards sensitivity when these tensions occur. This project forms the first scientific step towards the creation of a new dedicated degree program in interprofessional pain management that is currently under development in Western’s Faculty of Health Sciences.
Expanding our understanding of children within their context using wearable technology

Li, S., Batorowicz, B., & Pelland, L.

Background: The development of the child is significantly associated with his or her continuous interactions and experiences provided by the family and social context (Sameroff, 2009). Therefore, the context, environment, and the experiences of children are important to rehabilitation researchers. Even though there are many available methods to study children’s experiences, including observations, photo elicitation, interviews, participatory digital methods, and subjective experience evaluation, these methods cannot always capture the transactions between the person and the context. The new technology such as wearable technology can be applied to help better understand the transaction between children with disabilities and their context.

Objective: To expand the understanding of the participation of children within their context using wearable technology from the currently available wearables for all age groups

Methods: A scoping review incorporating the frameworks of Arksey and O’Malley (2005) and Levac, Colquhoun, and O’Brien (2010) was conducted. The search in five databases, including CINAHL, MEDLINE, EMBASE, PsycINFO, and ERIC, retrieved 1761 papers published from the past until November 2018.

Results: After the title and abstract screening, a preliminary result has 111 papers that contains 68 empirical studies, 13 reviews, 21 technical reports, 8 commentary papers, and 1 news. Full-text articles assessment is ongoing with the application of inclusion and exclusion criteria.

Embracing complexities when designing health interventions: A proposed study of a community-based exercise transition program for community-dwelling individuals with chronic stroke.

Manning, O.¹, Finlayson, M.¹, Tomasone, J.¹, & DePaul, V¹.
¹Queen’s University, *Research Trainee

Background: Upon discharge from rehabilitation, stroke survivors are encouraged to participate in physical activity (PA) for maintenance of previously achieved goals, continued improvement or recovery, and secondary prevention. However, many stroke survivors are not sufficiently active, and describe the transition to community recreation as challenging. Barriers to PA in stroke are complex and related to stroke severity, personal characteristics, as well as environmental and contextual factors.

The overall aim of this work is to design and evaluate a community exercise transition program to address the complex barriers surrounding ongoing PA in community-dwelling individuals with stroke.

This intervention is considered to be a complex health intervention (CHI), as it has multiple interacting components. CHIs are gaining ascendency in modern health research as a more nuanced approach to the design, implementation and evaluation of interventions than the typical “gold standard” randomized controlled trial (RCT). The Medical Research Council (MRC) Framework for CHI and the Consolidated Framework for Implementation Research (CFIR) offers theoretical and methodological guidance for this work.

Purpose:

1. Describe how the above frameworks are complimentary in developing, implementing and evaluating CHI, using proposed research for a community-based exercise program in stroke as a practical example.
2. Discuss implications for rehabilitation science.

Methods: This work uses multistage mixed-methods. Guidance from the MRC Framework inform methodological decisions at each phase.

Implications: This work will identify if a RCT is justified and ensure that it is rigorously designed using widely used frameworks. This approach has potential to have broad applications in rehabilitation science.
Abstracts

The Oasis seniors supportive living model of aging-in-place: Comparing baseline mobility and physical activity outcomes between original and new sites.


Purpose: There is a pressing need to develop strategies to keep older adults safe, active and engaged in the community. The Oasis Seniors Supportive Living program is an innovative seniors-driven model of aging in place (AIP) that has been running successfully for 10 years in an apartment building in Kingston Ontario. This model integrates health and supportive community services; with specific elements including communal meals, recreation and social activities, and shared-care coordinated approach to provision of health services. The overall purpose of the Oasis Project is to scale-up the Oasis model to seven additional naturally-occurring retirement communities and to describe and evaluate this model of AIP.

Objectives:
1. Describe this model of AIP.
2. Present preliminary results with a focus on mobility-related participation.
3. Discuss implications to rehabilitation science.

Methods/Analysis: Participatory action approach featuring mixed methods. Interviews underwent thematic analysis. Preliminary results of self-report and physical performance measures are to be summarized and where appropriate, between and within building comparisons will be made.

Results: Residents report a variety of benefits, including increased time spent outside of their apartment, engagement in physical activity, and maintenance of functional abilities. Quantitative data collection is ongoing and results will be presented including: strength, balance, gait speed (Short Physical Performance Battery), functional mobility (Timed up and go); fall risk (Fall Risk Assessment Tool), self-efficacy (Modified Falls Efficacy), self-reported mobility participation (Life Space Mobility Assessment); and physical activity (ActivPAL activity monitor).

Conclusions: This model for AIP has great potential for broad application within rehabilitation science.

Using the social ecological model to explore nutritional risk in community-dwelling older adults

Mills, C. M., RD, MPH

Introduction: More than one-third of community-dwelling Canadians aged 65 and older are at nutritional risk. Nutritional risk is associated with frailty, risk of falls, poor quality of life, increased hospitalization, and premature mortality. It is critical to understand the factors related to nutritional risk in community-dwelling older adults.

Objectives: To determine if the Social Ecological Model (SEM) can be used to analyze nutritional risk in community-dwelling older adults.

Methods: Three theories of aging were applied to the study of nutritional risk in older adults: social capital theory, social support theory, and the social ecological model. The databases CINAHL, Embase, Medline, and Google Scholar were used to identify articles related to nutritional risk and these theories of aging. After retrieving relevant articles, the three theories were analyzed to determine which best explains nutritional risk in community-dwelling older adults.

Results: SEM was the most appropriate theory. Not only can the social support and social capital theories be incorporated into SEM, but nutritional risk is affected by many factors at all of the levels within SEM and these also interact across levels.

Significance: Nutritional risk contributes to frailty and the risk of falls. It is important to understand nutritional risk to effectively design interventions to address or mitigate factors contributing to nutritional risk. SEM can be used to guide the development and evaluation of these interventions. If nutritional risk can be reduced, this could improve the health and quality of life for many community-dwelling older adults.
The role of health administrative data in rehabilitation therapy

Mofina, A., Tranmer, J., Miller, J., & Donnelly, C.

Introduction: With the shift towards greater integration of electronic health records in current health care systems, access to an abundance of health administrative data is now within reach. Additionally, there are data linkage opportunities within large administrative databases, which can provide insight into health care services provided, transitions between different sectors, and health utilization outcomes. Health administrative data allow for the exploration of rehabilitation therapy (physiotherapy and occupational therapy) within the context of regional, provincial and even national level service provision. Furthermore, through the use of these data we can look beyond traditional health care utilization outcomes and begin to unpack functional changes in health and how these functional changes are associated with different variations of health care service provision.

Objectives: The aim of this presentation is to describe one approach to using population-level research to better understand the relationship between therapy service provision and subsequent functional and health care utilization outcomes.

Approach: This work is part of a larger observational study employing a retrospective secondary analysis on data available through linked Ontario health administrative databases.

Practice Implications: This research aims to leverage the role of rehabilitation therapy through the use and analysis of routinely-collected population-level data. With these data we can understand and describe the relationship between rehabilitation therapy and routinely used functional and health care utilization outcomes.

Conclusions: Linking functional change to health utilization on a larger scale has the potential to provide quantitative data to support the role of therapists within an outcome driven health care system.

Roll with it

Increasing global accessibility to assistive technology by rethinking design, distribution and production

Neff, E., & Boynton, J.

Background: Around the world, there are many individuals whose quality of life is sub-standard because they do not have access to the assistive technology (AT) they need. The problem of inaccessibility to AT is complex, and globally impactful. The World Health Organization estimates that there are about 1 Billion individuals, globally, who require AT. However, only 10% of that population have access to the devices they need. As part of the Queen’s Biomedical Innovation Team (QBIT), the Roll With It (RWI) team’s goal was to develop a proof-of-concept device to increase accessibility to AT by changing the way the world thinks about the design, distribution, and production of those technologies.

Method: Accessibility to AT is dependant on many factors. To simplify the problem, the team generalized global inaccessibility to AT by defining it in terms of three main sources. Those sources were high cost, inefficient distribution, and a lack of adaptability to unique user needs. Inspired by the growing popularity of “Do it yourself AT” (DIY-AT), the team created a walker-style device comprised mostly of PVC piping. Every component of the device can be purchased locally and assembled in a home, making it optimal for global distribution. Furthermore, the simplicity of the design allows for a wide range of customization to the user’s size, ability, and environmental constraints. Lastly, by utilizing economies of scale and e-commerce platforms, the device has the potential to be produced and distributed globally at a cost of roughly 30 times less than an existing analogous product.
Scoping systematic review: Available methods for capturing emotional well-being (EWB) directly from children with severe motor and communication impairment.

Noyek, S., & Fayed, N.

Background: Children with severe motor and communication impairments (SMCI) describes children whose abilities are significantly hindered by multiple medical conditions5–4, requiring extensive long-term health care and additional non-medical support.5,6 Their self-report is complicated by challenges accessing their perspectives through traditional response methods5,11,14, such as paper and pencil or verbal response.

Objectives: Explore the methods available to capture EWB directly from children with severe motor and communication impairments (SMCI); through direct self-expression or physiological/brain signals.

Methods: On March 18th, 2019 the online database, Ovid MEDLINE (1946 to Present) was systematically reviewed. Three concepts 1) alternative methods of self-expression; 2) EWB; and 3) severe impairment/disability were expanded to include synonymous terms for each (combined with the Boolean operator “OR”), and further combined with the Boolean operator “AND”. Articles were included that presented alternative methods other than paper and pencil or verbal self-report to capture information that could capture EWB for children between 5-25 years old with SMCI. The following databases will be searched following MEDLINE: CINAHL; Embase; PsycINFO; Engineering Village; InSpec; Compendex.

Results: 4624 non-duplicate articles were screened; 17 articles met inclusion criteria. The patient population included children with Cerebral Palsy (10 articles), traumatic brain injury (1 article), quadriplegia (5 articles), and Developmental Coordination Disorder (1 article). Ten articles involved switch mechanisms, and three involved physiological signals. Seven studies solely utilized high-technology methods, only three studies utilized solely low-technology.

Conclusion: Findings demonstrate that few studies have captured methods alternative to traditional means to understand the inside views of children with SMCI. Additionally, there is limited use of administering outcome measures for this population, although high technology methods exist that would enable such activity.

Perspectives of Ontarians with Multiple Sclerosis on accessing healthcare services for managing their condition

Pétrin, J & Finlayson, M.

Background: Multiple sclerosis (MS) requires complex care throughout life. Current Canadian literature demonstrates that persons with MS are high users of healthcare services, yet still have multiple unmet health care needs and low satisfaction with healthcare services received.

Objective: The aim of this study was therefore to investigate access to healthcare from the perspective of Ontarians with MS.

Methods: Interpretive description methodology informed the study design. Data collection involved five focus groups with ten additional follow-up individual semi-structured telephone interviews. Participants were 48 Persons with MS living across Ontario recruited primarily through the MS Society of Canada.

Discussion and Conclusion: People with MS conceptualized access to healthcare services as a process involving a form of cost-benefit analysis. Participants repeatedly concluded that seeking care in managing their MS was not worth it. They explained that the numerous barriers to accessing services encountered in the past outweighed their potential benefit. The most commonly experienced barriers to accessing care included a lack of patient-centered care, restrictive MS-related knowledge of generalists, and lack of affordability of preferred source of care. Ongoing experiences with these barriers led participants to avoid seeking healthcare services until they felt threatened by their health state, leading to use of emergency services. Many also described completely disengaging from traditional healthcare services in favour of alternative treatments. Ontarians with MS report negative experiences with traditional healthcare services that fail to meet their complex care needs. Findings suggest that a patient-centered approach could reduce healthcare avoidance which leads to secondary complications and hospitalizations.
Progress update for a multi-site randomized controlled trial of MS INFoRm: An interactive fatigue management resource for persons with multiple sclerosis

Rajachandrapakumar, R., Askari, S., Petrin, J., Davies, S., Jarvis, S., Smyth, P., Turpin, K., Akbar, N., & Finlayson, M.

Background: People with multiple sclerosis (MS) commonly experience extreme fatigue that negatively impacts their daily activities. Dr. Marcia Finlayson and her team created a website called MS INFoRm (Multiple Sclerosis: An Interactive Fatigue Management Resource) that addresses the sources of fatigue, ways of monitoring fatigue, and strategies to reduce fatigue. This interactive tool allows people with MS to take a personalized and active approach to managing their fatigue.

Objectives: The objectives of this study are to determine: (1) if 3 months use can reduce the impact of fatigue on daily life (primary outcome); (2) improve secondary outcomes such as self-efficacy for managing MS fatigue, self-reported cognitive function, participation and autonomy, and depression; and (3) if benefits are maintained after 6 months.

Methods: This study uses a randomized controlled trial design. We are recruiting up to 200 participants and randomly assigning them to the MS INFoRm group or usual care control group. Both groups will be evaluated on primary and secondary outcomes at baseline, 3-months, and 6-months. We have currently completed 128 baselines, 73 3-month interviews, and 26 6-month interviews.

Results: To date, randomization has produced equivalent groups for all demographic and outcome variables. Preliminary analysis comparing baseline and 3 month interviews show no significant differences, but participants in the intervention group are changing in the expected directions (i.e. fatigue has less effect on their daily life).

Conclusion: If this study shows that MS INFoRm is effective, it could lead to major improvements in access to fatigue management resources in Canada.

Health care provider utilization and barriers to access for people with Multiple Sclerosis

Sharma, Y., Whelan, A., Petrin, J., & Finlayson, M.

Background: People with Multiple Sclerosis (PwMS) require complex care throughout life to meet their varied needs. Current evidence shows that Canadians with MS are high users of healthcare services, however they repeatedly report unmet healthcare needs due to a variety of systemic and financial barriers. MS clinical guidelines highlight the importance of multidisciplinary care, however there is little evidence investigating healthcare service use in Canada.

Objective: To explore the continuum of health care disciplines that PwMS access throughout their disease progression and identify barriers for low uptake of secondary health care services.

Methods: Forty-eight PwMS completed a demographic questionnaire and participated in a focus group or telephone interview. Each interview was guided by a semi-structured guide including open-ended and probing questions.

Results: PwMS used general practitioner (GP) and neurologist services more frequently than allied health professionals. Allied health professionals were consulted at a higher rate by people experiencing severe disability. PwMS felt financial and systemic constraints were significant barriers to accessing secondary services and that although GPs often provided support in navigating the healthcare system, the overall approach to MS care was not preventative in nature.

Conclusions: Increasing GP referrals and awareness of preventative roles of other health professionals can play a role in improving the delivery of multidisciplinary MS management care. Unfortunately, systemic and financial barriers, and policies that solely support medically necessary professionals threaten access to secondary services and multidisciplinary care, which are associated with optimal health outcomes for this population.
Exploring the meaning of quality of life among polio survivors in Northern Nigeria
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**Background:** Consequences of paralytic polio may adversely affect the quality of life of polio survivors. Promotion of quality of life is the ultimate goal of rehabilitation intervention. Various expert-driven operationalization and measurement are typically employed to evaluate quality of life among polio survivors. It is unclear whether this approach reflects what quality of life truly means to polio survivors in northern Nigeria.

**Aims:** To explore the meaning and relevant domains of quality of life, based on the perception of polio survivors in northern Nigeria.

**Method:** Using a qualitative descriptive design, we conducted eight focus group discussions with 48 polio survivors, consisting of 27 men and 21 women. We analyzed the transcribed data based on manifest content analysis and constant comparison, with the aid of NVivo, a qualitative data management program. We reported our findings narratively.

**Results:** Polio survivors in this study described quality of life as a complex, multifaceted construct. Based on their lived experiences, participants characterised quality of life as a blend of satisfaction of needs, happiness, spirituality, and self-image.

**Conclusion:** Spirituality and self-image are rarely reflected in quality of life instruments. Hence, the measurement of quality of life among polio survivors in northern Nigeria needs to consider and reflect these local perspectives.

**Implications:**
- Instruments that reflect local perspectives of polio survivors are essential for evaluation of quality of life.
- Rehabilitation interventions can be directed at satisfaction of needs, happiness, spirituality, and self-image to promote quality of life among polio survivors.
- There is a need to explore the relationship between spirituality, self-image, satisfaction of needs, and happiness among polio survivors.
- Policies that address the promotion of quality of life among polio survivors need to be advanced.

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Experiences participating in physical activity and exercise among adults living with chronic pain: An interpretive description qualitative study
Vader, K.

**Objectives:** (1) To explore experiences with physical activity and exercise and (2) to understand perceived barriers and facilitators to physical activity and exercise from the perspective of adults living with chronic pain.

**Design:** An interpretive description qualitative study using semi-structured interviews was conducted.

**Setting:** Participants were recruited from primary care sites and a hospital-based chronic pain clinic in Kingston, Ontario, Canada.

**Participants:** Adults who self-identified as living with chronic pain (>3 months duration).

**Main Outcome Measures:** An interview guide was developed to explore experiences participating in physical activity and exercise and perceived barriers and facilitators to engaging in physical activity and exercise among adults living with chronic pain.

**Results:** 16 participants (5 men; 11 women) were interviewed. Three major themes (and sub-themes) emerged related to physical activity and exercise among adults living with chronic pain: (1) the challenge of staying active (decreased activity levels due to pain, discomfort during physical activity, and uncertain and fluctuating abilities); (2) factors influencing participation (pain, fatigue, perceived risks, beliefs about physical activity, competing demands, social support, motivation, other health conditions, and access to supports for physical activity or exercise); and (3) perceived outcomes (pain management, functional improvements, social participation, mental health, and overall wellbeing).

**Conclusions:** Participating in physical activity and exercise was described as a challenge for adults living with chronic pain, whereby participation was influenced by a variety of factors. Perceived outcomes of physical activity and exercise went beyond pain management, including improved function, social participation, mental health, and overall well-being.
Prescribing physical activity and exercise for adults living with chronic pain: Implications for rehabilitation providers

Vader, K.

Objective: To explore strategies used by people living with chronic pain to participate in physical activity and exercise and their recommendations for healthcare providers when promoting physical activity and exercise.

Design: Interpretive description qualitative study.

Setting: Participants were recruited from primary care sites and a hospital-based chronic pain clinic in Kingston, Ontario, Canada.

Subjects: Adults (> 18 years of age) who self-identified as experiencing chronic pain (>3 months duration) were interviewed.

Methods: In-depth semi-structured interviews were conducted with participants. Interviews were audio-recorded, transcribed verbatim, and reviewed for accuracy by the interviewer. Transcripts were analyzed using a thematic analysis. Peer debriefing, reflexivity, and multiple in-person meetings were used to establish trustworthiness.

Results: 16 adults (5 men, 11 women) with a median age of 53 years were interviewed. Strategies used by adults with chronic pain to participate in physical activity and exercise included: finding the motivation; setting up for success; leveraging social support; and managing pain and discomfort during activity. Recommendations for healthcare providers when promoting participation in physical activity and exercise for adults living with chronic pain included: the importance of listening; providing tailored advice; being supportive; and making physical activity and exercise programming accessible.

Conclusions: Adults with chronic pain reported using multiple strategies to participate in physical activity and exercise. Recommendations for healthcare providers centered around the importance of listening and taking a supportive approach when promoting participation in physical activity and exercise for this patient population.

From Canadian Forces health services to provincial primary care during transition to civilian life

Williams, A., Cramm, H., & Donnelly, C.

Background: Canadian Armed Forces (CAF) members access Canadian Forces Health Services (CFHS) during service and, after release, must transition to provincial primary care. Veterans experience more health problems than the general population (1) and recent research indicates that primary care is an important source of healthcare service for Veterans during military to civilian transition (MCT) (1, 3). Approximately 31% of Veterans live in Ontario, the province leading the nation in interdisciplinary primary care (IPC); this means Veterans may be accessing primary care in team-based settings. Concerns have been expressed about the capacity of provincial health systems, including primary care, to address the needs of Veterans (3). However, no studies have investigated Veterans’ experience of transitioning from the CFHS to provincial primary care or how IPC teams provide service to Veterans.

Objectives: Increase understanding of Canadian Veterans’ experience of transitioning from the CFHS to provincial primary care and examine how IPC teams provide primary care services to Veterans.

Methods: Two studies will be conducted to address the objectives. First, a phenomenological study (4) will be conducted to explore Veteran experiences of transitioning to provincial primary care. Second, a case study (5) will be conducted with two Family Health Teams in Ontario to examine how an IPC team provides primary care to Veterans during transition to civilian life.

Impact: This study will address a gap in the literature regarding Veteran healthcare transition during MCT. Recommendations will be made for federal and provincial policy changes as well as for primary care providers working with Veterans.
People with Parkinson’s disease face significant barriers to access healthcare services

Zaman, M. S., & Ghahari, S.

Background: People with Parkinson’s disease (PD) need accessing a variety of healthcare services due to the complexity of the condition. However, research shows that the healthcare journey for people with PD is not optimum since they face significant difficulties in navigating healthcare services. This scoping review explored barriers to healthcare services for people with PD. The review aimed to explore barriers to accessing the healthcare services for people with PD.

Methods: Our systematic search of MEDLINE, Embase, CINHAL, and PsycINFO retrieved 992 articles, of which 26 articles retained for analysis after exclusion of duplicates and those that did not meet the study inclusion criteria. We included articles that were published in English and collected data from people with PD on barriers to healthcare accessibility. Two independent reviewers completed the article selection, and data charting. The framework of access to healthcare by Levesque, Harris, & Russell, (2013) was used for charting the data from the selected articles.

Results: The result showed patient-related factors including poor health literacy, lack of communication skills, low self-efficacy, lack of empowerment, belief about disease and medication, poor health status, transportation problem and cost of care act as barriers. Besides, factors including delay in reaching the diagnosis, unavailability of PD specific services, poor communication skills of healthcare providers, lack of coordination and disparity in healthcare setting prevent people with PD in accessing healthcare services.

Conclusions: The findings identified gaps in the healthcare services and suggested future research and the need for health interventions for the people with PD.
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