

Rehabilitation  
Sciences Institute



# RESEARCH DAY

ABSTRACT BOOK | 2022

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# Conference Access Instructions

1. Click the link below to visit the **Quercus page** containing the abstract book, poster presentations, schedule for the day and more!

<https://q.utoronto.ca/courses/222668>

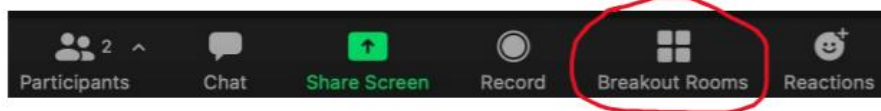
2. Click the link below to join the **Conference Zoom** to join Research Day 2022. Refer to the [conference schedule](#) for a detailed breakdown of the day.

<https://utoronto.zoom.us/j/88936692569>

**Password:** **research**

3. Certain aspects will be delivered through breakout rooms. To access **breakout rooms**:

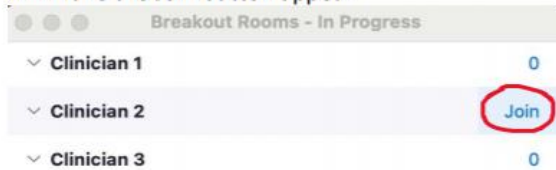
1. At the bottom of the screen, click on the Breakout Rooms button



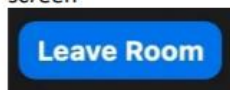
2. Windows: Click on the Join button to the right of the room you'd like to join



Mac: hover your mouse over the number to the right of the room you'd like to join; this will make the Join button appear



3. To return to the main room, click the Leave Room button at the bottom right of the screen



Please note that **breakout rooms will not work** unless you use the client/desktop version of Zoom (not the browser version). [CLICK HERE](#) to make sure you have the most up to date version of Zoom installed on your computer before joining the conference.

# A message from the Director of RSI, Dr. Angela Colantonio



*Dear RSI Community,*

With great pride and gratitude, I welcome you to the 2022 RSI Research Day, a highlight of our academic year. After another COVID year, I am particularly excited to celebrate the remarkable breadth and excellence of innovative interdisciplinary rehabilitation science and knowledge exchange. Our **event theme** this year is the **Future of Rehabilitation Sciences**. Our student-led event showcases how, in addition to demonstrating their research excellence, our students personify a commitment to social responsibility. Today, our students focus our attention on the most pressing global issues with discussions on Sustainability, Equity, Diversity, and Inclusion as well as on Technology in Health Sciences. I wish to thank and welcome our esteemed invited speakers who will address these research day themes: Dr. Sarah Blanton, Dr. Jed Meltzer, Dr. Lisa Richardson, and Dr. Fiona Miller, we look forward to learning from you.

This year was marked with many successes. A spectacular external review confirmed RSI's world leading status and unsurpassed breadth of opportunities for students. Impressively, our high calibre student body was identified as a strength. Indeed, our students receive awards for both academic excellence and leadership including diversity, equity, and inclusion. Our student leaders are at the forefront of our highly successful *Leadership Rehab Rounds* and *RSI Speakers Series*. Plus, they support us through the *Mental Health Committee* and a phenomenal newsletter that is shared and welcomed beyond RSI. Our student-led publication in its 7<sup>th</sup> year, *Rehab Ink*, continues to report on current rehabilitation research and practice issues from diverse perspectives, and now includes a podcast!

Our faculty are not only top researchers but dedicated mentors as well. A recent Temerty Faculty of Medicine survey of our students indicated that over 80% reported the exceptional impact of supervisors on training — well above the overall average for the faculty. Thank you to all the supervisors for their dedicated and impactful mentorship. We are also grateful for the support from contributing departments, donors, funders, alumni, hospitals and community partners. An enormous thank you to our administrative staff, Loida Ares, Diane Wiltshire, and Jessica Boaf, who this year were recognized with the well-deserved Temerty Staff Impact Award for Fostering a Collaborative and Inclusive Environment Team.

I will end with a special thank you to the Research Day Organizing Committee (Beatrice Manduchi, Wade Michaelchuk, Lovisa Cheung, Natasha Benn, Christine Muscat, Anna Huynh, Daniela Testani, Brynna Kerr, Sara Hanafy, Diane Wiltshire and Luc De Nil) for the excellent program of invited talks and wide range of student presentations. We know you have worked tirelessly under uncertain circumstances to make this day happen!

Wishing everyone a fantastic day!

Sincerely,

A handwritten signature in black ink, appearing to read 'Angela Colantonio'.

**Angela Colantonio, PhD, OT Reg. (Ont.), FACRM, FCAHS**

Professor and Director, Rehabilitation Sciences Institute

Professor, Dept. of Occupational Science & Occupational Therapy, University of Toronto

Senior Scientist, KITE-Toronto Rehabilitation Institute-UHN



## A message from Antony Duttine

*Pan American Health Organization (PAHO), World Health Organization (WHO)*

### Dear RSI students and RSI community

Congratulations as always to the exceptional work that you have done and continue to do in Toronto to advance the field of rehabilitation science. Your work does not go unnoticed and the evidence that you, and scientists like you around the world, are generating are invaluable to us at the WHO to continue our efforts to ensure that all people who need rehabilitation have timely and quality access to it. This is more important now than ever. On top of the [2.4 billion people](#) worldwide that were already known to have a potential need for rehabilitation, we are now seeing the legacy of COVID-19 on our bodies and minds. Rehabilitation is already having, and will continue to have, a critical role to play in supporting those with ongoing effects from COVID-19 infection. There is an urgent need to ensure that there is a continual stream of evidence and data to inform the most appropriate interventions and practices. I look forward to seeing what more groundbreaking research you can develop in the year ahead.



*Antony Duttine*  
PAHO/WHO

## A message from the Graduate Coordinators of RSI, Dr. Sarah Munce, Dr. Alison Novak



Welcome to the Rehabilitation Sciences Institute (RSI) Research Day 2022! The goal of this day is to profile the breadth and depth of theoretical and clinical research that is being conducted by our amazing students within the programs of RSI. The research conducted by our RSI students spans the fields of occupational science and therapy, physical therapy, speech language pathology, engineering, and rehabilitation science. These research activities adopt qualitative and/or quantitative methods to answer research questions that address some of the most complex health issues that confront our society today. Our students collaborate with our RSI faculty and perform their work at the University of Toronto, the teaching hospitals affiliated with the University of Toronto, and local, national, and international community partners.

The RSI Research Day has been conceived, developed, and organized by members of the RSI Research Day Committee which is composed and led by our students. The Research Day Committee has given extensive thought about the focus of RSI Research Day and its organization. The opportunity to gain a deeper understanding of the future of rehabilitation has provided us with an opportunity to expand our knowledge of the field of rehabilitation science and share our thoughts about the contemporary issues that we are confronted with today.

We would like to thank the RSI Research Day Committee for their dedication to organizing the activities of today. We would like to extend our sincerest thank you Beatrice Manduchi, Wade Michaelchuk, Lovisa Cheung, Natasha Benn, Christine Muscat, Anna Huynh, Daniela Testani, Brynna Kerr, Sara Hanafy, Diane Wiltshire, and Luc De Nil.



**Sarah Munce, PhD**

Assistant Professor (status) & Graduate Coordinator,  
Rehabilitation Sciences Institute,  
Scientist, KITE-Toronto Rehabilitation Institute, University  
Health Network  
Assistant Professor (status), Department of Occupational  
Sciences and Occupational Therapy, Rehabilitation  
Sciences Institute, Institute of Health Policy, Management  
and Evaluation, University of Toronto



**Alison C. Novak, PhD**

Graduate Coordinator, Rehabilitation Sciences Institute,  
Scientist, KITE-Toronto Rehabilitation Institute, University  
Health Network  
Assistant Professor (status), Department of Occupational  
Sciences and Occupational Therapy, Rehabilitation  
Sciences Institute, Faculty of Kinesiology & Physical  
Education, University of Toronto

## A message from the Associate Director of RSI, Dr. Luc De Nil



Welcome to the 2022 Rehabilitation Sciences Institute Research Day. This is a unique opportunity for our MSc and PhD students to showcase the exciting research projects that they are pursuing as part of their academic degree. These projects tackle important basic and applied research questions in the disciplines of speech-language pathology, occupational science and therapy, physical therapy, and rehabilitation sciences. As a participant at this event, you will be able to interact with our doctoral-stream students as they discuss their work spanning the full interdisciplinary breadth of rehabilitation research, from basic laboratory-based projects to clinical intervention and health policy using a variety of quantitative and qualitative approaches.

The research day will once again be a virtual event. While this necessarily will limit opportunities for personal interactions throughout the day, we hope that it will allow many more to attend the event and become familiar with the ground-breaking research that is being conducted by our students and faculty. This year's theme is the future of rehabilitation. You will hear from keynote speakers who were invited for their exceptional contributions to rehabilitation and whose thinking

will help shape that future. In addition, panel discussions, short presentations and posters by our students, many of whom undoubtedly will become leaders in their field, will allow them to share their personal vision for rehabilitation.

This day would not have been possible without the energy, amazing organizational talents, and exceptional problem-solving skills of our student research committee: Wade Michaelchuk, Beatrice Manduchi, Christine Muscat, Reeman Marzouqah, Brynna Kerr, Daniela Testani, Natasha Benn, Sara Hanafy, Diane Wiltshire, Meera Premnazeer, Lovisa Cheung and Anna Huynh. My sincere thanks to each one of these students for their many contributions to the success of this event.

I hope that you will enjoy today's events and that it will inform and inspire you to continue your own contributions to building a better future for rehabilitation.

**Luc De Nil, Ph.D.**

Associate Director, Rehabilitation Sciences Institute

Professor, Speech-Language Pathology

## A message from the Rehabilitation Sciences Graduate Students' Union (RSGSU)



RSI Research Day is an annual, student-led event which is organized and supported by members of the Rehabilitation Sciences Graduate Students' Union (RSGSU). After two successful virtual Research Day events in 2020 and 2021, the RSGSU is thrilled to welcome you back our third consecutive virtual showcase of student research within the RSI in 2022. We wish to acknowledge the hard work, creativity, and resilience demonstrated by the RSI students, faculty, and staff within the RSI in the past year, which has enabled continued research progress despite challenging circumstances.

Research Day is an opportunity to come together as a rehabilitation community, highlight the diversity of research taking place within the RSI, and recognize the achievements of students, faculty, and staff in the RSI community. We hope that this forum enables learning, encouragement, and meaningful dialogue among attendees regarding the future of rehabilitation.

We would like to thank the 2021 RSI Research Day Committee co-chairs, Wade Michaelchuk and Beatrice Manduchi, as well as the student committee members and department representatives for their hard work and dedication in making this event possible.

To learn more about the RSGSU and find out how to get involved, **email us at:** [rehabsciencegsu@gmail.com](mailto:rehabsciencegsu@gmail.com) and follow us on **Twitter:** @RSGSU, **Instagram:** @uoft\_rsi, and **Facebook:** Rehabilitation Graduate Student Union.

Sincerely,

Erica Dove and Nirusa Nadesar (RSGSU Co-Presidents),  
on behalf of the RSGSU Executive Team



# Land Acknowledgement

We wish to acknowledge this land on which the University of Toronto operates. For thousands of years, it has been the traditional land of the Huron-Wendat, the Seneca, and the Mississaugas of the Credit. Today, this meeting place is still the home to many Indigenous people from across Turtle Island and we are grateful to have the opportunity to work on this land.

We encourage you to take a moment to reflect on what being on this land means to you and what opportunities it affords you. We also encourage you to take time to read and reflect upon the impact of Colonialism in Canada within Indigenous communities. The Truth and Reconciliation Report Summary is a great starting point and identifies 94 calls to action. Additional resources and ways to support local Indigenous communities can be found below.

- Donate to the [Toronto Aboriginal Support Services Council](#).
- Donate to [Canadian Charities Helping Indigenous communities in Canada](#).
- [Next 150](#) has a detailed list of actions and practices you can take today and highlights and amplifies indigenous authors and voices.
- [Beyond 94](#) is an initiative that tracks the progress of the 94 calls action set out in the Truth and Reconciliation Report.
- Learn about events and current research through the [Toronto Indigenous Peoples Portal](#).
- Learn more about the [treaties in Ontario](#).
- [Whose Land](#) is a web-based app that uses technology to assist users in identifying Indigenous Nations, territories, and Indigenous communities across Canada.

# Schedule of the Day

<p><b>RSI Research Day</b>          Thursday, May 26<sup>th</sup>, 2022          8:50 a.m. – 3:30 p.m.</p> <p><a href="https://utoronto.zoom.us/j/88936692569">https://utoronto.zoom.us/j/88936692569</a></p> <p>Password: research</p>	
<b>MORNING SESSION</b>	
<b>8:50 – 9:00</b>	<b>Log on to Online Virtual Platform</b>
<b>9:00 – 9:15</b>	<p><b>Opening Remarks</b>  <i>Zoom, Main Room</i></p> <p>❖ <b>Dr. Angela Colantonio, Director of RSI</b></p>
<b>9:15 – 10:00</b>	<p><b>Keynote Address</b>  <i>Zoom, Main Room</i></p> <p>❖ <b>Dr. Sarah Blanton, Environmental Sustainability in Physical Therapy and within PT Curricula</b></p>
<b>10:00 – 10:45</b>	<p><b>Student Presentations: 3+2 Minute Presentations</b>  <i>Zoom, Main Room</i></p> <ul style="list-style-type: none"> <li>❖ <b>Do the Digital Bellies of Flexor Digitorum Superficialis and Flexor Digitorum Profundus Contribute Similarly to Grasp?</b>  <b>Emma Campisi, MSc Student</b></li> <li>❖ <b>Barriers and facilitators to aerobic exercise testing by physical therapists in inpatient stroke rehabilitation settings across Canada: a theory-informed web-based survey</b>  <b>Jean Michelle Legasto-Mulvale, PhD Student</b></li> <li>❖ <b>Employment and accommodation needs and the effect of COVID-19 on men and women with traumatic brain injury: A pilot study</b>  <b>Sara Hanafy, PhD Student</b></li> <li>❖ <b>Accuracy of a wearable device for assessing sedentary behavior in chronic obstructive pulmonary disease</b>  <b>Wade Michaelchuk, PhD Student</b></li> <li>❖ <b>Muscle Matters: An exploratory study on lower limb isokinetic strength and reactive balance performance post-stroke</b>  <b>Samantha Seaton, PhD Student</b></li> <li>❖ <b>Factors Influencing the Clinical Adoption of Gait Analysis Technologies with a focus on clinical efficacy, clinician perspectives, and external barriers and facilitators: A Scoping Review Protocol</b>  <b>Yashoda Sharma, PhD Student</b></li> </ul>

<b>10:45 – 11:00</b>	<b>Break</b> <i>Zoom, Main Room</i> ❖ <b>Stretching Break with Wade</b>
<b>11:00 – 12:00</b>	<b>Panel Discussion – The Future of Rehabilitation</b> <i>Zoom, Main Room</i> 1. <b>Expert in Equity, Diversity and Inclusion</b> ❖ <b>Lisa Richardson, MD</b> Physician and clinician-educator at Temerty Faculty of Medicine, University of Toronto 2. <b>Expert in Technology</b> ❖ <b>Jed Meltzer, PhD</b> Senior Scientist, Rotman Research Institute, Baycrest Hospital 3. <b>Expert in Sustainability</b> ❖ <b>Fiona Miller, PhD</b> Professor of Health Policy, Dalla Lana School of Public Health, Present & University of Toronto
<b>12:00 – 12:30</b>	<b>Lunch and Optional Networking</b> <i>Zoom, Breakout Rooms</i>
<b>AFTERNOON SESSION</b>	
<b>12:30 – 1:10</b>	<b>Student Presentations: 3+2 Minute Presentations</b>  ❖ <b>Therapists’ perspectives on using brain-computer interface-triggered functional electrical stimulation therapy for individuals living with upper extremity paralysis</b> <b>Hope Jervis-Rademeyer, PhD Student</b>  ❖ <b>Activity-based therapy after spinal cord injury or disease: Development of a tracking tool using the Delphi Method</b> <b>Anita Kaiser, PhD Student</b>  ❖ <b>Mobile Technology-Based Interventions for Stroke Self-Management Support: A Scoping Review</b> <b>Alexandra Thompson, PhD Student</b>  ❖ <b>Exergame Design for Balance Rehabilitation: Stakeholder and Lived Experience Perspectives</b> <b>Erica Dove, PhD Student</b>  ❖ <b>Facilitators and barriers to implementation of swallowing therapies for Head and Neck Cancer patients: preliminary results from a qualitative study</b> <b>Beatrice Manduchi, PhD Student</b>  ❖ <b>Using the COM-B Model and Theoretical Domains Framework to understand the workplace disclosure experiences, influencers, and needs of autistic youth and young adults</b> <b>Vanessa Tomas, PhD Student</b>
<b>1:10 – 2:10</b>	<b>Poster Presentations and Judging</b> <i>Zoom, Breakout Room</i>

<b>2:10 – 2:20</b>	<b>Bio Break</b>
<b>2:20 – 2:50</b>	<b>Awards Ceremony</b> <i>Zoom, Main Room</i> <ul style="list-style-type: none"> <li>❖ RSI Recognition Awards <ul style="list-style-type: none"> <li>❖ Faculty &amp; Staff</li> <li>❖ Student</li> <li>❖ Alumni</li> </ul> </li> <li>❖ Three Minute Presentation Competition</li> <li>❖ Poster Presentation Competition</li> <li>❖ Knowledge mobilization Competition</li> <li>❖ Social Media Contest Winners</li> </ul>
<b>2:50 – 3:00</b>	<b>Closing Remarks</b> <i>Zoom, Main Room</i> <ul style="list-style-type: none"> <li>❖ <b>Beatrice Manduchi, Research Day Co-Chair, PhD Student</b></li> <li>❖ <b>Wade Michaelchuk, Research Day Co-Chair, PhD Student</b></li> </ul>
<b>3:00 – 3:30</b>	<b>Optional Networking Time</b>



# Our valued Sponsors

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RESEARCH INSTITUTE

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# Our valued Donors

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*Dr. Angela Colantonio*



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**TORONTO** | International Centre for  
Disability and Rehabilitation

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*Dr. Larry Robinson*

## 2022 Research Day Theme



# THE FUTURE OF REHABILITATION

We are thrilled to host an innovative theme for 2022 RSI Research Day: *Future of Rehabilitation Sciences*.

This theme refers to topics or interventions that reflect the ongoing, changing landscape of rehabilitation sciences. These topics may include, but are not limited to...

- sustainability in rehabilitation services (i.e., how the delivery of health care impacts the natural environment and in turn human health);
- use of digital health technology in optimizing rehabilitation services and improving the quality and access to rehabilitative interventions;
- equity, diversity, and inclusion in rehabilitation and health care;
- as well as other topics shaping the future of rehabilitation (e.g., preventative interventions, risk factor management, personalized care reflecting the ongoing global shift from patient- to person-centred care).

We are excited to host a number of speakers and panelists with different expertise and addressing various topics related to the Future of Rehabilitation Sciences.

# Keynote Speaker

**Dr. Sarah Blanton**

*Topic: Environmental Sustainability in Physical Therapy and within PT Curricula*



Sarah Blanton is a Professor of Rehabilitation Medicine at Emory University School of Medicine, Division of Physical Therapy. Dr. Blanton is an NIH-funded researcher, with several grants exploring the integration of family care partners into the rehabilitation process. Dr. Blanton's DISCOVER Lab (Digital Scholarship Enhancing Rehabilitation) explores various ways digital scholarship can enhance rehabilitation research, education and clinical practice and promote interdisciplinary collaboration. She is the founding Editor-in-Chief of the Journal of Humanities in Rehabilitation (JHR), an

international and peer reviewed, multi-media journal using a collaborative model with humanities scholars, rehabilitation professionals, patients, and their families to gain a greater understanding of the human experience of disability.



## Student Oral Presenters



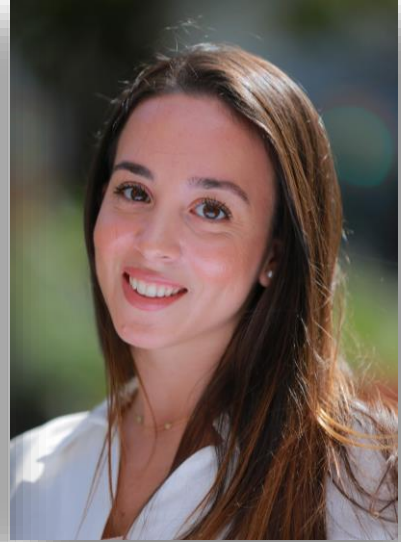
**Emma Campisi**

MSc Student



**Erica Dove**

PhD Student



**Sara Hanafy**

PhD Student



**Hope Jervis Rademeyer**

PhD Student



**Anita Kaiser**

PhD Student



**Jean Michelle Legasto-  
Mulvale**

PhD Student

## Student Oral Presenters



**Beatrice Manduchi**

PhD Student



**Wade Michaelchuk**

PhD Student



**Samantha Seaton**

PhD Student



**Yashoda Sharma**

PhD Student



**Alexandra Thompson**

PhD Student



**Vanessa Tomas**

PhD Student

# Panel discussion

## *Topic: The Future of Rehabilitation*

### Expert in Equity, Diversity and Inclusion

#### **Lisa Richardson, MD**

Temerty Faculty of Medicine, University of Toronto

University Health Network

Dr. Lisa Richardson is a mixed blood Anishinaabe physician and clinician-educator in the Temerty Faculty of Medicine at the University of Toronto. She practices General Internal Medicine at the University Health Network and is a Centre Researcher at the Wilson Centre with a scholarly focus on the integration of Indigenous and critical perspectives from the social sciences into medical education. Dr. Richardson is the Associate Dean, Inclusion and Diversity at Temerty Medicine and is the Strategic Lead in Indigenous Health for Women's College Hospital where she founded the Centre for Wise Practices in Indigenous Health. Dr. Richardson is a powerful advocate for Indigenous health equity at both the local and the national level and her contributions have been recognized through numerous local, national, and international awards.



### Expert in Technology

#### **Jed Meltzer, PhD**

Rotman Research Institute, Baycrest Hospital

Associate Professor Department of Psychology and Speech-Language Pathology, University of Toronto

Dr. Meltzer is a Senior Scientist at the Rotman Research Institute of Baycrest Hospital, and an Associate Professor in the departments of Psychology and Speech-Language Pathology at the University of Toronto. He did his Ph.D. at Yale University and a postdoctoral fellowship at the NIH in Bethesda, Maryland. His basic research deals with language representation in the brain, emphasizing the measurement and interpretation of the brain's electrical activity through recordings of electromagnetic fields produced by neurons. His applied research includes treatment of stroke and dementia using behavioural therapy, pharmacology, and noninvasive brain stimulation. This work has encompassed the use of software to assess and diagnose neurodegenerative disorders, and to provide efficient therapeutic exercises through asynchronous telerehabilitation.





## Expert in Sustainability

### **Fiona Miller, PhD**

Institute of Health Policy, Management and Evaluation in the Dalla Lana School of Public Health, University of Toronto

Dr. Fiona A. Miller is a Professor of Health Policy in the Institute of Health Policy, Management and Evaluation in the Dalla Lana School of Public Health at the University of Toronto. She holds the Chair in Health Management Strategies and is a Connaught Scholar.

Miller directs the Centre for Sustainable Health Systems at the University of Toronto and a national initiative for climate action and awareness in healthcare: CASCADES. In these roles, she leads and supports efforts to improve the sustainability of health systems through research, education, practice change and policy advocacy.

As a policy scholar, Miller brings a critical political economy perspective to the analysis of technological innovation and sustainability transitions. Her work aims at sustainable 'demand driven' innovation.





# Awards and Contests

We appreciate our sponsors and in-kind donors for making these opportunities possible!

## ***Oral Presentation Competition***

- > The top 6 presentations will win a student award.

Submit your ballot by 1:10pm! The winners will be announced at the afternoon Awards Ceremony.

## ***Poster Competition***

We have 6 student awards up for grabs:

- > Best Poster – MSc
- > Best Poster – PhD
- > Best Poster – People’s Choice (MSc)
- > Best Poster – People’s Choice (PhD)
- > Best Poster – Equity, Diversity, and Inclusion x 2

Submit your ballot by 2:10pm! The winners will be announced at the afternoon Awards Ceremony.

## ***RSI Recognition Awards***

- > Student Recognition Awards
- > Alumni Recognition Awards
- > Faculty Recognition Awards

Thank you for your nominations/submissions!

## ***Knowledge Translation Competition***

RSI students were invited to create an infographic of their research which will be shared at Research Day. Attendees will vote on their favourite infographics.

- > The **top two infographics will receive a knowledge translation award!**

Submit your ballot by 1:10pm! The winners will be announced at the afternoon Awards Ceremony.

## ***Social Media Contests***

What better way to kick off **RSI Research Day 2022** than with giveaways!

- > **Event Day Twitter Raffle (Deadline: May 26<sup>th</sup> @ 1:10pm EST)**

To participate, follow us on Twitter (@RSIUofT), keep your eyes peeled for the #RSIResearchDay #Giveaway post that will be shared on May 26th, then RETWEET it to be entered into the draw for 1 of 3 Mastercard/Visa gift cards!

All contest winners will be announced live at the Awards Ceremony on May 26<sup>th</sup>.

***Good luck!***

**RSI students, we want to feature you in our next episode!**



**LET'S TALK ABOUT THE FUTURE OF REHAB!**

Please email us at [podcast.rehabink@gmail.com](mailto:podcast.rehabink@gmail.com).

The  
**rehabINK**  
Podcast



<https://rehabinkmag.com/podcast/>

**Have you ever wanted to be on a podcast?** You are in luck! The [rehabINK Podcast](#) is recruiting students to hear your thoughts on the future of rehabilitation.

If you haven't already heard about the [rehabINK Podcast](#), it is led by graduate students in the Rehabilitation Sciences Institute (RSI). It is an academically driven channel dedicated to producing captivating stories of rehabilitation science, disability, and public health. Each episode aims to present research and encourage discussion in an accessible, critical, and engaging fashion within RSI, University of Toronto, and the greater community. You can find us on Apple podcasts, Spotify, Google podcasts, and Podbean.

If you are interested in being featured in the next episode, please email us at [podcast.rehabink@gmail.com](mailto:podcast.rehabink@gmail.com).

LOGO  
← 200 px →

BANNER ← 500 px →

NAVIGATION ← 800 px →

CONTENT 1  
← 500 px →

CONTENT 2

SOCIAL F

FOOTER ← 800 px →

## Abstracts

# Oral Presentations

(in order of presentation)

## **Presentation #1: Do the Digital Bellies of Flexor Digitorum Superficialis and Flexor Digitorum Profundus Contribute Similarly to Grasp?**

Campisi, Emma Stefanie, 1; Tran, John, 1; Amara, Catherine, 2; Switzer-McIntyre, Sharon, 3; Agur, Anne, 1

1 Rehabilitation Sciences Institute, Temerty Faculty of Medicine, University of Toronto; 2 Faculty of Kinesiology and Physical Education, University of Toronto; 3 Department of Physical Therapy, Temerty Faculty of Medicine, University of Toronto.

**Field of Research:** Movement Science.

**Funding:** Bertha Rosenstadt, Ontario Graduate Scholarship

**Background:** Flexor digitorum superficialis (FDS) and flexor digitorum profundus (FDP) are essential for grasp/fine motor skills. Following injury, balanced function of the digital bellies of FDS/FDP is difficult to restore and requires knowledge of muscle architecture. Literature of FDS/FDP function is scarce, limiting understanding of their relative contributions to wrist/digital movements.

**Purpose/Hypothesis:** The purpose was to compare morphology, fiber bundle length (FBL), and physiological cross-sectional area (PCSA) of FDS/FDP to elucidate their relative excursion/force generating capabilities.

**Methods:** In 10 FDS and 7 FDP specimens (mean age 79.0-10.0yrs), fiber bundles/aponeuroses were dissected, digitized, and modelled. The 3D morphology, mean FBL and PCSA of the digital bellies of FDS/FDP were compared to determine relative excursion/force generating capabilities using an unpaired t-test.

**Results:** The FDS consisted of 4 digital and 1 proximal belly FDP consisted of 4 digital bellies. In both, the mean FBL of the digital bellies from longest to shortest were 3rd, 4th, 5th, and 2nd. The mean FBL of the 2nd and 5th bellies of FDS were 23mm and 26mm less than the 2nd and 5th bellies of FDP, respectively. The 2nd, 4th and 5th digital bellies of FDP had greater mean PCSA than that of FDS whereas the 3rd belly of FDS had greater mean PCSA than FDP. The mean PCSA of the 5th FDP belly was statistically greater than FDS ( $p=0.00$ ).

**Discussion:** The 3rd digital belly of FDS and FDP had the greatest excursion capability. The proximal belly of FDS was in series with the 2nd/5th bellies through their attachment to a common aponeurosis. Contraction of the proximal belly may play a major role in wrist flexion of FDS, with isolated contraction of the digital bellies alone resulting primarily in digital flexion. The 3rd FDS belly and the 2nd FDP belly have the greatest force generation capability.

**Implication for Future of Rehabilitation:** Digitization and computer modelling of the muscle architecture will form an evidence-based approach to understand the functional contributions of FDS/FDP for digital movements. Further in vivo ultrasound study is required to determine the role of FDS/FDP in grasp and fine motor skills.

## **Presentation #2: Barriers and facilitators to aerobic exercise testing by physical therapists in inpatient stroke rehabilitation settings across Canada: a theory-informed web-based survey**

Legasto-Mulvale, Jean Michelle, 1,2; Inness, Elizabeth L, 1,2,3; Salbach, Nancy M, 1,2,3

1 Rehabilitation Sciences Institute, Temerty Faculty of Medicine, University of Toronto; 2 Department of Physical Therapy, Temerty Faculty of Medicine, University of Toronto; 3 The KITE Research Institute, University Health Network, University Health Network;

**Field of Research:** Movement Science;

**Funding:** Ontario Graduate Scholarship, Stipend from Dr. Nancy Salbach, Rehabilitation Sciences Institute

**Background:** Clinical practice guidelines recommend that people with stroke (PwS) undergo aerobic exercise (AEx) testing, however, less than 50% of physical therapists (PTs) and programs in stroke rehabilitation (SR) perform this practice. Though, previous surveys on AEx in SR described barriers and facilitators to AEx training they did not describe factors specific to AEx testing and were not informed by theory to ensure all factors impacting PTs' practice were captured. Results were also summarized from several SR settings making it difficult to develop meaningful interventions for in-patient (IP) SR settings, the earliest feasible opportunity for PwS to undergo AEx testing.

**Purpose/Hypothesis:** To describe current AEx testing practices of PTs in IP SR and the barriers and facilitators to these practices.

**Methods:** Registered PTs working in Canadian IP SR settings were invited to complete a web-based questionnaire through email blasts from national and provincial physical therapy associations and stroke research organizations. PTs were also recruited via social media. The questionnaire was developed using the Theoretical Domains Framework (TDF), previous surveys on AEx training in SR, and Canadian Stroke Best Practice Recommendations. Data were analysed using descriptive statistics.

**Results:** Thirty-seven PTs completed the questionnaire. Most participants were of female gender and sex (88%), practised in Ontario (69%), and held a Master of Science Degree in Physical Therapy (67%). Only 41% of participants reported conducting AEx testing on PwS predominantly, a field test (e.g., 6-minute walk test) was used (82%). Overground walking (73%), recumbent stepper (64%), and treadmill (45%) were the most common testing modalities. Over 50 barriers and facilitators to AEx testing were identified with all 14 domains of the TDF represented. Notably, though 85% of participants agreed that AEx testing of PwS is part of their clinical role and 73% endorsed wanting to conduct it more regularly only 19% agreed that most of their patients were appropriate for AEx testing while 73% endorsed being overwhelmed with other aspects of patient care to perform AEx testing.

**Discussion:** Though participants recognize the importance of AEx testing in PwS, there are many barriers that limit their use of AEx testing in IP SR.

**Implication for Future of Rehabilitation:** These findings will guide further exploration of how barriers can be overcome to improve AEx testing implementation by PTs in IP SR.



### **Presentation #3: Employment and accommodation needs and the effect of COVID-19 on men and women with traumatic brain injury: A pilot study**

Hanafy, Sara, 1,2; Colantonio, Angela, 1,3; Mollayeva, Tatyana, 1,2; Munce, Sarah, 2,3; Lindsay, Sally, 1,4

1 Rehabilitation Sciences Institute, Temerty Faculty of Medicine, University of Toronto; 2 KITE Research Institute, Toronto Rehabilitation Institute, University Health Network; 3 Department of Occupational Science and Occupational Therapy, Temerty Faculty of Medicine, University of Toronto; 4 Bloorview Research Institute, Holland Bloorview Kids Rehabilitation Hospital;

**Field of Research:** Occupational Science;

**Funding:** CIHR-SSHRC Partnership Grant (Supervisor), Toronto Rehabilitation Institute Scholarship, Canada Research Chairs Program in Traumatic Brain Injury in Underserved Populations (Supervisor)

**Background:** Traumatic brain injury (TBI) is a leading cause of disability worldwide. Men and women with TBI may have different experiences of support service needs and workplace accommodations after injury due to their sex (i.e., biological attributes) and gender (i.e., roles, responsibilities), as sex and gender have shown to influence TBI outcome. It is unknown how the Coronavirus Disease 2019 (COVID-19) pandemic additionally impacts the employment and mental health of men and women with TBI.

**Purpose:** To investigate the support services and workplace accommodation needs for persons with TBI and the impact of COVID-19 on work and mental well-being across sex and gender.

**Methods:** Cross-sectional online survey (November 2020 – February 2022) that included the Quality of Life after Brain Injury – Overall Scale (QOLIBRI-OS), Canadian Survey on Disability 2017 questions on the use of services and requirements for workplace accommodations and Statistics Canada questions on the impact of COVID-19 on work status and mental health. Descriptive and regression analyses were conducted for sex and gender differences. Content analysis was completed for open-ended responses.

**Results:** Thirty-two persons with TBI (62% female, identified as women 38% male, identified as men) participated. Physiotherapy, occupational therapy, and counselling services were indicated as the most needed services by women and men with TBI. Modified hours/days and modified/different duties were the most needed workplace accommodations for men and women. Help with daily activities was highlighted by women for a successful transition to work, including help with housekeeping and caregiving. Women also scored poorer than men on the daily activity domain of the QOLIBRI-OS. Women were more likely than men to experience no change in employment status because of COVID-19. Further, a higher percentage of men indicated being concerned about the inability to pay for living accommodation, losing their job, and not having future job prospects. Mental well-being was a highlighted concern for both men and women with TBI.

**Discussion:** Findings revealed differences between men and women in needed help with daily activities, change in employment post-pandemic, and concern over job security and finances post-pandemic, which highlight gender equity considerations. A high percentage of men and women experienced concern in mental well-being, suggesting the need to address this concern in rehabilitation.

**Implication for Future of Rehabilitation:** While contributing to the body of evidence on differences between men and women with TBI, largely within the construct of gender, findings from this study will inform rehabilitation professionals, employers, and persons with TBI on the needs of men and women with TBI and enable sex- and gender-sensitive interventions. Results will also further the understanding of the amplified challenges of COVID-19 for men and women with TBI.

#### **Presentation #4: Accuracy of a wearable device for assessing sedentary behavior in chronic obstructive pulmonary disease**

Michaelchuk, Wade, 1,2; Roger, Goldstein, 2,3; Dina, Brooks, 2,4

1 Rehabilitation Sciences Institute, Temerty Faculty of Medicine, University of Toronto; 2 Respiratory Research, West Park Healthcare Centre; 3 Departments of Physical Therapy and Medicine, Temerty Faculty of Medicine, University of Toronto; 4 School of Rehabilitation Science, Faculty of Health Sciences, McMaster University;

**Field of Research:** Rehabilitation Technology Science;

**Funding:** WM held an Ontario Respiratory Care Society Fellowship Award, DB holds the National Sanatorium Association Chair in Respiratory/Pulmonary Rehabilitation Research

**Background:** Physical activity (PA) and sedentary time (ST) independently predict mortality in Chronic Obstructive Pulmonary Disease (COPD). Thus, the accurate measurement of PA and ST is important. The accuracy of wearable fitness trackers to measure PA has been assessed in health and chronic disease, but a dearth of studies have assessed the accuracy of ST measurement in consumer-available devices.

**Purpose/Hypothesis:** To assess the accuracy of ST measurement in the FitBit Inspire™ compared to the validated ActivPAL4™ device.

**Methods:** People with COPD wore a FitBit Inspire™ and the validated ActivPAL4™ simultaneously for two weeks. Total ST (sitting + lying time) for valid data (24-hour wear time for ActivPAL™ and no evidence of FitBit™ removal confirmed visually on the web dashboard) was summarized. To assess accuracy in ST measurement between devices, the following analyses were performed: 1) mean absolute percent error (MAPE), 2) intra-class correlation (ICC), and 3) Bland-Altman analysis.

**Results:** Across 15 participants with COPD (53% female age: (mean±SD) 70.9±6.3 FEV1 %predicted: 43.3±27.6), 130 valid days were identified. MAPE(%) was 7.2%. ICC was 0.5 (95% CI: 0.38-0.60). Bland-Altman analysis showed that on average, FitBit™ underestimated daily ST by 16.3mins compared to ActivPAL™.

**Discussion:** FitBit™ showed fair accuracy and a moderate level of agreement when compared to the validated ActivPAL4™. FitBit™ slightly underestimated ST on average and agreement between devices appears to decrease at lower ST values. In COPD, a FitBit Inspire™ may provide an accurate estimate of ST.

**Implication for Future of Rehabilitation:** This work provides evidence that the consumer-available FitBit Inspire™ device may provide an accurate assessment of ST in people with COPD. Given the link between ST and mortality in COPD, this work is an important step toward integrating consumer devices into rehabilitation to track variables such as ST.

**Presentation #5: Understanding Canadian pediatric occupational therapists' beliefs about sensory integration therapy: A Theoretical Domains Framework study**

Seaton, Samantha, 1; Polatajko, Helene, 1; Colquhoun, Heather, 1

1 Rehabilitation Sciences Institute, Temerty Faculty of Medicine, University of Toronto;

**Field of Research:** Rehabilitation Health Services Studies;

**Funding:** Edith Strauss Rehabilitation Research Project Grant, McGill University

**Background:** Sensory Integration Therapy (SIT) is an occupational therapy (OT) intervention used to remediate sensory impairment in children with various developmental disabilities. There is limited high-quality evidence to support the use of SIT, according to numerous systematic reviews and policy statements. Despite a lack of evidential support, rates of SIT use among occupational therapists (OTs) are high. This gap between desired and actual practice suggests the need for a deeper and theoretical knowledge translation (KT) investigation.

**Purpose/Hypothesis:** The aim of the current project is to identify beliefs of OTs that perpetuate the continued delivery of SIT in pediatric practice.

**Methods:** A Theoretical Domains Framework study was undertaken. Thirteen semi-structured interviews were conducted with pediatric OTs in private practice settings. Two researchers are currently independently analyzing interview data for prevalent, important, and conflicting beliefs about the use of SIT. Analysis is being performed in consultation with an expert in TDF methodology.

**Results:** Preliminary results suggest that OTs may value clinical experience over scientific evidence for SIT practice. Participants also recognized inherent barriers to effectively studying SIT in research, and noted concerns that the research on SIT is too confusing to be clinically useful.

**Discussion:** Overall, these results highlight participants' knowledge and perspectives on SIT scientific evidence as particularly important for determining SIT behaviours.

**Implication for Future of Rehabilitation:** A theory-based investigation of the determinants of SIT behaviours has provided an understanding of the research-practice gap in pediatric OT. Findings will inform future development of potential approaches to enhance the uptake of knowledge in pediatric practice.

**Presentation #6: Factors Influencing the Clinical Adoption of Gait Analysis Technologies with a focus on clinical efficacy, clinician perspectives, and external barriers and facilitators: A Scoping Review Protocol**

Sharma, Yashoda, 1,2; Cheung, Lovisa, 1,2; Patterson, Kara. K, 1,2,3; Iaboni, Andrea, 1,2,4

1 Rehabilitation Sciences Institute, Temerty Faculty of Medicine, University of Toronto; 2 KITE-Toronto Rehabilitation Institute, Toronto Rehabilitation Institute, University Health Network; 3 Department of Physical Therapy, Faculty of Medicine, University of Toronto; 4 Department of Psychiatry, Temerty Faculty of Medicine, University of Toronto;

**Field of Research:** Rehabilitation Health Services Studies; Rehabilitation Technology Science

**Funding:** AGE-WELL, Toronto Rehabilitation Student Scholarship, UofT Fellowship

**Background:** Quantitative gait analysis (QGA) can support clinical decision-making by helping inform diagnosis, characterize gait impairments, and monitor treatment efficacy. These analyses can be performed using wearable sensors and/or non-wearable sensors however, to date, they have not been widely adopted in clinical practice. Technology adoption literature has highlighted technology effectiveness, a users' perspective on the technology (e.g., usability) and external barriers and facilitators (e.g., cost-effectiveness) to be some factors that influence their widespread adoption.

**Purpose/Hypothesis:** To synthesize the literature on clinical efficacy, clinician perspectives, and external barriers and facilitators that impact the use of QGA technologies in the care of adult patient populations.

**Methods:** This scoping review followed the Joanna Briggs Institute (JBI) methodology for scoping reviews. The review included both peer-reviewed and gray literature (i.e., conference abstracts) regarding the clinical efficacy of QGA technologies, clinician perspectives, and external barriers and facilitators that influence their use in the clinical care of adult patient populations. A search was conducted in MEDLINE (Ovid), CENTRAL (Ovid), EMBASE (Ovid), CINAHL (EBSCO) and SPORTDiscus (EBSCO). Included full-text articles were critically appraised using the JBI critical appraisal tools.

**Results:** The analysis of this review is ongoing. Nineteen full-text articles and 10 conference abstracts were included in this review. Preliminary results suggest that QGA technologies can influence treatment decision making. Clinicians identified factors that limit technology ease of use (e.g., time constraints), and contribute to technology usefulness (e.g., objective data to improve clinical care). External barriers to adoption include technical (e.g., device failure) and patient-related difficulties, while an external facilitator to adoption included cost-effectiveness of wearable sensors.

**Discussion:** Further research on clinical efficacy of QGA technologies in the care of adult patient populations is needed. Many barriers exist that impact the clinical use of QGA technologies, highlighting the need for future work on how to overcome these barriers.

**Implication for Future of Rehabilitation:** This review is the first step to understanding how QGA technologies can optimize clinical practice. Results will inform research aimed at evaluating, developing, or implementing these technologies.

## **Presentation #7: Therapists' perspectives on using brain-computer interface-triggered functional electrical stimulation therapy for individuals living with upper extremity paralysis**

Jervis-Rademeyer, Hope, 1,3; Ong, Kenneth, 2,3; Djuric, Alexander, 2,3; Musselman, Kristin E., 2,3; Marquez-Chin, Cesar, 3,4

1 Rehabilitation Sciences Institute, Temerty Faculty of Medicine, University of Toronto; 2 Department of Physical Therapy, Temerty Faculty of Medicine, University of Toronto; 3 KITE-Toronto Rehabilitation Institute, University Health Network; 4 Institute of Biomedical Engineering, University of Toronto;

**Field of Research:** Rehabilitation Technology Science; Practice Science

**Funding:** Dr. Kristin Musselman's (Supervisor's) Early Researcher Award and funding from the Canadian Institutes of Health Research

**Background:** Early results suggest brain-computer interface-triggered functional electrical stimulation therapy (BCI-FEST) can improve upper extremity (UE) functional movement after stroke and spinal cord injury. According to the Knowledge to Action Framework, the next step is determining if BCI-FEST is suited for broader therapy practice.

**Purpose/Hypothesis:** To understand the perspectives of therapists on their experiences delivering BCI-FEST and the feasibility of large-scale clinical implementation.

**Methods:** In this qualitative exploratory study, we interviewed physical therapists (PTs) and occupational therapists (OTs) who delivered BCI-FEST to individuals with UE paralysis. We developed semi-structured interview guides using the COM-B (Capability, Opportunity, Motivation - Behaviour) model of behaviour change. The COM-B informed a deductive content analysis. Other subthemes were detected with an inductive approach. Responses quotes were categorized using the deductive components and subcomponents (in parenthesis) of the COM-B: (1) Capability (physical, psychological), (2) Opportunity (physical, social), and (3) Motivation (automatic, reflective).

**Results:** We interviewed three PTs and three OTs with clinical BCI-FEST experience. Under each deductive subcomponent, we identified one to two inductive subthemes (n=8). In addition to Physical Capability, Motivation was a strong component supporting the use of BCI-FEST. Under Opportunity, therapists required more assistance and resources. Some participants new to BCI-FEST felt the need for support under the subcomponent Psychological Capability.

**Discussion:** Participants found BCI-FEST valuable and useful, but not yet fit for the broader clinical setting. To stimulate behavioural change, different interventions optimally target components of the COM-B. Interventions matched to Social Opportunity were department mentors to provide modelling and a resource network to restructure the social environment. Education aimed at outcomes and how BCI-FEST works was matched to Psychological Capability. Physical Opportunity could be afforded by restructuring the physical environment through scheduling BCI-FEST content within sessions.

**Implication for Future of Rehabilitation:** Qualitative research is sparse regarding BCI-FEST therefore, our study addresses a significant knowledge gap, providing background evidence for future research. Our findings can inform the development of new technologies and interventions for rehabilitation of paralysis and propel BCI-FEST towards large-scale clinical implementation.



## **Presentation #8: Activity-based therapy after spinal cord injury or disease: Development of a tracking tool using the Delphi Method**

Kaiser, Anita, 1,2; Chan, Katherine, 2; Zariffa, José, 2,3; Musselman, Kristin, 2,4

1 Rehabilitation Sciences Institute, Temerty Faculty of Medicine, University of Toronto; 2 KITE-Toronto Rehabilitation Institute, University Health Network; 3 Institute of Biomedical Engineering, University of Toronto; 4 Department of Physical Therapy, Temerty Faculty of Medicine, University of Toronto;

**Field of Research:** Rehabilitation Health Services Studies; Practice Science

**Funding:** Canadian Institutes of Health Research (Supervisor), Vanier Canada Graduate Scholarships, KITE-Toronto Rehab's TD Graduate Scholarship for People with Disabilities

**Background:** Activity-based therapy (ABT) is recognized as a valuable intervention that may promote neurorecovery for people with spinal cord injury or disease (SCI/D). The absence of tools documenting participation in ABT hinders widespread implementation in our rehabilitation centres. In response, the ABT Community of Practice identified the development of a tool to track participation in ABT across the continuum of care as one of their key priorities.

**Purpose/Hypothesis:** The objective of this study was to determine the content to include in an ABT tracking tool for people living with SCI/D.

**Methods:** The Delphi Method was used to reach consensus on the content of an ABT tracking tool from six key stakeholder groups (1. individuals living with SCI/D, 2. hospital clinicians, 3. community therapists, 4. administrators, 5. researchers, and 6. policy makers, funders and advocacy experts). Based on the findings from a previous scoping review and qualitative study, the initial survey included 16 types of ABT exercises (e.g., treadmill training) and four types of technology that could be added to an ABT exercise (e.g., virtual reality). Participants were asked to complete the online survey to rate the importance of including each type of ABT exercise and technology in an ABT tracking tool using a 9-point Likert scale (1=not important, 9=very important). Ratings of  $\geq 7$  were considered important. An ABT exercise or technology was recommended for inclusion in an ABT tracking tool if  $\geq 70\%$  of participants rated it as important. The process was repeated until consensus for each type of exercise and technology was achieved. Group data was summarized using descriptive statistics.

**Results:** Sixty individuals participated in the survey. The following nine exercises and one technology were deemed important to include in an ABT tracking tool (percentage of respondents rating  $\geq 7$ ): muscle strengthening (92%), balance training (90%), load-bearing exercises (85%), task-specific movement (85%), transcutaneous neuromuscular electrical stimulation (83%), transfer training (81%), ergometer training (80%), overground walking (80%), treadmill training (73%), and crawling (71%).

**Discussion:** The Delphi Method was used to achieve agreement among a diverse group of experts on the exercises and technologies to include in an ABT tracking tool.

**Implication for Future of Rehabilitation:** An ABT tracking tool may be used by clinicians or individuals living with SCI/D to assist with treatment planning and performance monitoring, and may contribute to the development of ABT practice guidelines.

## **Presentation #9: Mobile Technology-Based Interventions for Stroke Self-Management Support: What's in a name?**

Thompson, Alexandra N., 1,2; Dawson, Deirdre R., 2,3; Legasto-Mulvale, Jean Michelle, 1,4; Chandran, Nivetha, 1; Tanchip, Chelsea, 1; Niemczyk, Veronika, 5; Wang, Rosalie, 3,6; Cameron, Jill I., 3,6; Nalder, Emily, 3,6

1 Rehabilitation Sciences Institute, Temerty Faculty of Medicine, University of Toronto; 2 Rotman Research Institute, Baycrest Health Sciences; 3 Department of Occupational Science & Occupational Therapy, Temerty Faculty of Medicine, University of Toronto; 4 Department of Physical Therapy, Temerty Faculty of Medicine, University of Toronto; 5 Department of Rehabilitation Science, Faculty of Health Sciences, McMaster University; 6 KITE-Toronto Rehabilitation Institute, University Health Network;

**Field of Research:** Rehabilitation Technology Science; Social and Cognitive Rehabilitation

**Funding:** Rehabilitation Sciences Institute, Rotman Research Institute, Ontario Graduate Scholarship

**Background:** Stroke self-management support is a type of complex rehabilitation intervention that aims to provide people with knowledge, confidence, and skills to manage their condition post-stroke. There is growing interest in enhancing stroke self-management support with mobile health (mHealth) technology (e.g., smartphones, apps). Despite the growing interest, the concept of self-management support lacks clarity in the literature on post-stroke mHealth interventions, which makes it challenging to synthesize and compare the evidence. To address this gap in conceptual clarity, a scoping review was conducted.

**Purpose/Hypothesis:** (1) To identify and describe the types of post-stroke mHealth interventions evaluated using a randomized controlled trial (RCT) design and (2) to determine whether such interventions align with well-accepted conceptualizations (theory and taxonomy) of self-management support (Lorig & Holman, 2003; Pearce et al., 2016).

**Methods:** A scoping review was conducted using methods outlined by Arksey and O'Malley (2005). Seven databases were searched for studies evaluating post-stroke mHealth interventions using an RCT design. Article screening and data extraction were completed by two reviewers. Data were analyzed using descriptive statistics and content analysis.

**Results:** Among 24 included studies of 22 different mHealth interventions, seven types of programs were identified (e.g., physical exercise, activities of daily living training, stroke education) which used five types of mobile devices (e.g., smartphones, tablets, wearable sensors). As a whole, the literature aligned well with the concept of self-management support. However, on an individual basis, the alignment was less strong, suggesting a need for these interventions to be more theoretically driven and holistic.

**Discussion:** This scoping review concluded that the literature on post-stroke mHealth interventions is growing and would benefit from future research that is more theoretically driven, more multidisciplinary, and larger in scale.

**Implication for Future of Rehabilitation:** This review clarified a key concept and identified future research directions in the literature on post-stroke mHealth interventions. These contributions may inform the development and evaluation of mobile technology-based interventions for self-management support in stroke and other chronic conditions.

## **Presentation #10: Exergame Design for Balance Rehabilitation: Stakeholder and Lived Experience Perspectives.**

Dove, Erica, 1,2; Astell, Arlene, 1,2

1 Rehabilitation Sciences Institute, Temerty Faculty of Medicine, University of Toronto; 2 KITE-Toronto Rehabilitation Institute, University Health Network;

**Field of Research:** Rehabilitation Technology Science; Movement Science

**Funding:** Alzheimer Society of Canada - Alzheimer Society Research Program (ASRP): Doctoral Award, AGE-WELL NCE Graduate and Postdoctoral Award in Technology and Aging - Doctoral Award, Ontario Graduate Scholarship - Doctoral Award

**Background:** People with dementia experience greater impairments in balance, which increases their fall risk relative to cognitively healthy older adults. Exercise can improve people with dementia's balance, but physical rehabilitation and/or exercise interventions for this population are limited. Exercise video games ("exergames"), which are increasingly being used in rehabilitation with various populations (e.g., children with disabilities, adults after stroke), could address the current gap. However, to develop accessible, implementable, and clinically relevant exergames for people with dementia requires direct input from people with lived experience and other stakeholder groups such as physiotherapists and dementia caregivers.

**Purpose/Hypothesis:** To iteratively develop an exergame designed to impact balance of people with dementia through end user and stakeholder input.

**Methods:** People with dementia (n=21 mean age: 79.2 years) recruited from three community-based adult day programs are participating in exergame testing sessions. In these sessions, the participants try out current exergame systems using different means of control (e.g., Nintendo Switch) and types of games (e.g., Instant Sports). Each session is video recorded, with participants feeding back on what they like and do not like about the games and game systems. Simultaneously, rehabilitation clinicians (e.g., physiotherapists n=3 to date) are suggesting exercises to impact balance, game researchers (n=1 to date), and family and paid caregivers (n=8 to date), are contributing accessibility, design, and implementation considerations.

**Results:** Pros and cons of existing exergame systems for people with dementia include ease of use, ease of learning, and prompting. A set of exercises that could be integrated into exergames for people with dementia to impact balance (e.g., sit-to-stands) is being compiled to include in the first iteration of the game.

**Discussion:** The results so far confirm the importance and potential of developing an exergame program to improve balance and reduce fall risk of people living with dementia.

**Implication for Future of Rehabilitation:** This study will be used to inform the initial design of an exergame intended to improve balance among people with dementia. This exergame will benefit people with dementia, families, and service providers by raising awareness about balance rehabilitation for dementia.

## **Presentation #11: Facilitators and barriers to implementation of swallowing therapies for Head and Neck Cancer patients: preliminary results from a qualitative study**

Manduchi, Beatrice, 1,2; Fitch, Margaret, 3; Ringash, Jolie, 4, 5; Howell, Doris, 3,4; Martino, Rosemary, 1,2

1 Department of Speech-Language Pathology, Temerty Faculty of Medicine, University of Toronto; 2 Rehabilitation Sciences Institute, Temerty Faculty of Medicine, University of Toronto; 3 Bloomberg Faculty of Nursing, University of Toronto; 4 Princess Margaret Cancer Centre, University Health Network; 5 Department of Otolaryngology - Head and Neck Surgery, University of Toronto;

**Field of Research:** SLP;

**Funding:** Swallowing Lab, Department of Speech-Language Pathology (Rehabilitation Sciences Institute, University of Toronto), 2021-2022 Mary H. Beatty Fellowship (School of Graduate Studies, University of Toronto), 2021-2022 K. M. Hunter Graduate Award (Peterborough)

**Background:** Several research trials have demonstrated the health benefits of swallowing therapies for Head and Neck Cancer (HNC) patients delivered during radiotherapy (RT) in preventing or lessening the consequences of swallowing disorders. Understanding HNC patients' perspectives on the acceptability of these therapies can provide crucial information on how to successfully implement them into clinical settings. However, to date, no studies have explored patients' perspectives on barriers and facilitators of swallowing therapies delivered during RT for HNC.

**Purpose/Hypothesis:** This study aims to use qualitative research methods to explore patients' perspectives on facilitators and barriers to their implementation into clinical practice.

**Methods:** A qualitative research design using generic qualitative methodology was adopted. Patients (n=6) were recruited from the ongoing PRO-ACTIVE trial to participate in an individual, semi-structured interview. The Theoretical Framework of Acceptability guided data collection and thematic data analysis. Transcripts were independently coded by 3 reviewers preliminary themes were developed through consensus discussion.

**Results:** Commonly perceived facilitators were: receiving support, encouragement and simple, graphic instructions from the clinician during therapy understanding risks associated with swallowing disorders. Perceived barriers included: experiencing acute symptoms as RT progressed implications of being on a feeding tube lacking motivation and time to engage in the therapy. Suggestions to overcome barriers included: provide more information and support during and after RT adjust therapy to individual needs set more realistic goals when symptoms manifest.

**Discussion:** According to patients, implementation of swallowing therapies is mainly enhanced by regular clinician support and clear therapy instructions. Future trials should consider tailoring therapy on individual needs and prioritize identified facilitators to overcome RT-related barriers.

**Implication for Future of Rehabilitation:** According to the World Health Organization, patient-centered care is one of the global mandates for 2030. Achieving patient-centeredness requires a thorough understanding of patient needs and opinions regarding the care received. This study provides unique insights into HNC patients' perceptions of the acceptability of a rehabilitative intervention, thus supporting patient-centeredness to inform its implementation into practice.

## **Presentation #12: Using the COM-B Model and Theoretical Domains Framework to understand the workplace disclosure experiences, influencers, and needs of autistic youth and young adults**

Tomas, Vanessa, 1,2; Kingsnorth, Shauna, 1,2,3; Kirsh, Bonnie, 3; Anagnostou, Evdokia, 2,4; Lindsay, Sally, 1,2,3

1 Rehabilitation Sciences Institute, Temerty Faculty of Medicine, University of Toronto; 2 Bloorview Research Institute, Holland Bloorview Kids Rehabilitation Hospital; 3 Occupational Science and Occupational Therapy, Temerty Faculty of Medicine, University of Toronto; 4 Department of Paediatrics, Temerty Faculty of Medicine, University of Toronto;

**Field of Research:** Social and Cognitive Rehabilitation; Occupational Science

**Funding:** Dr. Sally Lindsay's (Supervisor's) CIHR-SSHRC Partnership grant and Kimel Family fund grant, 2022-2023 Hilda and William Courtney Clayton Paediatric Research Fund (University of Toronto), 2019-2020 Kimel Family Pediatric Disability Research Award (Bloorview Research Institute)

**Background:** For autistic youth and young adults, deciding whether and how to disclose their autism diagnosis and/or related needs at work can be daunting and complex. Minimal research explores what they need to support disclosure decisions and what might influence them.

**Purpose/Hypothesis:** To explore workplace disclosure experiences, influencers, and needs among autistic youth and young adults and compare across genders.

**Methods:** We conducted six online focus groups using the Capability, Opportunity, Motivation, Behaviour Model to guide the questions, and the Theoretical Domains Framework (TDF) to guide the analysis. We thematically analyzed data deductively from 23 Canadian autistic youth and young adults (mean age 22.78 years 13 men, eight women, one transman, one transwoman).

**Results:** The TDF domains were used as subthemes to develop five themes: 1) workplace environment, 2) perceptions of disclosure outcomes, 3) personal factors and identity, 4) disclosure-related ambitions and determination, and 5) know-hows of disclosure. Participants discussed the role of, and disclosure needs around concepts from 13 of 14 TDF domains, for example, identities (intersecting identities), emotions (e.g., fear), beliefs about consequences (negative outcomes), environmental context (workplace environment), optimism (positive outcomes), social influences, disclosure goals, and procedural knowledge, skills, and strategies enacted. The workplace environment was identified as the greatest influencer of disclosure decisions. Potential gender differences were noted in disclosure frequencies, participants' disclosure goals, and how they perceived their autism identity.

**Discussion:** Results provide newfound understandings of the disclosure experiences of autistic youth and young adults and highlight the individualized nature of disclosure and the predominant role of the workplace environment. These findings can inform practices by professionals who support disclosure processes (e.g., occupational therapists, psychologists, vocational rehabilitation professionals) and the development of tools/supports that may help with disclosure decision-making and navigation. Future work should also target employer-level factors and roles to foster inclusive workplaces.

**Implication for Future of Rehabilitation:** This work emphasizes the criticality of taking an individualized, holistic approach and considering the role of intersecting identities (e.g., gender) and the environment (e.g., the workplace) when providing rehabilitation supports and services.



## Poster Abstracts



# Movement Science

*The integration and synthesis of knowledge from basic sciences, social sciences and applied sciences for the purpose of studying questions related to understanding the prevention of movement-related impairments, and the maintenance, enhancement and rehabilitation of human physical activity for persons whose physical capabilities are, or are perceived to be, challenged by disease and injury.*

### **Poster #13: Why do some people exercise post stroke but not others?**

Barzideh, Azadeh, 1,2; Devasahayam, Augustine, 2; Jagroop, David, 2; Inness, Elizabeth, 1,2; Munce, Sarah, 2; Mansfield, Avril, 1,2

1 Rehabilitation Sciences Institute, Temerty Faculty of Medicine, University of Toronto; 2 KITE-Toronto Rehabilitation Institute, University Health Network;

**Field of Research:** Movement Science;

**Funding:** Dr Avril Mansfield's The funding comes fr Heart and Stroke Foundation of Canada, Dr Avril Mansfield's Canadian Institutes of Health Research

**Background:** Less than half of people with stroke participate in aerobic exercise (AE) during rehabilitation. Many studies have explored the barriers and facilitators to AE prescription from the physiotherapists' perspective only or have examined physiotherapists' and patients' perspectives separately, without considering how they may interact. In my study however, not only we explore the interaction between physiotherapists' and patients' interviews, but we also put the patients at the centre of the discussions in physiotherapist' interviews (i.e., through chart-stimulated recall).

**Purpose/Hypothesis:** The purpose of this study is to understand clinical decision making around aerobic exercise prescription and participation in stroke rehabilitation, from both the physiotherapists' and patients' points of view combined.

**Methods:** A qualitative descriptive approach was adopted. Four stroke rehabilitation sites involved in this study have structured AE exercise programs in place for recruiting both physiotherapists and patients. We invited people with stroke at the end of their rehabilitation stay, or soon after discharge. All treating physiotherapists were invited to take part in the study. All participants completed one-on-one, semi-structured interviews. The final sample size will be determined based on information power. Data were analysed concurrently with data collection using the framework method procedure. The theoretical domain framework (TDF) was used to guide the deductive part of data analysis.

**Results:** Five stroke patients and 5 physiotherapists have been interviewed to date. Patient interviews encompassed 11 domains from TDF: Knowledge; Skills; Memory, attention, and decision processes; Social influences; Environmental contexts and resources; Social/Professional role & identity; Beliefs about capabilities; Optimism; Beliefs about consequences; Reinforcement; and Emotion. Physiotherapist interviews encompass three TDF domains: Belief about consequences; Environmental context and resources; and Knowledge. Patient and physiotherapist behavior-related codes were also added to the above TDF domains as the result of inductive analysis.

**Discussion:** A better understanding of the determinants of participation in AE during stroke rehabilitation will help us develop interventions that can increase AE participation.

**Implication for Future of Rehabilitation:** Increased participation in AE will, in turn, help improve cardiorespiratory fitness and quality of life of those surviving a stroke and prevent recurrence of another stroke.

**Poster #14: The feasibility of transcranial direct current stimulation as an adjunct to inpatient physiotherapy in children and youth with moderate to severe acquired brain injury**

Ryan, Jennifer, 1,2; Beal, Deryk, 1,2; Fehlings, Darcy, 1,2; Levac, Danielle, 3; Wright, Virginia, 1,2,4

1 Rehabilitation Sciences Institute, Temerty Faculty of Medicine, University of Toronto; 2 Bloorview Research Institute, Holland Bloorview Kids Rehabilitation Hospital; 3 School of Rehabilitation, Faculty of Medicine, University of Montreal; 4 Department of Physical Therapy, Temerty Faculty of Medicine, University of Toronto;

**Field of Research:** Movement Science;

**Funding:** CIHR Frederick Banting and Charles Best Canada Graduate Scholarships Doctoral Award, Holland Bloorview Centre for Leadership, Holland Bloorview Children's Hospital Foundation Chair in Paediatric Rehabilitation

**Background:** Children with moderate to severe acquired brain injury (ABI) require intensive physiotherapy early in recovery to relearn the motor skills affected by their injury. Despite considerable gains with inpatient rehabilitation, motor recovery typically plateaus, and deficits often persist. To reduce long-term deficits, rehabilitation technologies are often explored as adjuncts to traditional intervention. Transcranial direct current stimulation (tDCS) modulates neural activity and enhances motor learning when coupled with skill practice, but has not been studied in pediatric subacute ABI. Thus, the objective of this study was to evaluate the feasibility of tDCS as an adjunct to inpatient physiotherapy in children with ABI.

**Purpose/Hypothesis:** The objective of this study was to evaluate the feasibility of tDCS as an adjunct to inpatient physiotherapy in children with ABI.

**Methods:** This randomized feasibility study allocated children (5-18 years) with moderate to severe ABI to receive 20 minutes of active or sham anodal tDCS immediately prior to their existing inpatient physiotherapy at Holland Bloorview Kids Rehabilitation Hospital for a total of 16 sessions. Participants, physiotherapists, assessors, and primary investigators were blinded to treatment allocation. The following feasibility indicators were evaluated with a priori targets: eligibility, recruitment, retention, tolerance, and preliminary treatment effect.

**Results:** Of 232 children admitted over 21 months, 6 children were eligible and 4 enrolled. One participant completed the study, two withdrew for unrelated medical reasons, and one could not participate due to Covid-19. Eligibility (2.6%) was below our target (20%). Reasons for ineligibility included: age (67), seizures (26), brain tumour (37), short admission (12), behaviour (8), decreased tolerance (8). However, tDCS session tracking indicated that participants tolerated the tDCS with itchiness being the primary transient side effect. The participant who completed the study changed by 33% points on the Gross Motor Function Measure (GMFM-88), where 18% points is the mean change associated with inpatient rehabilitation.

**Discussion:** While participants tolerated tDCS, few inpatient children with moderate to severe ABI met study eligibility criteria.

**Implication for Future of Rehabilitation:** Because tDCS may have motor learning benefits but study feasibility targets were not met, future studies should be multi-site to increase enrollment. With some inpatients not been medically ready for tDCS, the feasibility of an outpatient ABI tDCS and physiotherapy protocol should also be explored.

## **Poster #15: Balance and Multisensory Integration in Concussion**

Brooke, Calaina, 1; Perry, Stephen, 1,2

1 Rehabilitation Sciences Institute , Temerty Faculty of Medicine, University of Toronto; 2 KITE-Toronto Rehabilitation Institute, University Health Network;

**Field of Research:** Movement Science;

**Funding:** Rehabilitation Sciences Institute

**Background:** Concussions can result from falls, vehicular accidents, or through sports and recreational activities. It has been demonstrated that concussion symptoms can lead to a lower health-related quality of life through the persisting cognitive, emotional, and/or physical repercussions causing difficulties in returning to work, school, or sports. Environments such as busy streets or grocery stores have competing stimuli that can provoke concussion symptoms. Balance deficits after concussion increase when walking and performing divided attention tasks, ultimately resulting in increased centre of mass (COM) sway. Similarly, increased centre of pressure (COP) sway was observed in response to visual field motion when a concussed group stood in front of a moving virtual reality (VR) environment. Using current assessments, balance deficits are said to recover within 3-7 days post-injury, however, research using complex visual environments and gait trials have shown impairments can last 30 days.

**Purpose/Hypothesis:** The goal of the following research is to explore the relationship between balance and multisensory integration using a paradigm that perturbs the sensory systems post-concussion.

**Methods:** The current study is a two- group repeated measures design with a control and a concussed group. Subjects (n=30) will be male, and female aged 18-40 recruited from the Hull Ellis Concussion Clinic and UHN Hospitals. Testing will occur 2-4 weeks post-concussion. All testing sessions will take place in the FallsLab located in the Toronto Rehabilitation Institute. Participants will be outfitted with motion analysis markers and a VR headset. Testing will be divided into standing (12 trials) and walking (32 trials) blocks. The blocks will include randomized visual perturbations and physical perturbations. Kinetic data will be measured with AMTI force plates and kinematic data will be measured with the VICON motion tracking system. Analyzed variables include COM velocity and displacement, COP path, and MOS.

**Discussion:** The use of VR in rehabilitation is on the rise, the results from this study could demonstrate potential applications for VR in concussion rehabilitation programs.

**Implication for Future of Rehabilitation:** Increasing the understanding of balance responses and sensory integration post-concussion may provide evidence of the need for clinically applicable measures of balance and gait to make informed return to activity decisions



## **Poster #16: A 3D Digitized Map of the Human Saphenous Nerve: A Neuroanatomical Approach to Developing a Novel Neuromodulation Therapy for Treating Overactive Bladder**

Peng, Michael, 1,2; Yoo, Paul B., 2; Agur, Anne M.R., 1,2

1 Division of Anatomy, Department of Surgery, University of Toronto; 2 Rehabilitation Sciences Institute, Temerty Faculty of Medicine, University of Toronto, 3 Institute of Biomaterials and Biomedical Engineering, University of Toronto;

**Field of Research:** Movement Science;

**Funding:** 2021-2022 Natural Sciences and Engineering Research Council (NSERC) Master's Scholarship, Mitacs Accelerate Award

**Background:** Saphenous nerve (SN) stimulation is an emerging treatment for overactive bladder (OAB) syndrome. Precise knowledge of the subcutaneous distribution of nerve branches is lacking. Previous literature consists of descriptive accounts, photographs, and schematic diagrams of SN distribution. However, these resources are not adequate to construct high fidelity computational models that can simulate peripheral nerve activation.

**Purpose/Hypothesis:** The purpose of this study was to volumetrically document and model in 3D the course of branches of the SN relative to bony/soft tissue landmarks.

**Methods:** The SN and its branches along with bony and soft tissue landmarks were serially dissected, digitized (MicroScribe® G2X), and laser scanned (FARO® Quantum FaroArm®) in 10 embalmed lower limb specimens. The digitized and laser scanned data were registered and modelled (Autodesk® Maya®) with plug-ins developed in the laboratory (University of Toronto). The 3D models were constructed using clinically identifiable landmarks with the intent of subsequently converting the digitized maps into computational models.

**Results:** The SN has an extensive subcutaneous network comprised of the infrapatellar and medial crural cutaneous branches (MCC). The MCC consist of an anterior (AB) and posterior (PB) branch, which further ramify to supply the medial aspect of the leg. The AB divides into multiple smaller branches as it courses distally deep to the great saphenous vein to the foot. Superiorly, the AB lies just posterior to the medial border of the tibia and inferiorly, on its medial surface. The PB lies on the crural fascia superficial to the medial head of gastrocnemius and terminates superior to the ankle. Absence of PB and variations in branching pattern were found.

**Discussion:** The novel 3D data is the first cartesian coordinate-based map of the MCC nerve branches in the human lower leg. The results will enable us to implement highly realistic computational (finite element) models that can subsequently be used to simulate various forms of electrical stimulation of the human saphenous nerve.

**Implication for Future of Rehabilitation:** This high-fidelity data will facilitate more accurate computational (finite element) modeling of peripheral nerve stimulation modalities and provide the necessary detail to translate these findings to the clinical setting.

**Poster #17: Integrating a pelvic health elective course in Canadian entry-to-practice physiotherapy programs: a proposal for a realist evaluation**

Scodras, Stephanie, 1; Yeung, Euson, 1,2; Colquhoun, Heather, 1,3; Jaglal, Susan B., 1,2,4; Salbach, Nancy M., 1,2,4

1 Rehabilitation Sciences Institute, Temerty Faculty of Medicine, University of Toronto; 2 Department of Physical Therapy, Temerty Faculty of Medicine, University of Toronto; 3 Department of Occupational Science and Occupational Therapy, Temerty Faculty of Medicine, University of Toronto; 4 The KITE Research Institute, University Health Network;

**Field of Research:** Movement Science; Rehabilitation Health Services Studies

**Funding:** Canadian Institutes of Health Research (CIHR) Doctoral Award, Rehabilitation Sciences Institute

**Background:** Pelvic health physiotherapy (PHPT) is an emerging area of practice that is typically taught at the post-graduate level. Exposing students to PHPT content is recommended but not required of Canadian entry-to-practice programs and programs can face challenges to incorporating content into existing curricula, such as lack of time or faculty expertise. A small number of programs have incorporated PHPT content through a novel elective course format. However, the process of integrating such a course has not been studied to date.

**Purpose/Hypothesis:** To explore the decision-making, development, and implementation processes involved in creating and delivering a PHPT elective course in Canadian entry-to-practice programs.

**Methods:** A realist evaluation embedded in a cross-sectional multiple case study is proposed. The cases will be defined as physiotherapy programs that have integrated and sustained a PHPT elective course for at least two years. A realist evaluation aims to understand “what works for whom and in what circumstances” and follows these steps: formulating an initial middle range theory, collecting data, analysing data, and refining the theory. Our initial theory is that factors internal and external to the entry-to-practice program can affect a program’s decision and ability to develop and integrate a PHPT elective course into an existing curriculum. We will recruit 2-3 programs and collect data from multiple sources, including program documents and qualitative interviews with program administrators and educators. We will use a directed qualitative content analysis approach anchored in the realist evaluation-specific ‘context, mechanism, and outcome (CMO)’ configuration. The Consolidated Framework for Implementation Research Constructs (CFIR) will inform the context sub-codes because it spans individual, team, organization, and system level factors. The initial theory will be revised in relation to the identified CMOs.

**Discussion:** A case study design lends itself to an in-depth evaluation of specific circumstances. Thus, it is well suited to develop a theory that seeks to increase ‘specification’ rather than ‘generalization,’ as is characteristic of realist evaluations.

**Implication for Future of Rehabilitation:** The findings can be used by stakeholders who wish to implement a similar course to advance PHPT education in other entry-to-practice programs.

## **Poster #18: Validation of the Patient Reported Outcomes of Fracture Healing (PROOF) Questionnaires for Evaluation of Pediatric Upper Extremity Fracture Outcomes**

DiNola, Lauren, 1,2; Narayanan, Unni, 1,2,3

1 Rehabilitation Sciences Institute, Temerty Faculty of Medicine, University of Toronto; 2 Child Health Evaluative Sciences, Hospital For Sick Children; 3 Department of Surgery, University of Toronto;

**Field of Research:** Movement Science;

**Funding:** Dr. Narayanan (Supervisor) Priority-based Scales for Children's Outcomes' Research & Evaluation (PSCORE), Rehabilitation Sciences Institute

**Background:** In children, long bone fractures of the upper extremity are common injuries and it is uncertain with such a variety of treatment methods which treatments are best. To date, there are no Patient Reported Outcome Measures (PROM) available specifically for pediatric fractures, so we are validating a PROM called Patient Reported Outcomes of Fracture healing (PROOF) for upper extremity fractures.

**Purpose/Hypothesis:** The purpose of this proposed study is to (i) evaluate the reliability and internal consistency; (ii) establish construct validity; (iii) compare children's responses to their parents' responses; (iv) (iv) evaluate the responsiveness of the PROOF questionnaires for upper extremity fractures. We hypothesize the questionnaires will be reliable, valid and responsive to change.

**Methods:** Patients with an upper extremity fracture, be between the ages of 0 and 18 years old and their parents were recruited from SickKids within 3 weeks of injury. Recruitment occurred in the fracture clinic during the patient's appointment or virtually. Participants were invited to participate in the following aspects: test-retest reliability (two administrations of the PROOF evaluated using intraclass correlation coefficient), construct validation (one-time administration of the PROOF and the relevant established questionnaires evaluated using t-test), and/or the responsiveness (2 to 4 longitudinal assessments of the PROOF over the course of fracture healing, evaluated using ANOVA).

**Results:** 296 children with a variety of upper extremity fractures have been recruited at SickKids. Data obtained from 1-4 time points. (In Progress)

**Discussion:** Preliminary data shows the PROOF questionnaires are valid, reliable and responsive to evaluate upper extremity fracture outcomes in children. (In Progress)

**Implication for Future of Rehabilitation:** These measures will have the potential to be adopted widely in all kinds of clinical research of children's fractures. Clinicians and researchers will be able to use this questionnaire to provide Canadian and other investigators a more sensitive and meaningful instrument to measure outcomes in the broad array of fractures.

## **Poster #19: Impact of cognitive capacity on physical performance in chronic obstructive pulmonary disease (COPD) patients: a scoping review**

Rassam, Peter, 1; Pazzianotto-Forti, Eli, 2; Matsumura, Umi, 3; Rodrigues, Antenor, 4; Rozenberg, Dmitry, 5; Reid, W Darlene, 6

1 Rehabilitation Sciences Institute, Temerty Faculty of Medicine, University of Toronto; 2 Rehabilitation Aimed at Muscle Performance (RAMP) Lab, University of Toronto; 3 Department of Health Sciences, Graduate School of Biomedical Sciences, Nagasaki University; 4 Department of Critical Care, St. Michael's Hospital; 5 Department of Medicine, Respiriology, University Health Network; 6 Department of Physical Therapy, Temerty Faculty of Medicine, University of Toronto;

**Field of Research:** Movement Science;

**Funding:** Rehabilitation Sciences Institute

**Background:** COPD is often accompanied by cognitive dysfunction and impaired physical performance.<sup>1</sup> Although, these factors have been extensively studied, the impact of cognitive capacity on physical performance in COPD has not been consolidated. Furthermore, limitations in cognitive capacity in either a dual-task<sup>2</sup> or sequential (cognitive exertion prior to exercise) paradigm<sup>3</sup> reduces physical performance in healthy populations. Thus, investigating the burden of cognitive impairment in COPD would be pertinent.

**Purpose/Hypothesis:** The objective of the review was to determine the impact of cognition on physical performance in COPD.

**Methods:** Established scoping review methodology was performed.<sup>4</sup> A systematic search was conducted in the databases: MEDLINE, EMBASE, Cochrane Systematic Reviews, Cochrane CENTRAL, APA PsycINFO, and CINAHL. Among the comprehensive search strategy, keywords included: COPD, cognition, and exercise capacity. Study designs included: cross-sectional, dual-task and interventional. Two reviewers independently assessed the literature for inclusion, data abstraction, and quality assessment. Studies were selected based on prespecified inclusion and exclusion criteria.

**Results:** Our search identified 10,045 articles and 40 met the inclusion criteria. 5365 patients (65% male; mean age of 66) with a mean forced expiratory volume in 1 second of 46% predicted were included. Cognitive scores correlated with strength, balance, and hand dexterity, while 6-minute walk distance (n= 9) was mostly similar among cognitively impaired and normal COPD patients. In 2 reports, regression analyses showed that delayed recall and the trail making test were associated with balance and handgrip strength, respectively. Dual task studies (n= 5) reported impaired balance, gait variability or velocity in COPD patients compared to healthy adults. Exercise intervention studies (n= 11) showed variable improvements in cognition and exercise capacity, while mild cognitive impairment may potentially not impact intervention efficacy.

**Discussion:** Associations between cognition and physical function were observed in several studies but the mechanistic underpinning requires further study.

**Implication for Future of Rehabilitation:** The current state of treatment for COPD is pulmonary rehabilitation but given the cognitive and dual-task deficits observed, suggested future intervention strategies could employ dual-task (cognitive-physical) training.

A photograph of two women sitting at a table, looking at a document together and laughing. The woman on the left has curly hair and is wearing a light-colored top. The woman on the right has long straight hair and is wearing a white t-shirt. The background shows a window with a view of trees. The entire image has a blue tint.

## Occupational Science

*A basic science dedicated to the systematic study of human occupation. Using both qualitative and quantitative methods of inquiry, it addresses the form, function, and meaning of human occupation and its relationship to health and well-being. The science informs and is informed by many other disciplines including psychology, anthropology, sociology, human movement science, medical science and economics.*

## **Poster #20: Developing items for the Patient Reported Outcome Measure for Amputation (PRO-AMP)**

Cimino, Stephanie R., 1; Guilcher, Sara J.T., 1,2; MacKay, Crystal, 1,3; Mayo, Amanda L., 4; Kayssi, Ahmed, 5; Domingo, Aristotle, 6; Viana, Ricardo, 7; Devlin, Michael, 3; Dilkas, Stephen, 3

1 Rehabilitation Sciences Institute, Temerty Faculty of Medicine, University of Toronto; 2 Leslie Dan Faculty of Pharmacy, University of Toronto; 3 West Park Healthcare Centre; 4 St. John's Rehab Research Program, Sunnybrook Research Institute; 5 Sunnybrook Health Sciences Centre; 6 Amputee Coalition of Toronto; 7 Parkwood Institute;

**Field of Research:** Occupational Science;

**Funding:** Dr. Sander L. Hitzig's (Supervisor's) Canadian Institutes of Health Research Grant

**Background:** Patient-reported outcome measures (PROMs) are useful tools that capture the perspectives of a patient's symptoms, burden of their condition, and overall health. There is currently a lack of PROMs assessing quality of life in people with lower extremity amputation (LEA).

**Purpose/Hypothesis:** The aim of the study was to develop a set of items that are applicable for this population.

**Methods:** Item generation was guided by Haywood and colleagues' PROM development framework. Several data sources were used to create the original item bank. First, qualitative interviews were conducted among persons with LEA to solicit meaningful patient identified areas of exploration. From the interview data, an initial set of items was created. Second, previously published knowledge syntheses were examined. The items developed from the interview data were checked against these previously published knowledge syntheses. New items were added based on this comparison if not covered by the qualitative interviews. Finally, a stakeholder meeting was conducted among clinicians and those with lived experience to check the applicability of the initial item set.

**Results:** Five knowledge syntheses and 55 qualitative interviews informed the development of items. A total of 127 unique items were identified. An additional 13 items were added following the meeting with experts (n=11) for a total of 140 items. This initial item bank was then organized into six main headings for ease of administration: 1) general health (n=6), 2) mental health (n=26), 3) mobility/function (n=32), 4) occupation (n=34), 5) physical health (n=24), and 6) relationships (n=18).

**Discussion:** The creation of an item set using a rigorous process will ensure that the newly developed PROM for lower-limb amputation is meaningful to this population. The next steps will include cognitive interviews to ensure content validity of the item set. The final PRO-AMP will fill an important gap in understanding the impact of LEA on an individual's quality of life.

**Implication for Future of Rehabilitation:** PROMs are important tools that can help clinicians and researchers to understand: 1) how to best provide patient care; 2) how to provide more meaningful and individualized care; 3) how effective treatments are; 4) the quality and completeness of health services; 5) how research can address the impairments of living with LEA; and 6) how to develop and implement new policies to help improve QoL. Therefore, the development of a PROM will lead to a more nuanced understanding of the impact of living with LEA which will help will improve care for this population.

## **Poster #21: Occupational Therapist's Role in Maintaining the Presence of Populations with Early Onset Dementia and Mild Cognitive Impairment in the Workforce**

Nadesar, Nirusa, 1,2; Astell, Arlene, 1,2; Nowrouzi-Kia, Behdin, 3; Rogers, Alec, 3; Griffith, Marissa, 3

1 Rehabilitation Sciences Institute, Temerty Faculty of Medicine, University of Toronto; 2 KITE-Toronto Rehabilitation Institute, University Health Network; 3 Department of Occupational Science and Occupational Therapy, Temerty Faculty of Medicine, University of Toronto;

**Field of Research:** Occupational Science; Rehabilitation Health Services Studies

**Funding:** 2021-2022 Social Sciences and Humanities Research Council (SSHRC) Master's Scholarship, AGE-WELL CIHR Supervisor Research Grant, Rehabilitation Sciences Institute

**Background:** Early-Onset Dementia (EOD) is a progressive, irreversible disorder in individuals aged 30 to 65. Mild Cognitive Impairment (MCI) shows early signs of dementia and slowly progresses into an Alzheimer's type condition. Currently, at least 16,000 Canadians are living with EOD, not including MCI populations. Majority will need support to remain in workforce, to provide for themselves and their families. Occupational Therapists (OTs) will assess the capabilities, circumstances, and goals of their unique clients and use targeted interventions to allow them to engage back into their lives. Currently, no formal Canadian guideline to address these individuals' needs in the workplace exists.

**Purpose/Hypothesis:** To investigate and identify OTs' role in maintaining the presence of individuals living with EOD and MCI in the workplace. The study will provide insight into the unique challenges these populations face related to continuing their employment after being diagnosed. Furthermore, explaining how OTs navigate these challenges and provide support through their role as a health care professional.

**Methods:** Sample includes OTs who are or have practiced in public or private setting across Canada and other countries, with experience working with at least one individual who has EOD/MCI. The project uses a Sequential Exploratory Design. The methodology begins with semi-structured interviews using an interpretivist paradigm and phenomenological design. Interview guide includes open ended questions involving experiences, barrier and challenges to role, collaboration with employers, etc. Qualitative data will be analyzed using NVivo by at least two independent coders through thematic analysis. Scoping Review of the literature simultaneously conducted to understand state of literature and present knowledge gaps.

**Results:** Scoping review in progress and indicating little to no research involved between OTs, populations with EOD and MCI, and the workplace. 1 participant interview conducted yielding themed of lack of services and resources for EOD/MCI specific issues and lack of involvement with/from employer.

**Discussion:** Preliminary results show OT's working with these populations need more assistance to provide better support.

**Implication for Future of Rehabilitation:** Provides OTs and employers with a reference when working with these populations. Can further inform creation of future guidelines involving these populations and their places of work; This can include how OTs can help these groups in the context of their employment and how workplaces can better accommodate these individuals' needs.



**Poster #22: Association between infrapatellar fat pad and knee bone density in postmenopausal women with osteoarthritis: the PoKIMP study**

Espinosa Hernandez, Michelle, 1; Liu, Siwen, 1; Yanzdankhah, Nima, 1; Anwari, Vahid, 1; Johnston, James D., 1; Naraghi, Ali, 1; Veit-Haibach, Patrick, 1; Coolens, Catherine, 1; Rosenberg, Dmitry, 2

1 Joint Department of Medical Imaging, University Health Network; 2 Rehabilitation Sciences Institute, Temerty Faculty of Medicine, University of Toronto; 3 Dalla Lana School of Public Health, University of Toronto;

**Field of Research:** Occupational Science;

**Funding:** CIHR Project Grant PJT-156274, IRTG Award from University of Toronto and University of Melbourne

**Background:** The infrapatellar fat pad (IPFP) is an irregularly shaped region in the knee between the patellar tendon, femoral condyle and tibial plateau. (Cai et al., 2015) Due to its composition and proximity to cartilage and bone surfaces, it has become an area of interest for the pathogenesis of osteoarthritis (OA). (Cai et al., 2015, Ragab and Serag, 2021) This rheumatic disease is characterized by increased bone density and risk factors such as sex, age, and body mass index (BMI). (Cai et al., 2015)

**Purpose/Hypothesis:** This project aims to relate IPFP perfusion and muscle to tibial and femoral bone density in postmenopausal women.

**Methods:** In this cross-sectional study, knee peripheral quantitative computed tomography (pQCT) scans were performed in 52 women (61.86-8.55 yrs; BMI: 22.52-8.55 kg/m<sup>2</sup>). The IPFP was manually segmented from transaxial slices internal to the lateral and medial tibia, and lateral and medial femur compartments. Bone and IPFP blood perfusion (Kep metric) was measured by dynamic contrast enhanced MRI and pharmacokinetics. Linear regressions were applied to seven input exposures and adjusted for age and BMI. The outcome was compartmental trabecular bone density.

**Results:** Higher Kep was significantly associated with lower lateral femur trabecular bone density either alone (-2.22(-3.92, -0.53)) or adjusted for IPFP area (-1.70(-3.43, 0.03)) or total volume (-2.18(-3.88, -0.48)). The opposite was observed for higher perfusion in the lateral tibia bone and a correspondingly higher total bone density (1.24(0.34, 2.15)). Lower periarticular muscle mass was significantly related to greater lateral femur (-0.49(-0.97, -0.02)) and medial tibia (-0.58(-1.02, -0.15)) total bone density and with a higher lateral (-0.49(-0.97, -0.02)) and medial (-2.76(-5.35, -0.17)) tibial trabecular bone density.

**Discussion:** The most significant relations for IPFP and muscle properties occurred in the lateral tibia, determined by associations in the trabecular region. A larger amount of fat and higher perfusion indicative of inflammation within it may be responsible for bone deterioration reminiscent of osteoporosis in postmenopausal women with early osteoarthritis. However, the presence of inflammation in the bone may already be a sign of advanced disease triggering bone thickening.

**Implication for Future of Rehabilitation:** This study is focused on postmenopausal females and has not yet measured gender constructs, but several psychosocial and gender role expectation questionnaires have been amended for inclusion into future work.

## **Poster #23: An exploratory study on the predictors of lifelong participation in adults with upper limb musculoskeletal differences**

Davidson, Lexi, 1,3; Ho, Emily, 2,3

1 Rehabilitation Sciences Institute, Temerty Faculty of Medicine, University of Toronto; 2 Occupational Science and Occupational Therapy, Temerty Faculty of Medicine, University of Toronto; 3 Division of Plastic and Reconstructive Surgery, The Hospital for Sick Children;

**Field of Research:** Occupational Science; Rehabilitation Health Services Studies

**Funding:** The Patty Rigby and John Wedge Graduate Scholarship in Science and Technology, Connaught New Investigator Research Grant (Supervisor)

**Background:** For individuals living with birth-related upper limb musculoskeletal (MSK) differences, therapeutic programs focus on physical rehabilitation for improving participation in activities of daily living (ADLs). Beyond disproportionate mental health risks (e.g., anxiety, depression, stigma, etc.) found in comparative youth-cohort studies in this population, little is known about the social and psychological factors of these conditions in adult cohorts. These risks are compounded with a scarcity of assistance beyond adolescence.

**Purpose/Hypothesis:** The overall objective of this study is to address disparities in how MSK populations experience participation and rehabilitation beyond adolescence. This study aims to determine (1) if there is a difference in outcomes of participation frequency between adults (aged 19-34 years) with and without birth-related upper limb MSK diagnoses; (2) what physical, psychological, and social factors predict participation restrictions?

**Methods:** This convergent mixed-methods study includes (1) a quantitative cross-sectional survey of reliable and comprehensive patient-reported outcome measures (mental and physical health, pain interference, upper limb function, biographic data, medical diagnoses, socioeconomic status, and education level) to evaluate predictors of participation in ADLs (primary outcome) and (2) qualitative, interpretive semi-structured interviews, informed through co-design with patient partners, will be conducted to elucidate participants' prior autonomy, social interactions, and peer influences on their activities of participation. This study is currently in the data collection phase.

**Implication for Future of Rehabilitation:** This novel study is urgently needed to inform evidence-based guidelines for psychosocial interventions that could mitigate healthcare burdens in Canada and increase the quality of life for adults with birth-related upper limb MSK differences; both presently and proactively for future generations of this population.

## **Poster #24: The Youth Concussion Awareness Network (You-CAN): A Pilot Study**

Kerr, Brynna, 1; Wilson, Katherine, 2; Ippolito, Christina, 2; Reed, Nick, 1,2

1 Rehabilitation Sciences Institute, Temerty Faculty of Medicine, University of Toronto; 2 Department of Occupational Science & Occupational Therapy, Temerty Faculty of Medicine, University of Toronto;

**Field of Research:** Occupational Science;

**Funding:** This work is funded by the Canadian Institutes of Health Research

**Background:** Concussions represent a significant health concern for Canadian youth. Despite their high prevalence, concussions in the youth population remain largely underreported. This is a concern, as youth who do not get the care they need post-concussion may experience a greater number and severity of symptoms, taking them away from the activities they need and love to do. To address concussion underreporting, there is a need to provide youth with concussion education and resources that are easily accessible, relevant, and meaningful to them. Delivering this education using a peer education model in school settings shows promise as it can reach all youth and provides youth with the opportunity to learn from each other, resulting in more meaningful knowledge consumption and the development of leadership skills.

**Purpose/Hypothesis:** This pilot study aims to implement and evaluate the Youth Concussion Awareness Network (You-CAN) program. The You-CAN program is a school-based, peer-led education program for Canadian high school students which aims to increase high-school students' intentions to (1) report a concussion to an adult and (2) provide social support to a peer who has a concussion. We hypothesize that the You-CAN program will improve youths' concussion knowledge, ultimately improving youths' intended behaviours.

**Methods:** Four high schools from across Canada will participate in this longitudinal study. Each school will recruit students to create a Concussion Council. These councils will use the evidence-based concussion resources on the You-CAN web portal to design and run a week-long concussion awareness campaign at their schools. A school-wide survey, based on the Theory of Planned Behaviour, will be administered before and after the campaign to evaluate the success of the intervention.

**Discussion:** The majority of concussion education programs are created and delivered by adults and thus may not meet high-school students' needs. This study will be the first to evaluate the effectiveness of a school-based peer-led concussion education program for high school-aged students.

**Implication for Future of Rehabilitation:** The findings from this study may help inform the design of future concussion education initiatives so that they are more meaningful and engaging for youth. This may lead to improved concussion knowledge, attitudes and behaviours in this high-risk population.

## **Poster #25: Gaining insight into gender and Autism shaping mental health experiences of self-diagnosed women**

Routledge, Francis, 1,2; Hamdani, Yani, 1,2; Lai, Meng-Chuan, 3,4; Thulien, Naomi, 5,6

1 Rehabilitation Sciences Institute, Temerty Faculty of Medicine, University of Toronto; 2 Azrieli Adult Neurodevelopmental Centre, Centre for Addiction and Mental Health (CAMH); 3 Department of Psychiatry, Temerty Faculty of Medicine, University of Toronto; 4 Child and Youth Mental Health Collaborative, Centre for Addiction and Mental Health, Hospital for Sick Children and University of Toronto; 5 MAP Centre for Urban Health Solution, Li Ka Shing Knowledge Institute, St. Michael's Hospital; 6 Dalla Lana School of Public Health, University of Toronto;

**Field of Research:** Other - Social Sciences Perspectives;

**Funding:** Rehabilitation Sciences Institute, Centre for Addiction and Mental Health, Ontario Association on Developmental Disabilities

**Background:** Autism has been commonly conceptualized as Autism Spectrum Disorder (ASD) and has been heavily researched as a neurodevelopmental disorder. This biomedical way of understanding Autism underpins research focused on genetics and co-morbidities and the search for deficits in behaviours compared to socially accepted behavioural norms. Emphasizing biomedical constructions of Autism directs attention away from other ways of understanding the lived experiences of Autistic people, in which autistic ways of being and behaving are embraced as a dimension of difference rather than a deficit. Moreover, the profoundly personal experiences of autistic people related to assessment, diagnosis, community, and being labeled as 'disordered' can have significant effects on their health, wellbeing, and identity. Importantly, Autism can present differently in non-male populations. An Autism assessment gap exists where males are two to three times more likely to receive an Autism diagnosis than females. Limited understandings of Autism in women contribute to the discrepancy in diagnosis, significantly impacting women's health through misdiagnosis, underdiagnosis, or diagnosis later in life. As a result, many adults have relied on or arrived at self-diagnosis.

**Purpose/Hypothesis:** The purpose of this study is: 1) to explore how prevailing ideas about gender and Autism in health sciences intersect and shape the experiences of self-diagnosed autistic women, and 2) to examine the implications for their mental health.

**Methods:** Guided by a critical social science perspective and intersectionality, this qualitative mixed-methods study will involve a critical discourse analysis of health sciences literature on Autism, gender, and mental health and semi-structured interviews with self-diagnosed or self-identifying autistic women.

**Discussion:** Addressing this knowledge gap of mental health experiences of self-diagnosed or self-identifying Autistic women may help Autistic women receive diagnostic services appropriate to their gender if seeking a clinical diagnosis, receiving assessment earlier in life, preventing misdiagnosis and harmful experiences with health care.

**Implication for Future of Rehabilitation:** Examining the intersection of gender and Autism in the context of self-diagnosis will provide a novel lens to understand the mental health experiences of self-diagnosed autistic women.

# Rehabilitation Health Services Studies

*A multidisciplinary field of scientific investigation that studies how social factors, financing systems, organizational structures and processes, health technologies, and personal behaviors affect access to rehabilitation health care, the quality and cost of rehabilitation health care, and ultimately health and well-being. Its research domains are individuals, families, organizations, practitioners, institutions, communities, and populations.*

**Poster #26: Abnormal-Becoming-Normal: Conceptualizations of Childhood Disability in Children's Rehabilitation Textbooks**

Mosleh, Donya, 1,2; Gibson, B.E., 2,3

1 Rehabilitation Sciences Institute, Temerty Faculty of Medicine, University of Toronto; 2 CDARS Lab, Bloorview Research Institute, Holland Bloorview Kids Rehabilitation Hospital; 3 Department of Physical Therapy, Temerty Faculty of Medicine, University of Toronto;

**Field of Research:** Rehabilitation Health Services Studies;

**Funding:** Dr. Barbara Gibson's (Supervisor's) Chair in Childhood Disability Research

**Background:** Despite advancements to theory and practice, children's rehabilitation is dominated by taken-for-granted assumptions about disability and childhood.

**Purpose/Hypothesis:** In order to address a pressing need for scholarship in this area, this paper draws on post-structuralism, critical disability studies, and disabled children's childhood studies to interrogate the underlying logics and central assumptions of children's rehabilitation textbooks.

**Methods:** We drew on critical discourse analysis to examine eight North American textbooks: two from general rehabilitation; three from occupational therapy; and three from physical therapy.

**Results:** Our analysis highlights how the discourse of normal/abnormal is pervasive and underpins the understandings and logics deployed throughout the texts.

**Discussion:** We argue that the texts construct disabled children as abnormal-becoming-normal, and thus reinforce a moral imperative whereby disabled children are understood as requiring motivation and self-efficacy to lead a 'good'/ normal life.

**Implication for Future of Rehabilitation:** In drawing on these reductive understandings, children's rehabilitation relies on a disempowering conception of disabled children as lacking, and thus fails to acknowledge and appreciate the many ways in which disabled children can be and become.

## **Poster #27: The Basic Science of Patient-Provider Communication: In Theory and Practice**

Forsey, Jacquelin, 1,2; Ng, Stella, 1,5; Rowland, Paula, 2,7; Freeman, Risa, 4; Li, Connie, 6; Woods, Nikki, 2,3

1 Rehabilitation Sciences Institute, Temerty Faculty of Medicine, University of Toronto; 2 The Wilson Centre, UHN; 3 The Michener Institute, University Health Network; 4 Family and Community Medicine, Temerty Faculty of Medicine, University of Toronto; 5 The Centre for Interprofessional Education, University Health Network; 6 Department of Medicine, Faculty of Health Sciences, McMaster University; 7 Institute of Health Policy, Management and Evaluation, University of Toronto;

**Field of Research:** Rehabilitation Health Services Studies;

**Funding:** Ontario Graduate Scholarship, Rehabilitation Sciences Institute, Unity Health

**Background:** To prepare health professionals to provide expert care to Canadians, we must prepare them to be expert and adaptable communicators with their patients. Communication affects all levels of care from diagnosis through to treatment adherence, psychological and physiological outcomes. We know that integrating conceptual knowledge, or basic science, into clinical teaching improves learning outcomes. We are currently exploring the belief that this will remain true for basic communication science as well.

**Purpose/Hypothesis:** The purpose of this work is to identify the basic science underpinning patient-provider communication and explore the ways in which it is integrated into current classroom and workplace learning environments.

**Methods:** The first stage in this work was to identify basic communication science principles of patient-provider communication. This was accomplished through the completion of a scoping review. Phase two of the project is underway and is a mixed-methods document analysis exploring basic communication science within health professions communication training materials. Phase three will explore basic communication science in the context of workplace teaching and learning that occurs between staff and trainees at Holland Bloorview Kids Rehabilitation Hospital.

**Results:** Our critical scoping review revealed 6 conceptual groupings that describe the basic science of communication. We will be using these groupings as a lens to explore teaching materials used for communication skills training. We are currently in the process of gathering and analysing teaching documents. Initial findings suggest that the concepts of managing transactional and relational goals, clarity, and patient activation are frequently highlighted in teaching documents, while epistemic access and identity/role are rarely topics of focus.

**Discussion:** Our review paper very clearly outlines the basic science principles that could support a strong communication skills training program. However, these concepts may not align with the needs and priorities of health professions communication training programs as evidenced by teaching materials and teaching observations.

**Implication for Future of Rehabilitation:** This project will bridge the gap between basic communication science and current pedagogical approaches, with the hope that future educational innovations can integrate theoretically informed instructional content with the needs and priorities of institutions and trainees



## **Poster #28: Sex Differences in Post-Stroke Depressive Symptoms at Entry to Cardiac Rehabilitation: A Retrospective Study**

Du, Olivia, 1,2; Brooks, Dina, 1,3; Oh, Paul, 1,2; Marzolini, Susan, 1,2

1 Rehabilitation Sciences Institute, Temerty Faculty of Medicine, University of Toronto; 2 KITE-Toronto Rehabilitation Institute, University Health Network; 3 School of Rehabilitation Science, McMaster University;

**Field of Research:** Rehabilitation Health Services Studies; Social and Cognitive Rehabilitation

**Funding:** Seed/Catalyst Grant to Improve Heart and Brain Health for Women or Indigenous Women in Canada Competition from the Heart and Stroke Foundation of Canada, 2021-2022 Canadian Institute of Health Research Frederick Banting and Charles Best Canada Graduate Scholarship-Master's Scholarship

**Background:** Post-stroke depressive symptoms (PSDS) affect approximately 1 in 3 people in the first year post-stroke. Knowledge gaps exist about if and why sex differences exist in PSDS prevalence, specifically at entry to cardiac rehabilitation (CR).

**Purpose/Hypothesis:** To examine sex differences in PSDS prevalence at entry to CR and identify predictors in all patients, and males and females separately. We hypothesize a greater proportion of females than males will have PSDS. Unique predictors will be identified between sexes.

**Methods:** This retrospective study from the Toronto Rehabilitation CR database (2006-2017) included people with stroke who completed the Center for Epidemiologic Studies Depression (CES-D) scale at entry to CR. Bivariate analysis determined sex differences in PSDS prevalence (CES-D $\geq$ 16). Multivariate logistic regression identified PSDS predictors.

**Results:** Patients (n=1278, 28.8% female) had a mean age of 64.0 $\pm$ 12.9 years and mean time from stroke to CR entry of 23.5 $\pm$ 48.6 months. Among all patients, 29.9% had PSDS. A greater proportion of females than males had PSDS (39.1% vs 26.2%, p<0.001). A greater proportion of females than males had PSDS in 51-60 years (p=0.02) and 61-70 years (p<0.001) age groups. Females with PSDS entered CR 11.8 $\pm$ 34.2 months later than males with PSDS (p=0.02). Predictors of PSDS in all patients were female sex (OR=1.6, 95%CI [1.14-2.13]), unemployment, antidepressant prescription,  $\leq$ 50 years of age compared to the 2 oldest age groups ( $\geq$ 71 years), lower cardiorespiratory fitness ( $\dot{V}O_2$ peak), chronic obstructive pulmonary disease (COPD), higher body mass index (BMI), no transient ischemic attack, and later CR entry (>12 months post-stroke). Predictors in females were obesity (BMI $\geq$ 30), 51-60 years of age compared to 71-80 years of age, antidepressant prescription, and not married. Predictors in males were  $\leq$ 50 years of age compared to the 3 oldest age groups ( $\geq$ 61 years), unemployment, antidepressant prescription, lower  $\dot{V}O_2$ peak, sleep apnea, COPD, and no hypertension.

**Discussion:** Females are disproportionately affected by PSDS at entry to CR. Females and males had mostly unique PSDS predictors indicating tailored strategies to address PSDS are needed. Greater delay to CR entry in females with PSDS and greater odds of PSDS in people entering CR >12 months post-stroke suggest efforts should target timely referral to facilitate earlier and repeated screening and management.

**Implication for Future of Rehabilitation:** Effects of CR on PSDS, specifically the association with change in  $\dot{V}O_2$ peak and BMI should be investigated.

## **Poster #29: Program Options for Accessible Playgrounds in Education and Pediatric Health Care Settings**

Sedres, Shalaine, 1,2; Ross, Timothy, 1,2

1 Rehabilitation Sciences Institute, Temerty Faculty of Medicine, University of Toronto; 2 Engagement & Planning for Inclusive Communities Lab), Holland Bloorview Kids Rehabilitation Hospital;

**Field of Research:** Rehabilitation Health Services Studies; Social and Cognitive Rehabilitation

**Funding:** Rehabilitation Science Institute, Dr. Timothy Ross Supervisor Stipend, 2022-23 HBKRH Centre for Leadership Grant

**Background:** Play offers important benefits to children, including those with disability. It presents opportunities to interact with peers, advance social competencies, and to develop physical skills. The literature tells us that children with disabilities (CWD) experience reduced participation in play due to poor social supports, inaccessible infrastructure, and attitudinal barriers. In recent years, however, there has been a shift toward building accessible playgrounds, but little scholarly attention to developing programming options. In 2020, Holland Bloorview Kids Rehabilitation Hospital opened an accessible playground that has potential to be leveraged via program options.

**Purpose/Hypothesis:** This study aims to: (1) To understand the accessible playground programming needs and desires of CWD, their parents, and both education and health care professionals; and (2) To produce and share well-informed recommendations for developing playground programming options that will enhance play, educational, and clinical experiences on playgrounds, and ultimately improve quality of life for CWD.

**Methods:** This study will use a qualitative approach involving arts-based research methods. We will engage 6 CWD in draw-and-write activities to produce visual and verbal narratives of their experiences. 24 participants will complete semi-structured interviews focused on their accessible playground programming experiences, needs, and desires.

**Implication for Future of Rehabilitation:** This work may yield new solutions for increasing and enhancing accessible playground usage in pediatric rehabilitation. It can do so by identifying novel play and rehabilitation programming options that leverage accessible playground infrastructure and enhance clinical practice. Findings and recommendations will also have implications for equity, diversity, and inclusion initiatives in the pediatric rehabilitation field by seeking to advance equitable access to play opportunities. Potential implications include playground programming options for play (e.g., play clubs), structural changes (e.g., new signage), and best practices for scheduling programs.

### **Poster #30: How Do Healthcare Partners Act as Boundary Spanners in Community-Based Exercise Programs with Healthcare-Community Partnerships? A Proposal**

Alsbury-Nealy, Kyla, 1; Colquhoun, Heather, 1,2; Jaglal, Susan B., 1,3,4; Munce, Sarah, 1,2,4; Salbach, Nancy M., 1,3,4

1 Rehabilitation Sciences Institute, Temerty Faculty of Medicine, University of Toronto; 2 Department of Occupational Science & Occupational Therapy, Temerty Faculty of Medicine, University of Toronto; 3 Department of Physical Therapy, Temerty Faculty of Medicine, University of Toronto; 4 The KITE Research Institute, Toronto Rehabilitation Institute, University Health Network;

**Field of Research:** Rehabilitation Health Services Studies;

**Funding:** Heart & Stroke Foundation, Canadian Frailty Network, Rehabilitation Sciences Institute

**Background:** Community-based exercise programs with healthcare-community partnerships (CBEP-HCP) are supported by registered healthcare providers called healthcare partners, whose responsibilities can include overseeing instructors, monitoring the program, and promoting referrals to the program. The majority of healthcare partners in a Canadian CBEP-HCP, the Together In Movement and Exercise (TIMETM) program, are physical therapists. Referrals from healthcare partners to TIMETM programs, however, are inconsistent. Theoretical models indicate that boundary spanners who have experience in different settings can link disconnected domains. Healthcare partners can be considered boundary spanners connecting healthcare settings and community programs, however their role has not yet been studied. The Knowledge-to-Action Framework guides this research by helping to identify the problem, adapt knowledge to local context, and assess barriers and facilitators.

**Purpose/Hypothesis:** The purpose of this study is to explore how healthcare partners understand and enact their role as boundary spanners in the context of referrals to CBEP-HCPs.

**Methods:** A qualitative study using an interpretivist approach will be conducted. We will invite healthcare partners (current or those who held this role in the last five years) from 27 centres offering the TIMETM Program to participate in semi-structured interviews via Zoom. Interviews will be audio-recorded, transcribed, and analyzed using reflexive thematic analysis. Measures (e.g., transparency) to optimize research rigor will be employed.

**Discussion:** This study will help to illuminate the role of healthcare partners in CBEP-HCPs and healthcare providers as boundary spanners, which is a recommended role for physical therapists as per best practice guidelines.

**Implication for Future of Rehabilitation:** This is the first study that will focus on healthcare partners involved in the TIMETM program and will have implications for the training of healthcare partners to facilitate referral. Findings may be transferable to other CBEP-HCPs (e.g., the Fitness And Mobility Exercise program).

## **Poster #31: A Scoping Review of Social Connection Measurement Tools for Older Residents Living in LTC homes (with and without dementia)**

Liougas, Madalena , 1; Sommerlad , Andrew, 4; O'Rourke , Hannah, 5; Bethell , Jennifer, 1,2,3; McGilton, Kathy , 1,2,6

1 Rehabilitation Sciences Institute , Temerty Faculty of Medicine , University of Toronto; 2 KITE-Toronto Rehabilitation Institute, University Health Network; 3 Institute of Health Policy, Management & Evaluation, University of Toronto; 4 Division of Psychiatry, University College London; 5 Faculty of Nursing, University of Alberta; 6 Lawrence S. Bloomberg Faculty of Nursing, University of Toronto;

**Field of Research:** Rehabilitation Health Services Studies; Social and Cognitive Rehabilitation

**Funding:** Walter & Maria Schroeder Institute for Brain Innovation and Recovery, Advancing Research on Care and Outcome Measurement (ARCOM) grant from the Alzheimer's Association, Brain Canada and Leveraging an Interdisciplinary Consortium to Improve Care and Outcomes for Persons living with Alzheimer's and Dementia (LINC-AD) grant

**Background:** Social connection comprises multiple distinct aspects describing how individuals connect to each other. It has significant impacts on quality of life and well-being in older adults living in long-term care (LTC) homes. This population is disproportionately affected by poor social connection due to cognitive impairment, complex health needs and changes in social networks. Various measurement tools have been used to assess social connection in LTC home populations. While these tools assess multiple aspects of social connection, they use inconsistent terminology and there is no gold standard approach to measurement, leading to further ambiguity around quantifying this construct.

**Purpose/Hypothesis:** The objective of this scoping review is to describe and analyze how social connection is assessed in measurement tools developed specifically for LTC resident populations.

**Methods:** A literature search was conducted in MEDLINE ALL (Ovid), Embase Classic and Embase (Ovid), Emcare Nursing (Ovid), APA PsycInfo (Ovid), Scopus, CINAHL Complete (EBSCOhost), AgeLine (EBSCOhost), and Sociological Abstracts (ProQuest) from database inception to November 18th, 2021. Studies were included if they: (1) were conducted in LTC resident populations, (2) quantified any aspect(s) of social connection and (3) reported at least one psychometric property for the measure(s) of social connection. Two reviewers independently screened titles and abstracts, and reviewed full text articles against inclusion criteria. Data extraction will be carried out in duplicate. Content analysis, guided by the framework method, will be used to analyze data and synthesize findings.

**Discussion:** This review will create a comprehensive list, detailing existing measurement tools, their characteristics, and approaches to measurement. It will inform the development of a comprehensive conceptual framework to demonstrate how social connection is conceptualized and operationalized in measures developed specifically for LTC resident populations.

**Implication for Future of Rehabilitation:** This review will advance the measurement of social connection in LTC residents. The findings will inform future measurement tool development through its contribution to the SONNET study. SONNET is creating a novel, person-centered, social connection measurement tool for people living in LTC homes.

## **Poster #32: Wellness in Action: What Do Wellness Principles Look Like in Real-World Special Olympics Practices and Activities and How Can They Be Supported?**

Formosa, Victoria, 1,2; McPherson, Amy, 2,3; Hamdani, Yani, 4,5; Reed, Nick, 1,2,5

1 Rehabilitation Sciences Institute, Temerty Faculty of Medicine, University of Toronto; 2 Holland Bloorview Kids Rehabilitation Hospital; 3 Dalla Lana and Rehabilitation Sciences Institute, Temerty Faculty of Medicine, University of Toronto; 4 Azrieli Adult Neurodevelopmental Centre, University of Toronto; 5 Department of Occupational Science and Occupational Therapy, Temerty Faculty of Medicine, University of Toronto;

**Field of Research:** Rehabilitation Health Services Studies;

**Funding:** Special Olympics Canada Research Grant, Dr. Amy McPherson (supervisor's) grant

**Background:** Working in close partnership with Special Olympics Canada (SOC), our research team has conducted a series of impactful studies exploring how important wellness is for SOC's athletes, families, coaches and staff. Wellness addresses how individuals can lead meaningful lives by focusing on their unique strengths and resources across these multiple wellness dimensions. This takes a positive approach to health rather than the deficit approach (i.e., focusing on what a person can't do), which is often the focus for people with intellectual and developmental disabilities. A wellness approach strongly aligns with SOC's values, including honouring what is unique in and for each individual.

**Purpose/Hypothesis:** The goal of this proposed study is to help SOC better understand how their programs can contribute to athlete wellness and provide practical examples so they can ensure that wellness principles are purposefully integrated into their programs and activities.

**Methods:** Guided by the five wellness principles identified with SOC in our previous research, we will use an ethnographic, mixed methods approach to identify wellness principles in action in SO programs, describing specific examples and showcasing where coaches are already making positive wellness contributions to benefit athletes.

**Implication for Future of Rehabilitation:** This project will provide a better understanding of how to support athletes across multiple wellness dimensions to improve their overall well-being and enrich their lives.

### **Poster #33: Exploring Physical Activity Behaviours during COVID-19 after Moderate-to-Severe Traumatic Brain Injury**

Quilico, Enrico, 1,2; Swaine, Bonnie, 2,3; Wilkinson, Shawn, 4; Duncan, Lindsay, 5; Sweet, Shane, 2,5; Bedard, Evelyne, 5; Colantonio, Angela, 1,6

1 Rehabilitation Sciences Institute, Temerty Faculty of Medicine, University of Toronto; 2 Centre de recherche interdisciplinaire en réadaptation du Montréal métropolitain, Institut universitaire sur la réadaptation en déficience physique de Montréal; 3 École de réadaptation, Faculté de médecine, Université de Montréal; 4 Applied Human Sciences, Faculty of Arts and Science, Concordia University; 5 Kinesiology and Physical Education, Faculty of Education, McGill University; 6 KITE-Toronto Rehabilitation Institute, University Health Network;

**Field of Research:** Rehabilitation Health Services Studies; Movement Science

**Funding:** Social Sciences and Humanities Research Council of Canada Insight Grant #504363, Sport Canada Research Initiative Grant #506014, Dr. Angela Colantonio's (Supervisor's) Canada Research Chair in Traumatic Brain Injury in Underserved Populations

**Background:** Physical activity (PA) is proposed for the management of long-term problems after traumatic brain injury (TBI) with mood, quality of life, and participation. However, COVID-19 mitigation strategies in Canada resulted in the widespread closures of community-based fitness centres, including one housing an innovative peer-assisted PA program (TBI Health). The impact of closing community-based programs serving persons with moderate-to-severe TBI has not been fully explored in the COVID-19 context.

**Purpose/Hypothesis:** The purpose of this interpretive phenomenological analysis (IPA) was to provide an in-depth exploration of COVID-19's impact on the TBI-Health program for adults with moderate-to-severe TBI and determine how their PA behaviours could be supported in the pandemic.

**Methods:** Semi-structured Zoom-facilitated interviews were conducted with a sample of seven female and nine male adults with moderate-to-severe TBI (including program participants and mentors). Audio-recordings were transcribed verbatim for the IPA analysis with a sex and gender lens, which identified three major themes.

**Results:** Importance of PA after a TBI included the benefits of PA after TBI, adapting PA to the pandemic, and desire for an adapted PA program. Lasting Impacts of the TBI-Health Program identified belonging to the TBI-Health community, as well as benefits and knowledge transfer from the PA program. Resilience and Loss through the Pandemic comprised the repercussions of COVID-19, loss of the PA program, and resilience after TBI.

**Discussion:** Study participants identified the profound impacts COVID-19 had on their lives and optimal methods to support PA behaviours in the pandemic.

**Implication for Future of Rehabilitation:** Recommendations include examining the feasibility of adapted outdoor PA programs after moderate-to-severe TBI.

## **Poster #34: Exploring Electrical Injury Survivors and Caregivers' Experiences with Social Support: A Qualitative Study**

Zahir, Susan, 1,2; Wasilewski, Marina, 1,2

1 Rehabilitation Sciences Institute, Temerty Faculty of Medicine, University of Toronto; 2 St. John's Rehab Research Program, Sunnybrook Health Sciences Center;

**Field of Research:** Rehabilitation Health Services Studies;

**Funding:** Sunnybrook Foundation, Dr. Marina Wasilewski

**Background:** Following a traumatic injury, social support has been found to play a key role in alleviating stress for both the survivor and their caregiver. Although the importance of social support has been well established, no research to date has focused on the role of it in an electrical injury (EI) survivor and caregiver's psychosocial recovery. EI can cause any of the complications associated with thermal burns, but the electricity-induced trauma produces a pathology unique to this mechanism of injury. The psychosocial consequences of EI are significantly disabling and greatly impede an individual's mental and physical functioning, ability to return to work, resume daily activities, and maintain family relationships and community engagement. Unfortunately, the impact of burn injuries is not confined to the survivor, as caregivers of burn patients often must deal with many concerns, such as psychological problems, financial issues, child-care, and changes in family roles. Research suggests that, compared to other traumatic injuries, EI results in unique challenges for both the survivor and caregiver. Thus, research is needed to explore this population within the context of social support in order to inform EI-specific support programming.

**Purpose/Hypothesis:** Our proposed research aims to address the gap in the literature by exploring the lived experiences of EI survivors and caregivers with social support engagement throughout the recovery journey.

**Methods:** We will conduct one-on-one semi structured interviews with the survivors and caregivers from the inpatient and outpatient burn programs at Sunnybrook (Ross Tilley Burn Centre) and St. John's Rehab. The interviews will be transcribed verbatim and thematic analysis will be used to analyze the interviews. We are aiming to recruit 15-20 participants (3-5 caregivers and 12-15 survivors). A secondary analysis of the data will be conducted using a Strengths, Opportunities, Aspirations, and Results (SOAR) framework. The findings from this analysis will serve as an important evidence base to inform future development and implementation of social support programming for EI survivors and their caregivers.

**Implication for Future of Rehabilitation:** This study will shed light on the experiences of EI survivors and their caregivers in an effort to develop the substantive knowledge needed to assist rehab professionals in providing timely family-centered social support services with the goal of optimizing the health of EI survivors and caregivers and enhancing the recovery process.



**Poster #35: Online mindfulness for individuals with physical and mental health conditions and seeking health behaviour change(s): a scoping review**

Senthilnathan, Vjura, 1,2; Simpson, Robert, 1,2; Jaglal, Susan, 2,3; Craven, Cathy, 2,4; Fetterly, Mary-Jo, 2,5; Munce, Sarah, 1,2

1 Rehabilitation Sciences Institute, Temerty Faculty of Medicine, University of Toronto; 2 KITE-Toronto Rehabilitation Institute, University Health Network; 3 Department of Physical Therapy, Temerty Faculty of Medicine, University of Toronto; 4 Institute of Health Policy, Management, and Evaluation, University of Toronto; 5 Trinity Yoga INC.;

**Field of Research:** Rehabilitation Health Services Studies;

**Funding:** Branch Out Neurological Foundation, Dr. Sarah Munce's (Supervisor's) Craig H. Neilsen Foundation PSR Pilot Grants

**Background:** Mindfulness programs have become increasingly popular to improve the well-being of healthy individuals and patients. With increasing internet access, there has been an increase in the administration of online mindfulness programs. Yet, the literature has not examined the key characteristics of these programs, especially across various health conditions and health behaviour changes.

**Purpose/Hypothesis:** To identify the nature and extent of the literature on online mindfulness programs for individuals with physical and mental health conditions and seeking health behaviour changes, and their key characteristics.

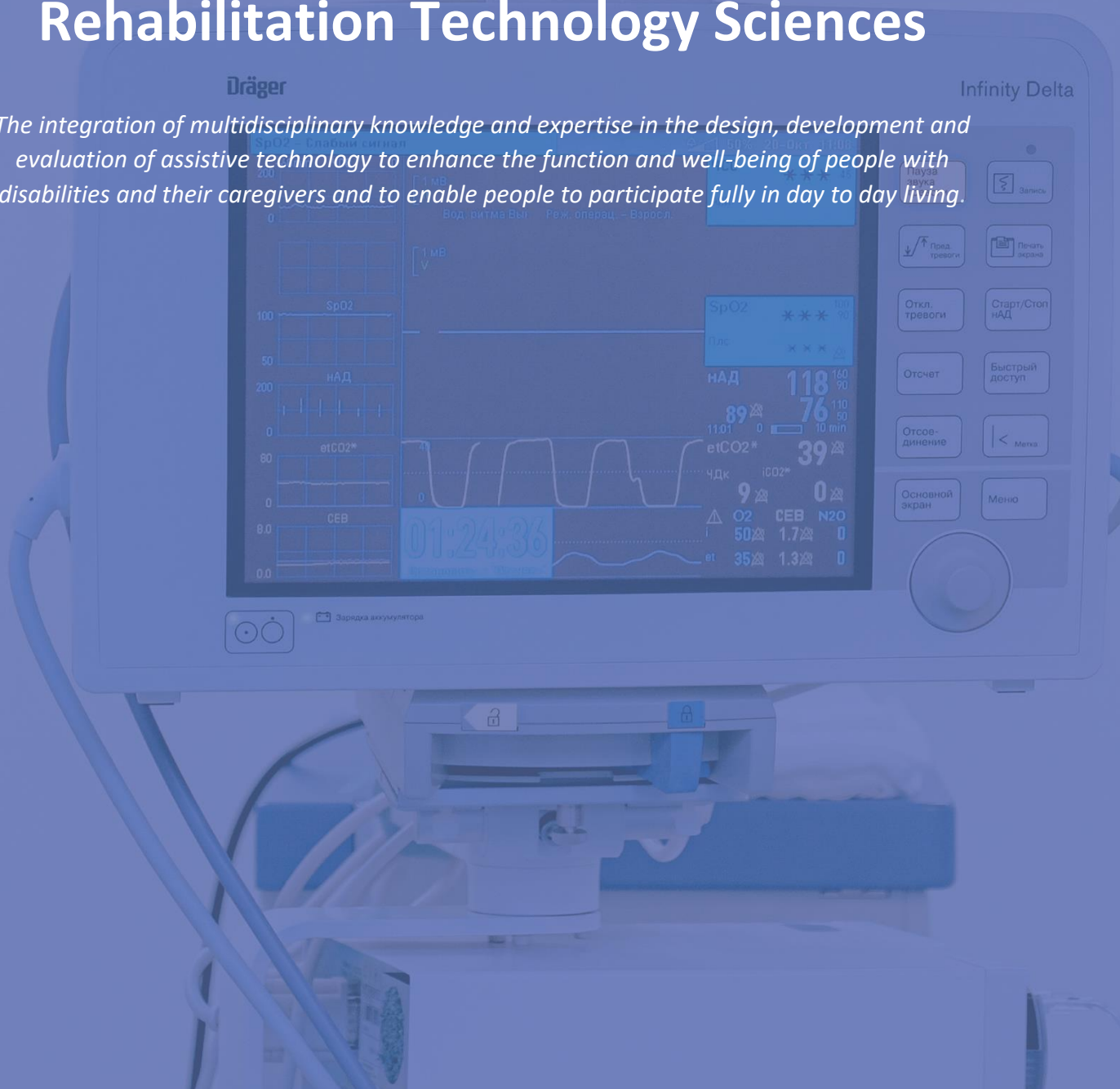
**Methods:** A scoping review guided by the Joanna Briggs Institute (JBI) framework will examine online mindfulness-based interventions (MBIs), online mindfulness-based stress reduction (MBSRs) and online mindfulness-based cognitive therapy (MBCT) across health conditions and health behaviour changes. We will search for articles in MEDLINE, EMBASE, PsycINFO, Allied and Complementary Medicine and the Cochrane Central Register of Controlled Trials between 1980 and March 2022. We will use an integrated knowledge translation (iKT) approach, where researchers and stakeholders collaborate during the research process, resulting in research relevant to end-users. We will assemble a team of end-users and experts in online interventions, mindfulness, and knowledge syntheses. Their responsibilities will include finalizing the research objective, search terms, and dissemination strategies.

**Discussion:** This review is the first to map the literature on online mindfulness programs across various health conditions and health behaviour changes. We will identify key characteristics and outcomes that have been implemented and are relevant to online mindfulness programs. We may then identify which key characteristics are associated with successful outcomes to inform future research. Dissemination will occur through conferences and publications in peer-reviewed journals. End-of-grant knowledge translation will take place through organizations interested in online mindfulness programs.

**Implication for Future of Rehabilitation:** With the rise in digital rehabilitation services, this review will identify gaps and characteristics of online mindfulness programs that will inform the development of future online mindfulness programs.

# Rehabilitation Technology Sciences

*The integration of multidisciplinary knowledge and expertise in the design, development and evaluation of assistive technology to enhance the function and well-being of people with disabilities and their caregivers and to enable people to participate fully in day to day living.*



## **Poster #37: Identifying priorities for balance interventions through a participatory co-design approach with end-users**

Benn, Natasha, 1,2; Benson, Kayla, 2; Chan, Katherine, 2; Lee, Jae, 2,3; Inness, Elizabeth, 1,2; Wolfe, Dalton, 4; Alizadeh-Meghbrazi, Milad, 5; Masani, Kei, 2,3; Musselman, Kristin, 2,6

1 Rehabilitation Sciences Institute, Temerty Faculty of Medicine, University of Toronto; 2 KITE-Toronto Rehabilitation Institute, Toronto Rehabilitation, University Health Network; 3 Institute of Biomedical Engineering, Temerty Faculty of Medicine, University of Toronto; 4 Parkwood Institute; 5 Myant Inc.; 6 Department of Physical Therapy, Temerty Faculty of Medicine, University of Toronto;

**Field of Research:** Rehabilitation Technology Science; Movement Science

**Funding:** Dr. Kristin Musselman's (Supervisor's) CHRP Grant

**Background:** Falling is a health care crisis for people with impaired balance control due to neurological conditions. As a result, developing effective balance interventions is a research priority.

**Purpose/Hypothesis:** The purpose of this study was to identify and understand the priorities for balance interventions from the perspectives of end-users, including people with spinal cord injuries (SCI) or stroke, physiotherapists (PTs), and hospital administrators, to assist with the design of a standing balance intervention that combines functional electrical stimulation (FES) with visual feedback training.

**Methods:** Two people with SCI, one person with stroke, two PTs and one hospital administrator were recruited by convenience sampling from three hospitals in Ontario, Canada. Participants attended three focus group meetings, each lasting 50-53 minutes. A semi-structured interview guide was used to query participants' experiences with balance deficits and interventions, and FES. Meetings were audio-recorded and transcribed verbatim. An iterative and reflexive inductive thematic analysis was conducted by three researchers.

**Results:** Four themes were identified: 1) The complexity and importance of balance for daily life and rehabilitation. As described by a participant, "without balance you cannot do anything." Participants acknowledged the importance of continuing to work on balance post-discharge to attain their goals, and how balance deficits interfere with participation in therapeutic activities. 2) Considerations for balance interventions. Participants want balance interventions to be tailored to patients' unique needs, relevant to them and be fun and engaging. 3) Prior experiences with FES to inform future therapeutic use. Participants were motivated to use FES for its scientific evidence and benefits, including awakening muscles, improved confidence, and quality of life. The challenges of FES included wires, cost, and time of set up. 4) Potential role of FES in balance interventions. Participants felt that FES would complement balance interventions and explored future possible combinations.

**Discussion:** Although FES is rarely found in balance interventions, the findings support that the development of a combined intervention would be advantageous for end-users. Many factors must be considered prior to the implementation of a balance intervention though.

**Implication for Future of Rehabilitation:** The priorities and challenges identified will inform and improve the design and implementation of interventions targeting balance in people with SCI and stroke.

**Poster #38: Exploring the demand for a video gaming, home rehabilitation intervention for children with cerebral palsy in Costa Rica.**

Chan Viquez, Daniela, 1, 2; Fernandez-Huertas, Heilyn, 3; Khan, Ajmal, 2; Fehlings, Darcy, 2,5; Munce, Sarah, 1,4; Wright, Virginia, 1,2; Biddiss, Elaine, 2,6

1 Rehabilitation Sciences Institute, Temerty Faculty of Medicine, University of Toronto; 2 Bloorview Research Institute, Holland Bloorview Kids Rehabilitation Hospital; 3 Escuela de Tecnologías en Salud, Facultad de Medicina, Universidad de Costa Rica; 4 KITE–Toronto Rehabilitation Institute, University Health Network; 5, Temerty Faculty of Medicine, University of Toronto; 6 Institute of Biomedical Engineering, Faculty of Applied Science & Engineering, University of Toronto;

**Field of Research:** Rehabilitation Technology Science;

**Funding:** Dr. Elaine Biddiss, Azrieli Foundation

**Background:** Economic and geographic barriers can limit access to rehabilitation therapies for children with cerebral palsy (CP), especially in developing countries. Effective and engaging approaches are needed to motivate and support children in practicing motor therapies at home.

**Purpose/Hypothesis:** Bootle Blast (BB) is a customizable, low-cost, movement-tracking videogame that encourages upper limb (UL) exercises. Phase 1 of this mixed methods study aims to understand the demand for a family-centred, BB home intervention among Costa Rican children with hemiplegic CP.

**Methods:** Fifteen children-parent dyads will participate. Children (hemiplegic CP, 7-17 yrs.) must have an accessibility barrier to UL rehabilitation services. Indicators of demand are: 1) recruitment rate  $\geq 3$  dyads a month, 2)  $\geq 80\%$  of dyads interested in BB will have an appropriate screen and space to play, 3) dyads can set a weekly playtime goal (PTG)  $\geq 45$  minutes, and identify at least one UL therapy goal, and 5) participants expectations for the BB program. Indicators 1 and 2 are collected during screening and reported using descriptive statistics. Indicators 3 and 4 are identified in a pre-intervention interview, using inductive thematic analysis.

**Results:** Five children (7-8 yrs.) were enrolled in 2 months. All dyads had appropriate equipment and space to play BB at home. PTGs ranged from 20-30 min, in 3-4 days per week. All participants identified at least UL therapy goals. Main expectations were having access to “some therapy”, improving fine motor skills and “having fun” with BB.

**Discussion:** Despite high expressed interest in the program, the extensive screening process and limited human resources (i.e., one researcher) affected the recruitment rate. Most families in Costa Rica have a flat-screen TV. Since BB only requires a 3x3 m<sup>2</sup> of space to play, these were not barriers to implementing the program. The use of a short video showcasing BB (recruitment strategy) made the intervention easy to understand, so participants could set specific UL goals. Most children had not received therapy for  $\geq 1$  year, and families shared a feeling that “any therapy is better than no therapy”. As expected, children were motivated by the fun component of BB, while parents were interested in its therapeutic value.

**Implication for Future of Rehabilitation:** Worldwide, children face accessibility barriers to motor therapy services. This study will provide valuable learnings on how therapy gaming interventions can/should be implemented to bridge accessibility gaps, engage children and caregivers, and improve access to care.

# Speech-Language Pathology (SLP)

*SLP is a multidisciplinary field of research concerned with the study of the normal processes of speech, language and swallowing function as well as research into the etiology, symptomatology, and prognosis of various disorders and efficacious methods for evaluation and treatment of such disorders. Specific populations of interest include individuals affected by disorders of developmental language, neurogenic speech and language, fluency, voice, articulation/phonology, and swallowing across a wide age range.*

**Poster #39: 3D video tracking technology in the assessment of orofacial impairments in neurological disease: Clinical validation**

Jafari, Deniz, 1,2; Guarin, Diego, 3; Simmatis, Leif, 1,2; Bouvier, Liziane, 1,4; Taati, Babak, 1,2; Yunusova, Yana, 1,2;

1 Rehabilitation Sciences Institute, Temerty Faculty of Medicine, University of Toronto; 2 KITE-Toronto Rehabilitation Institute, University Health Network; 3 Department of Biomedical Engineering, Florida Institute of Technology; 4 Hurvitz Brain Sciences Program, Sunnybrook Research Institute;

**Field of Research:** SLP; Rehabilitation Technology Science

**Funding:** NIH NIDCD R01DC013547, ALS Society of Canada, Canadian Partnership for Stroke Recovery Collaborative

**Background:** A precise and objective assessment of facial function is important for evaluating the severity of neurological diseases as well as tracking their progression. However, existing oro-facial assessment methods rely on either subjective clinical evaluations performed by experts, or on the use of complex/expensive sensor-based techniques, which are not practical for clinical use.

**Purpose/Hypothesis:** We aim to clinically validate kinematic features obtained using an accessible 3D camera and a machine learning-based facial landmark tracking method in individuals with amyotrophic lateral sclerosis (ALS) or post-stroke. Validity will be determined using correlations between perceptual clinical assessments and objective kinematic features. We hypothesized that the kinematic features and corresponding perceptual clinical scores—symmetry, range of motion (ROM), and speed—are significantly correlated ( $p$ -value < 0.05) and can be used to predict the severity of oro-motor impairment.

**Methods:** 45 participants (19 diagnosed with motor neuron disease, and 26 post-stroke) performed two non-speech tasks (mouth opening and lip spreading) and one speech task (repetition of a sentence ‘Buy Bobby a Puppy’) while being video recorded in a standardized lab setting. The color video recordings of participants were assessed by a speech language pathologist, on the severity of three orofacial measures: symmetry, range of motion (ROM), and speed. Clinically interpretable 3D kinematic features, linked to symmetry, ROM and speed, were automatically extracted from video recordings, using a deep facial landmark detection and tracking algorithm, for each of the three tasks. Spearman correlations were used to identify features that were significantly correlated with their corresponding clinical scores. Clinically significant kinematic features were then used in the subsequent multivariate regression models to predict the overall orofacial impairment severity score.

**Results:** Several kinematic features extracted from 3D video recordings were associated with their corresponding perceptual clinical scores. Different patterns of significant features were observed in ALS and in patients post-stroke; however, they aligned with clinical representations in both cases.

**Discussion:** Several kinematic measures extracted from 3D video recordings could be used to indicate the severity of oro-facial impairments.

**Implication for Future of Rehabilitation:** These findings support the clinical validity of video-based automatic extraction of kinematic features. Development of such systems and their validation with larger set of data is a viable clinical tool that can help clinicians objectively assess oromotor speech disorder and track disease progression.

**Poster #40: Understanding attitudes of people with stroke towards the use of transcranial direct current stimulation for motor neurorehabilitation**

Gupta, Prateek, 1; Chen, Joyce, 1,3

1 Kinesiology, Faculty of Kinesiology and Physical Education, University of Toronto; 2 Sunnybrook Research Institute, Sunnybrook Health Sciences Centre; 3 Rehabilitation Science Institute, Temerty Faculty of Medicine, University of Toronto;

**Field of Research:** Speech-Language Pathology; Rehabilitation Technology Science

**Funding:** Rehabilitation Sciences Institute

**Background:** Patient attitudes surrounding implementation of Transcranial Direct Current Stimulation (tDCS) is an important avenue to pursue. tDCS is a form of non-invasive brain stimulation, which delivers weak, direct electrical currents to the brain using electrodes on the scalp and improves a person's ability to execute and control movements. Understanding attitudes will help us to determine the barriers and facilitators to compliance of a tDCS intervention and potential implementation into rehabilitation programs for people with stroke. The aim of this qualitative study is to investigate patient attitudes surrounding the use of tDCS for stroke motor recovery.

**Purpose/Hypothesis:** To explore views and experiences of clinicians and people living with stroke, regarding the use of tDCS for rehabilitation purposes. We hypothesize that participants with chronic stroke and clinicians will have a generally positive outlook and attitude.

**Methods:** Participants (aged >18 years) living with chronic stroke >6 months post-stroke, hemorrhagic or ischemic), and clinicians (physical therapists and occupational therapists) will be recruited. Open and closed-ended questions will be developed. Information about tDCS will be provided to each patient and then discussions, using purpose-driven questions will ensue. Participant answers will be recorded with common themes highlighted.

**Implication for Future of Rehabilitation:** This study will primarily aim to overcome barriers and facilitators to implementation of tDCS. Secondly, aim to understand whether patients are willing to undergo electrical stimulation paired with their rehabilitation program.

## **Poster #41: BootleVoice! : Designing a Mobile Application for Paediatric Voice Intervention**

Ponte, Nicole, 1,2; Biddiss, Elaine, 1,2; Moola, Fiona, 1,2

1 Rehabilitation Sciences Institute, Temerty Faculty of Medicine, University of Toronto; 2 PEARL Lab, Holland Bloorview Rehabilitation Hospital;

**Field of Research:** Speech-Language Pathology;

**Funding:** Dr. Elaine Biddiss, PEARL Lab, Holland Bloorview Rehabilitation Hospital

**Background:** Voice disorders are among the most common communication disorders in paediatric populations, with an estimated prevalence between 6% and 30% (Akif Kiliç et al., 2004; Carding et al., 2006; Powell et al., 1989). Vocal symptoms including hoarseness, fatigue, increased effort, and aphonia can have a significant impact on affected children's quality of life (Krohling et al., 2016; Ruddy et al., 2013; Ruddy & Sapienza, 2004). Despite the paucity in randomized control evidence, the published literature suggests that therapy is generally effective for the treatment of paediatric voice disorders (Braden & Thibeault, 2020; Feinstein & Abbott, 2021; Gambalogna, 2020; Ongkasuwan & Friedman, 2013). However, gaps in the current literature are characterized by insufficient descriptions of therapy methods, and disproportionate evidence in adult populations that may not apply to children due to anatomical, emotional and cognitive differences (Feinstein et al., 2021; Gambalogna, 2020; Theis, 2010). Clinical barriers to successful intervention include logistical difficulties attending therapy, and inconsistent implementation of home practice strategies (Braden et al., 2018; Hseu et al., 2020). Preliminary studies on the use of technology to address these barriers have shown promising results in adults and children (van Leer et al., 2021; Zacharias et al., 2019).

**Purpose/Hypothesis:** Guided by the Knowledge to Action Framework (Graham et al., 2006) and Design Thinking, the objectives of this project are to (1) describe current practices in paediatric voice, (2) co-design BootleVoice!, and (3) evaluate the initial feasibility of BootleVoice! in clinical settings.

**Methods:** This project will follow a mixed-methods design using a combination of survey, semi-structured interview, observational, and clinical data. Reflexive thematic analysis will be used to analyze qualitative data (Braun & Clarke, 2006). A combination of descriptive and inferential statistics will be employed to describe survey data and analyze clinical outcomes.

**Implication for Future of Rehabilitation:** New technologies in paediatric voice have the potential to enhance service delivery and reduce environmental barriers to voice therapy success.



## **Poster #42: Standardized measures of auditory attention in monolingual and bilingual children: A systematic review and meta-analysis**

Bao, Wenfu, 1,2; Alain, Claude, 3,4; Thaut, Michael, 1,5; Molnar, Monika, 1,2

1 Rehabilitation Sciences Institute, Temerty Faculty of Medicine, University of Toronto; 2 Department of Speech-Language Pathology, Temerty Faculty of Medicine, University of Toronto; 3 Rotman Research Institute, Baycrest Health Centre; 4 Department of Psychology, University of Toronto; 5 Institute of Medical Sciences, University of Toronto;

**Field of Research:** Speech-Language Pathology;

**Funding:** Dr. Monika Molnar's (Supervisor's) Natural Sciences and Engineering Research Council of Canada

**Background:** Bilinguals outperform monolinguals on various cognitive tasks, which is often interpreted as a bilingual advantage. Primarily based on findings from (audio-)visual attention tasks, it is hypothesized that this between-group difference might stem from their different attention allocation strategies. Yet, little is known about whether such distinction exists in the auditory domain alone, despite the importance of auditory attention to early language development.

**Purpose/Hypothesis:** This systematic review and meta-analysis will assess if there are reliable differences between monolingual and bilingual children across typically (TD) and atypically developing (AD) populations in auditory attention, as measured by standardized tests.

**Methods:** A comprehensive literature search was conducted in three electronic databases: OVID Medline, OVID PsycInfo and EBSCO CINAHL. Only empirical studies reporting standardized behavioral performance of auditory attention in monolingual and bilingual participants below 18 years were included. Effect size was analyzed through meta-regression modelling.

**Results:** Twenty studies (TD = 19, AD = 1) met the participant and test characteristics. The meta-analysis only included studies from TD children. Studies reporting accuracy observed a marginal bilingual advantage ( $g = 0.10$ ), whereas those reporting response times indicated a small monolingual benefit ( $g = -0.34$ ). None of the other factors (participant age, stimulus type, attention components) affected children's performance.

**Discussion:** This meta-analysis suggests very little difference in monolingual vs. bilingual children's performance on standardized auditory attention tests. Whether this is related to the potentially wide variety of bilingual children included across studies and/or the tests being developed for monolingual English-speaking populations only is unclear.

**Implication for Future of Rehabilitation:** Future work would benefit from appropriately assessing and reporting various factors relevant to bilingualism, and considering bilingualism as a continuum. Further, we advocate for developing tests for assessing bilinguals, since most of the current tests are designed and normed for monolinguals.

### **Poster #43: Systematic Review and Meta-Analysis of Dynamic Assessment of Early Literacy Skills in Children: Concurrent and Predictive Validity**

Wood, Emily, 1; Molnar, Monika, 2

1 Speech-Language Pathology, Temerty Faculty of Medicine, University of Toronto; 2 Speech-Language Pathology, Temerty Faculty of Medicine, University of Toronto;

**Field of Research:** Speech-Language Pathology;

**Funding:** SSHRC Canada Graduate Scholarship - Master's, Rehabilitation Sciences Institute

**Background:** Literacy is a human right. Negative effects associated with reading difficulties can be mitigated provided early identification. Traditional static assessments (SAs) are influenced by previous language exposure and as a result are biased against bilingual children, leading to misidentification of challenges. In contrast, dynamic assessments (DAs), measure learning ability, and are characterized by their interactivity and use of feedback and prompting. Studies have reported promising findings on the applications of DAs for evaluating early literacy skills in diverse populations.

**Purpose/Hypothesis:** The objective of this project is to examine validity of various types of DAs of literacy skills for use with six population groups defined by their language status and reading ability. It is anticipated that correlations between DAs and SAs of early literacy skills will be more consistent in English monolinguals than in bilinguals, but that correlations between DAs and later reading outcome measures will be consistent across groups, indicating that SAs and DAs differentially evaluate mono and bilinguals, but that DAs are well suited to predict reading abilities in all groups. Regarding type of DA, it is expected that decoding skills will be most consistently predictively valid across groups.

**Methods:** The concepts “dynamic assessment” and “literacy” were used to search 5 databases and the grey literature. Included studies will be primary research papers, whose focus is on evaluating literacy in children aged 4-10 with DAs, and equivalent SAs, OR later reading outcome measures. A quality appraisal tool will be used to evaluate risk of bias. Following data extraction, a random effects model of correlational meta-analyses will be performed. Narrative descriptions of associations will be provided in the event of insufficient studies.

**Discussion:** Outcomes of this project will inform what early literacy skill DAs and for whom DAs are most consistently valid.

**Implication for Future of Rehabilitation:** This information will inform future development and validation of a virtually administered, language-independent DA of early literacy skills for use with heterogeneous Canadian bilingual children.

**Poster #44: Reconciling theory-driven and data-driven feature selection methods for acoustic analysis of neurodegenerative diseases**

Tanchip, Chelsea, 1,2; Simmatis, Leif, 1,2; Yunusova, Yana, 1,2

1 Rehabilitation Sciences Institute, Temerty Faculty of Medicine, University of Toronto; 2 KITE-Toronto Rehabilitation Institute, University Health Network;

**Field of Research:** Speech-Language Pathology; Rehabilitation Technology Science

**Funding:** Natural Sciences and Engineering Research Council of Canada (NSERC) Discovery Grant, Toronto Rehabilitation Institute Student Scholarship

**Background:** Speech acoustics offer a powerful means by which to evaluate neurological function, including the detection, tracking, and subgrouping of various types of dysarthria, a motor speech disorder. Classic methods of evaluating speech involved perceptual assessment, which was followed historically by acoustic (i.e., spectral and temporal) methods, based on theory-driven selection of key acoustic features for dysarthria identification and classification. Recently, there has been great interest in the use of data-driven methods of acoustic feature selection due to novel technologies able to extract hundreds of measures automatically.

**Purpose/Hypothesis:** This study aims to 1) characterize the usage of theory-driven and data-driven feature selection methods; and 2) propose a means by which these two approaches could be integrated.

**Methods:** We will conduct a scoping review with various pre-defined keywords, including acoustic analysis, dysarthria, and feature selection. Popular databases such as NCBI, PubMed, and IEEE will be searched. The PRISMA extension for scoping reviews will be used to guide study selection and synthesis.

**Discussion:** The lack of clinical/theoretical bases for automatic feature selection approaches poses major problems for clinical interpretability. This work will emphasize the need for a principled speech acoustic feature selection approach and will offer a rationale for integrating clinical/theoretical and statistical feature selection approaches. This will enhance interpretability and promote standardization across future studies of neurodegenerative disease detection and tracking.

**Implication for Future of Rehabilitation:** This work will be one of the first in its field to explore an integrated approach to feature selection for speech analysis in the clinical context. This work will also reflect the ongoing global research shift towards creating more interpretable classification models for disease detection, which will inform future clinical tool development.

**Poster #45: Developing a Shared Decision-Making Aid for Bulbar Symptom Management in Amyotrophic Lateral Sclerosis (ALS)**

Huynh, Anna, 1,2,3; Barnett-Tapia, Carolina, 4,5; Cranley, Lisa, 6,7; Zinman, Lorne, 1,2; Yunusova, Yana, 1,2,3

1 Rehabilitation Sciences Institute, Temerty Faculty of Medicine, University of Toronto; 2 Sunnybrook Research Institute, Sunnybrook Health Sciences Centre; 3 KITE-Toronto Rehabilitation Institute, University Health Network; 4 Department of Medicine (Neurology), Temerty Faculty of Medicine, University of Toronto; 5 Institute of Health Policy, Management, and Evaluation, University of Toronto; 6 Lawrence S. Bloomberg, Faculty of Nursing, University of Toronto; 7 Institute for Life Course and Aging, Factor-Inwentash Faculty of Social Work, University of Toronto, Toronto;

**Field of Research:** Speech-Language Pathology;

**Funding:** KITE-Toronto Rehab's TD Graduate Scholarship for People with Disabilities, Toronto Rehabilitation Institute Student Scholarship, Rehabilitation Sciences Institute

**Background:** Bulbar dysfunction causes a drastic decline in speech and swallowing, which can significantly reduce the quality of life (QoL) and lifespan of persons with ALS (PwALS). As there is no cure, current practice focuses on symptom management to optimize function and QoL, which demands timely decision-making for best outcomes. Yet, decision-making is frequently delayed for bulbar symptom management as clinical practice is often idiosyncratic and reactive; some decisions also challenge the preferences and values of PwALS and their families. PwALS, families, and clinicians have expressed a need for more support with decision-making. Shared decision-making (SDM) is a collaborative process that organizes best available treatment evidence and facilitates discussions about values and preferences. However, SDM is difficult to implement without navigational supports like decision aids. To date, no decision aid is available for bulbar symptom management in ALS.

**Purpose/Hypothesis:** To develop a SDM aid to facilitate conversations about bulbar symptom management between PwALS, their families, and clinicians.

**Methods:** This development involves three phases: (1) A systematic review will be conducted across common rehabilitation databases to identify bulbar management practices in ALS for varying clinical profiles. (2) Purposive sampling will be used to recruit proposed users of this aid (i.e., PwALS, caregivers, and clinicians). 12 to 15 semi-structured interviews will be conducted to identify decisional needs to develop a prototype. We will then conduct three focus groups (5 to 6 users) to receive feedback on the prototype. (3) Feasibility of this aid will be assessed by users via completion of Likert scale surveys at random after clinic visit 1, 2, or 3.

**Discussion:** This aid will directly support conversations on bulbar symptom management and enhance the healthcare experience within ALS care. This aid is expected to have positive uptake as it is designed with input from proposed users and consistent with current practices at the ALS clinic.

**Implication for Future of Rehabilitation:** This aid promotes a standardized and proactive approach to SDM for PwALS. It also reflects the shift from patient- to person-centred care by focusing on conversations about clinical management throughout disease progression to support the daily lives of PwALS and their families.

## **Poster #46: Is the Effortful Swallow Maneuver effective in addressing Swallowing Impairment in People with Parkinson Disease?**

Gandhi, Pooja, 1,2; Steele, Catriona, 2

1 Rehabilitation Sciences Institute, Temerty Faculty of Medicine, University of Toronto; 2 KITE-Toronto Rehabilitation Institute, University Health Network;

**Field of Research:** Speech-Language Pathology;

**Funding:** Dr. Catriona Steele's NIDCD grant

**Background:** Parkinson disease (PD) is a common neurological disorder that is expected to affect 9 million people by 2030. Dysphagia (swallowing impairment) is highly prevalent in PD, even in early stages, and can result in aspiration pneumonia, malnutrition, and dehydration. The most common intervention for aspiration (airway invasion) in people with dysphagia is the use of thickened liquids and modified food textures. However, this approach negatively impacts quality of life, and non-adherence is common. Therefore, there is a need to establish effective interventions that will enable people with PD-related dysphagia to continue to consume regular foods and liquids. A recent systematic review evaluating the effectiveness of interventions used to treat dysphagia in PD found there are no optimal interventions, but exercise-based interventions targeting improved swallowing efficiency and muscle strength hold promise. In order to select targeted exercise goals for dysphagia therapy, it is important to identify the physiological mechanisms contributing to swallowing impairment in PD. A subsequent prospective cohort study was conducted by our group, comparing profiles of swallowing safety, efficiency, timing and kinematics in individuals with mild PD to those of healthy age- and sex-matched controls. This research identified two key mechanisms of swallowing impairment in PD: 1) prolonged time-to-laryngeal-vestibule-closure ("LVC", i.e. airway protection), which is a risk for aspiration; and 2) reduced pharyngeal constriction, leading to pharyngeal residue after the swallow.

**Purpose/Hypothesis:** In other patients with dysphagia, the Effortful Swallow maneuver (ES) is commonly used to target faster airway protection and improved bolus clearance. Other exercise-based interventions emphasizing effort have shown some promise for improving swallowing in people with PD, but curiously, the impact of the ES has not yet been studied in this population. Therefore, we have designed a prospective study to establish feasibility and collect preliminary data regarding the immediate (compensatory effect) and long-term efficacy (rehabilitative effect) of the ES on swallowing physiology in PD. Specifically, we hypothesize that use and repeated practice of the ES will lead to faster LVC and better pharyngeal constriction, with corresponding functional outcomes of reduced aspiration and reduced pharyngeal residue. This poster will explain our research design.

**Methods:** We are currently collecting data for this prospective single arm feasibility trial. In total, 12 adults with PD will be recruited. Participants complete a baseline videofluoroscopic x-ray of swallowing (VFSS) including both regular effort swallows (RES) and the ES. The ES technique for this study involves the use of increased tongue-palate pressure when initiating a swallow. After the baseline videofluoroscopy, participants complete a 4-week rehabilitation program, with two 30-minute sessions of ES practice daily, 5 days per week. Each session includes 10 ES repetitions on saliva swallows, 10 with water and 10 with a mildly thick liquid. These consistencies are known to challenge airway protection and bolus clearance, respectively. Biofeedback regarding swallow strength is provided using the Iowa Oral Performance Instrument. Practice is supervised on a reducing schedule (week 1: 5 sessions; week 2: 4 sessions, etc.),

either in-person or via a secure videoconference. A post-intervention VFSS is collected after 40 sessions. The VFSS recordings are then analyzed in duplicate according to a rigorous standard procedure known as the ASPEKT Method, from which parameters of time-to-LVC, aspiration, pharyngeal constriction and residue will be obtained.

**Implication for Future of Rehabilitation:** This study is evaluating outcomes of the ES maneuver as an intervention targeting mechanisms of swallowing impairment in PD.

## **Poster #47: The Quantification of Fibrosis Using Clinically Indicated Magnetic Resonance Imaging for Head and Neck Cancer Patients**

Che, Zhiyao, 1,3; Yu, Eugene, 4; Hainc, Nicolin, 4; Waldron, John, 5; Goldstein, David, 6; Xu, Wei, 7; Parra-Fariñas, Carmen, 4; Huang, Shao Hui, 5; Martino, Rosemary, 1,2

1 Rehabilitation Sciences Institute, Temerty Faculty of Medicine, University of Toronto; 2 Department of Speech-Language Pathology, Temerty Faculty of Medicine, University of Toronto; 3 Swallowing Lab, University Health Network; 4 Medical Imaging, University Health Network; 5 Radiation Oncology, University Health Network; 6 Otolaryngology-Head & Neck Surgery, University Health Network; 7 Department of Biostatistics, Dalla Lana School of Public Health, University of Toronto;

**Field of Research:** Speech-Language Pathology;

**Funding:** Dr. Rosemary Martino's (Supervisor's) Canada Research Chair Tier II in Swallowing Disorders

**Background:** Patients with head and neck cancer (HNC) undergoing radiotherapy (RT) often develop fibrosis-related dysphagia (difficulty swallowing) as their muscles gradually become scarred and weak after RT completion. There is currently no method to objectively measure the extent of fibrosis damage to the swallowing muscles after RT, however magnetic resonance imaging (MRI) shows strong potential.

**Purpose/Hypothesis:** The purpose of this study is to pilot a method of quantifying fibrosis, assess its inter-rater reliability, and explore its change over time and validity by correlating with an established measure of dysphagia. Our hypotheses are that there will be strong inter-rater reliability defined by an inter-class correlation coefficient of  $>0.75$ , fibrosis volume increases over time, and that the quantification of fibrosis extent from MRI will be directly correlated with a pharyngeal impairment score captured from videofluoroscopic (VFS) imaging of the swallow, as muscles affected by fibrosis are weaker.

**Methods:** This study has a retrospective design using 45 participants' data from larger randomized control trials. The participants are adults with HNC who have completed RT and have at least two MRIs and two VFSs over time from before RT to one-year post-RT. Expert neuroradiology raters will review axial T2 images to identify and demarcate fibrosis volume using Vitrea post-processing software. Expert speech-language pathology (SLP) raters will review and rate previously captured VFSs to obtain the oral and pharyngeal totals of the Modified Barium Swallow Impairment Profile (MBSImp™©). Inter-rater reliability of MRI and VFS measures will be analyzed using the Intraclass Correlation Coefficient. We will compare the MRI volumes with MBSImp™© values using Kendall's coefficient of rank correlation.

**Discussion:** Developing a method with clinical MRI to quantify fibrosis reliably and accurately as an outcome measure can result in earlier identification of fibrosis and better inform targeted rehabilitation treatment strategies for this population and potentially alleviate swallowing disorders to improve patient quality of life.

**Implication for Future of Rehabilitation:** This is a novel use of existing clinical imaging technology applied to the field of SLP and has the potential to inform researchers and clinicians of early anatomical impairments.

## **Poster #48: The neural basis of speech motor adaptation**

Wheatley, Kieran, 1,2; Beal, Deryk, 1,2

1 Rehabilitation Sciences Institute, Temerty Faculty of Medicine, University of Toronto; 2 CONNECT Lab, Holland Bloorview Kids Rehabilitation Hospital;

**Field of Research:** Speech-Language Pathology; Rehabilitation Technology Science

**Funding:** Dr. Deryk Beal's (Supervisor's) Natural Sciences and Engineering Research Council of Canada Grant

**Background:** Auditory feedback is the perception of self-produced sounds, providing information of speech outcomes for error detection and correction, an essential process for online speech motor control and integral in the acquisition and maintenance of speech. Motor learning occurs as a function of feedback-based learning when error detection is sustained, in a process known as speech motor adaptation.

**Purpose/Hypothesis:** This study aims to determine causation of the left ventral motor cortex (LVMC) in the speech motor adaptation process and identify cortical structures associated with performance ability.

**Methods:** Seventy-five adults will be recruited, exclusion criteria include: history of learning difficulties, head injury, speech or language deficiencies. The primary outcome measures are response magnitude and latency to auditory perturbation. Day 1: Structural MRI (T1-MPRAGE, DTI) and task-based fMRI scans will be collected. Participants will be randomly assigned to sham; inhibitory; or facilitatory rTMS condition. Day 2: Participants undergo assigned rTMS condition for 20-minutes, followed by auditory perturbation trial. Mixed ANOVAs will be done for F1 and F2 results, phase (baseline vs learning) within-subject factor, and group (facilitatory vs inhibitory vs control) between-subject factor. Correlation analysis of grey matter thickness and fractional anisotropy with performance in each group.

**Discussion:** The DIVA (Directions Into Velocities of Articulators) model suggests that adaptive learning process involves modification of feedforward speech motor commands, represented in the LVMC, as opposed to continuous correction through the feedback loop. Research using tDCS and/or TMS to regulate brain activity before an auditory perturbation task, suggests that the LVMC and tongue representation of the primary motor cortex are involved in speech motor adaptation processes.

**Implication for Future of Rehabilitation:** Advance understanding of the effects of rTMS on speech motor adaptation and the underlying neural correlates, contributing to the comprehensive understanding of auditory-motor integration for the establishment and maintenance of speech-motor programs.



## **Poster #49: A Proposal of Subacute Rehabilitation Outcomes Following Childhood Stroke**

Muscat, Christine, 1,2; Morgan, Angela, 3,4; Scratch, Shannon, 1,2; Beal, Deryk, 1,2

1 CONNECT Lab, Bloorview Research Institute; 2 Rehabilitation Sciences Institute, Temerty Faculty of Medicine, University of Toronto; 3 University of Melbourne; 4 Murdoch Children's Research Institute; 5 Royal Children's Hospital;

**Field of Research:** Speech-Language Pathology; Rehabilitation Health Services Studies

**Funding:** CIHR Canada Graduate Scholarships Master's award, The University of Toronto and the University of Melbourne, University of Toronto Office of the Vice President International Collaborative Grant

**Background:** Paediatric stroke is a neurological injury caused by the occlusion or rupture of cerebral blood vessels and can be classified as perinatal and childhood stroke (28 days to 18 years). Impairments in speech and language functioning is observed in 41-75% of children following stroke. A crucial period for speech and language recovery, which aims to mitigate potential chronic impairments is the subacute rehabilitative stage, 3-11 weeks following stroke onset. Despite the importance of this critical timing, there is little evidence of the speech and language, recovery process, nor the underlying neural mechanisms that aid in recovery, over the subacute period. A recent review of childhood stroke recommendations, concluded there is no literature on speech and language interventions for the subacute phase following stroke. Moreover, research is warranted to support the creation of evidence-based assessments and intervention guidelines to aid in early detection and intervention for speech and language outcomes in children post-stroke. Functional magnetic resonance imaging (fMRI) has been used to understand brain-behaviour relations, including neural processing and recovery. However, the neural mechanisms that drive speech and language recovery in response to intensive rehabilitation in the subacute stages post childhood stroke remain unclear.

**Purpose/Hypothesis:** Our project will address the following aims: 1. Prospectively document clinical and neural outcomes of speech and language rehabilitation in the subacute phase of recovery. 2. Identify brain-behaviour associations of speech and language at 3 time points.

**Methods:** Childhood stroke patients will be recruited from the in-patient Brain injury Rehabilitation Team (BIRT) at Holland Bloorview and the Royal Children's Hospital in Melbourne, Australia. Convenience sampling will be utilized. Based on previous decision support data, we expect to collect data from 1-2 participants per month over 3-years. We will 1. Prospectively assess speech and language outcomes of childhood stroke patients using clinical speech and language assessments. Participants will be assessed upon: (i) admission, (ii) discharge, and (iii) 3-months post-discharge. 2. At each time point, structural and functional MRI will be conducted. 3. Children will complete a naming task modified for task-based fMRI data collection and the variability of abilities our participants will have post-stroke. Behavioural data will be analyzed in R using mixed linear models. Neuroimaging data will be analyzed using Freesurfer and FSL toolboxes.

**Implication for Future of Rehabilitation:** This research will enhance our understanding of the brain-behaviour relations between neural and clinical speech and language outcomes in the subacute phase of post-stroke recovery. Such relations will aid in the development of timely and personalized interventions to address a child's main areas of difficulty along their rehabilitative speech and language recoveries post-stroke.

## **Poster #50: Exploring Muscle and Movement Outcomes for Oropharyngeal Exercise Intervention After Stroke**

Marzouqah, Reeman, 1,2,3; Gaurin, Diego, 4; Tanchip, Chelsea, 1,3; Boulos, Mark, 2,3,5; Yunusova, Yana, 1,2,3

1 Rehabilitation Sciences Institute, Temerty Faculty of Medicine, University of Toronto; 2 Sunnybrook Research Institute, Sunnybrook Health Sciences Centre; 3 KITE-Toronto Rehabilitation Institute, University Health Network; 4 Biomedical Engineering Department, Engineering, Florida Institute of Technology; 5 Department of Neurology, Temerty Faculty of Medicine, University of Toronto;

**Field of Research:** Speech-Language Pathology; Rehabilitation Technology Science

**Funding:** Natural Sciences and Engineering Research Council of Canada (NSERC) Grant, Canadian Partnership for Stroke Recovery (CPSR) Collaborative Grant, Toronto Rehabilitation Institute Ontario Student Opportunities Research Fund Scholarship

**Background:** Sensorimotor deficits in the oral cavity and pharynx after stroke are prevalent and significantly impact swallowing and sleep-breathing functions. These adverse effects led to the uptake of oral and pharyngeal motor exercise protocols to promote post-stroke recovery. Previous studies have focused on measuring the effect of these exercises on global functions, such as swallowing and sleep functions but often overlooked measuring muscle and movement outcomes.

**Purpose/Hypothesis:** This study aimed to investigate the feasibility of using instrumental muscle/movement measures and explore the effect of an oropharyngeal exercise program on maximum isometric tongue pressures, lower lip kinematics, and diadochokinetic rate.

**Methods:** The sample included post-stroke patients who participated in a clinical trial investigating the effect of an oropharyngeal exercise program on obstructive sleep apnea severity. Patients were randomized (1:1) to an intervention that involved a pre-specified schedule of oropharyngeal strengthening exercises (OPE) versus sham exercises. Maximum isometric tongue pressures, lip video-based kinematics (i.e., during speech and non-speech tasks) and diadochokinetic (DDK) rate were collected at baseline, post-training (6 weeks), and retention (10 weeks).

**Results:** The sample included 16 stroke patients (OPE: 9, sham: 7). The preliminary results revealed that patients who practiced OPE improved their maximum posterior tongue pressure after training (17.63% change) compared to those who practiced the sham exercises (-12.9% change). Results from lip range of movement during non-speech tasks showed a significant difference between groups after training (OPE: 40.8%, sham 1.8%), with no noticeable difference between groups in the speech task (OPE: 8.75%, sham 4.04%). Lastly, the DDK rate analysis revealed no significant difference between groups in /pataka/ (OPE: 9.54%, sham: 8.36%) or /ka/ (OPE: 1.4%, sham 1.5%).

**Discussion:** Based on these findings, muscle and movement outcomes appear feasible, but a larger sample size might be needed to delineate treatment effects. Through this work, we hope to better understand the underlying mechanisms of exercise interventions and determine the feasibility of using instrumental measurements to detect small changes that clinicians cannot capture when using subjective means.

**Implication for Future of Rehabilitation:** The future implication of this work is to establish clinical guidelines for the evaluation of exercise programs in the speech-language pathology field.

## **Poster #51: Early Literacy Screening: Establishing Predictive Validity of an Urdu Phonological Awareness Tool**

Bhalloo, Insiya, 1,2,3; Molnar, Monika, 1,2,3

1 Rehabilitation Sciences Institute, Temerty Faculty of Medicine, University of Toronto; 2 Department of Speech-Language Pathology, Temerty Faculty of Medicine, University of Toronto; 3 Bilingual and Multilingual Development Lab, Department of Speech-Language Pathology, University of Toronto;

**Field of Research:** Speech-Language Pathology;

**Funding:** SSHRC Canada Graduate Scholarship - Doctoral

**Background:** Approximately 56% of children globally and 30.3% of Canadian children have inadequate reading skills (UNESCO, 2017; The Conference Board of Canada, 2012). A major component of effective early reading success is literacy precursor screening tools that can detect potential reading difficulties prior to their manifestation. Literacy screening tools have been predominantly developed for monolingual children, despite 50% of the world's population being bilingual (Grosjean, 2010; Ryan, 2013). Literacy precursors include phonological awareness (i.e., recognition and manipulation of sound structures), which predicts future reading abilities.

**Purpose/Hypothesis:** The longitudinal project will focus on the standardization and predictive-validation of an Urdu phonological-awareness tool. Using the Urdu phonological awareness tele-assessment tool, we will examine whether Kindergarten Urdu phonological awareness skills (Time 1) predicts Grade 1 Urdu reading performance (Time 2) of Urdu-English bilingual children, across a range of reading (dis)abilities, in Canada and Pakistan.

**Methods:** Similar to previous biliteracy research (e.g., Anthony et al., 2009; O'Brien et al., 2019) and based on G\*Power Analysis, 100 Urdu English bilinguals will be assessed on their Urdu and English phonological awareness (Time 1) and reading (Time 1) across the two time-points in Canada (n=50) and Pakistan (n=50). Participants: We will assess typically-developing Urdu-English simultaneous bilingual Canadian and Pakistani children who are: in Senior Kindergarten at assessment timepoint 1 (i.e., 5-6 years) and in Grade 1 at assessment timepoint 2 (i.e., 6-7 years), have no reported history of cognitive difficulties, and were exposed to Urdu and English prior to 3 years.

**Discussion:** Along with publishing our findings in an open-access journal, we will create a dissemination platform to share the novel tool with researchers and clinicians globally.

**Implication for Future of Rehabilitation:** The developed tool will enable speech-language pathologists to screen vulnerable bilingual children – rather than waiting until the child gains sufficient English proficiency. Our theoretical findings will be relevant to languages linguistically-related to Urdu, including Arabic and Farsi, which are spoken globally.

## **Poster #52: The Feasibility of Using Shear Wave Ultrasound to Measure the Stiffness of Geniohyoid and Genioglossus at Rest and During Contraction in Normal Healthy Subjects**

Shaw, Stephanie, 1; Rattansingh, Anand, 2; Agur, Anne, 3; Mathur, Sunita, 4; Hope, Andrew, 5; Atri, Mostafa, 6; Martino, Rosemary, 1,6,7

1 Rehabilitation Sciences Institute, Temerty Faculty of Medicine, University of Toronto; 2 Medical Imaging, Toronto General Hospital, University Health Network; 3 Department of Surgery, Division of Anatomy, University of Toronto; 4 Department of Physical Therapy, Temerty Faculty of Medicine, University of Toronto; 5 School Rehabilitation Therapy, Health Sciences, Queen's University; 6 Princess Margaret Cancer Centre, University Health Network; 7 Department of Speech-Language Pathology, Temerty Faculty of Medicine, University of Toronto;

**Field of Research:** Speech-Language Pathology; Rehabilitation Technology Science

**Funding:** Rosemary Martino's Canada Research Chair in Swallowing Disorders, Canadian Institutes of Health Research (CIHR Operating Grant #93685), Canadian Cancer Society Research Institute (CCSRI Operating Grant #020190)

**Background:** Radiotherapy for head and neck cancer can lead to fibrosis (RF). RF has been associated with a number of negative outcomes, including dysphagia. No validated tools exist for measuring RF within the head and neck.

**Purpose/Hypothesis:** To determine the feasibility of using shear wave ultrasound (SWE) to measure stiffness of swallowing muscles in healthy subjects.

**Methods:** Ten healthy adult subjects were recruited. SWE measurements were obtained for geniohyoid and genioglossus muscles at rest and during swallowing exercises (i.e. Tongue Press, Mendelsohn maneuver, and Effortful Pitch Glide) using Supersonic Imagine Aixplorer®. Ten repeated measures were taken for left and right sides for each muscle/exercise condition. Each image was rated for quality by an experienced sonographer. Participants also rated testing across three dimensions: clarity of instructions, comfort during testing, and duration of testing, using 5-point Likert scales. Testing was considered "feasible" when mean participant ratings were  $\geq 3$  (e.g. "good-excellent") and when image quality was "acceptable" for  $\geq 50\%$  of scans. Intra-rater reliability was estimated for left vs. right sides using intraclass correlation coefficient (ICC) based on individual data points and averages across repeated measures. Linear mixed models were used to explore the impact of gender, side, condition, and probe position on SWE measurements.

**Results:** Image quality met acceptability criteria in 6/16 conditions. Participant ratings were  $\geq 3$  across all three dimensions. Intra-rater reliability was fair-good ( $\geq 0.40$ ) for 4/6 acceptable conditions, though confidence intervals were wide due to small sample size. Exploratory analyses suggest that muscle/exercise condition, probe orientation, and gender during the EPG may significantly impact SWE measurements.

**Discussion:** SWE is feasible for measuring the stiffness of geniohyoid and genioglossus at rest and during certain swallowing exercises. Further investigation into the reliability/validity of SWE for measuring RF in post-radiotherapy for HNC is warranted.

**Implication for Future of Rehabilitation:** Having a valid/reliable tool to measure the tensile properties of swallowing muscles could offer new insights into the causes of dysphagia post-radiotherapy for HNC, and could thereby guide the development of novel, individualized, targeted, and effective interventions.

HFS  
+LPH



Tra>Cor -13  
>Sag -4

# Social and Cognitive Rehabilitation Sciences

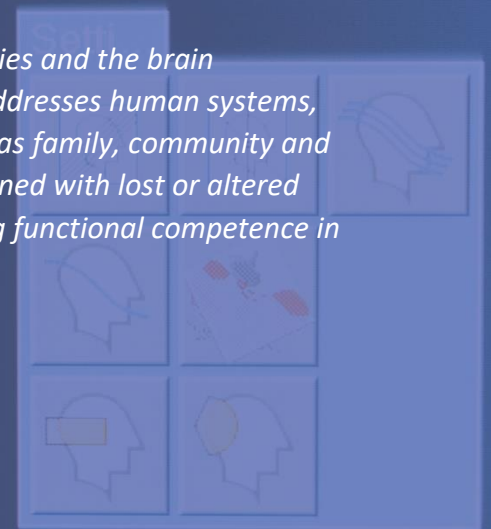
*Cognitive science concerns the study of the mind: its capacities and the brain structures/processes that underlie those capacities. Social science addresses human systems, namely the relationship between individuals and larger groups, such as family, community and work. The cognitive and social sciences in rehabilitation are concerned with lost or altered cognitive functioning and social functioning with the aim of enhancing functional competence in real-world situations.*



TP H17  
SP H15.0  
SL 6.50  
Tra>Cor(-12.6)>Sag(-4.2)  
W 726



Type	Orien...	Image



**Poster #53: A scoping review of magnetic resonance modalities used in detection of persistent post-concussion symptoms (PPCS) in pediatric populations**

Sheldrake, Elena, 1,2; Lam, Brendan, 1; AlHakeem, Hiba, 1; Reed, Nick, 2; Scratch, Shannon, 1,2

1 Bloorview Research Institute, Holland Bloorview Kids Rehabilitation Hospital; 2 Rehabilitation Sciences Institute, Temerity Faculty of Medicine, University of Toronto;

**Field of Research:** Social and Cognitive Rehabilitation;

**Funding:** Rehabilitation Sciences Institute

**Background:** Children and youth are vulnerable to the effects of mild traumatic brain injury, or concussion. While most youth recover quickly, up to 30% can experience persistent post-concussion symptoms (PPCS) lasting for four weeks or longer, which can significantly impact quality of life. Magnetic Reasoning Imaging (MRI) has the potential to improve concussion detection and management. However, there are no clear preferred modalities to assist in detecting PPCS amongst children.

**Purpose/Hypothesis:** The objective of this scoping review is to synthesize published findings on utilization of MRI amongst children and youth with PPCS, and to summarize progress and limitations within the field of concussion detection.

**Methods:** Four databases were searched: Ovid MEDLINE, CINAHL, EMBASE, and PsychInfo. Thirty-seven studies were included from 4,907 identified papers.

**Results:** The charting of studies was organized by modality. Many studies utilized more than one MRI modality, including: (1) structural MRI (n =27) such as T1- and T2-weighted imaging, diffusion weighted imaging (DWI) and susceptibility weighted imaging (SWI); (2) functional MRI (fMRI; n = 23) and perfusion weighted imaging (PWI), and (3) magnetic resonance spectroscopy (MRS; n = 4). Significant findings were heterogeneous amongst modalities, with some trends favouring fMRI. Across all 37 studies in this review, no brain-based biomarker for PPCS in children was consistently identified.

**Discussion:** There remains a lack of consensus on which MRI modalities prove most beneficial when detecting PPCS in pediatric populations, although DWI, fMRI, and MRS appear to be most promising. In addition, more research using MRI with pediatric populations experiencing PPCS is needed as there are significantly less peer-reviewed pediatric studies compared to adults.

**Implication for Future of Rehabilitation:** MRI provides a potential avenue for identification of biomarkers of PPCS that could provide downstream benefits to rehabilitation through treatment and management strategies.

**Poster #54: Repetitive transcranial magnetic stimulation as a way to promote positive self-regulatory behaviour in children with autism spectrum disorder**

Buckley, Chelsea, 1,2; Beal, Deryk, 1,2; Mitchell, Trina, 2; Anagnostou, Evdokia, 2,3; Andrade, Brendan, 4,5  
1 Rehabilitation Sciences Institute, Temerty Faculty of Medicine, University of Toronto; 2 Bloorview Research Institute, Holland Bloorview Kids Rehabilitation Hospital; 3 Department of Paediatrics, Temerty Faculty of Medicine, University of Toronto; 4 Department of Psychiatry, Temerty Faculty of Medicine, University of Toronto; 5 Youth and Emerging Adult Program, Centre for Addiction and Mental Health;

**Field of Research:** Social and Cognitive Rehabilitation;

**Funding:** Dr. Deryk Beal (Supervisor) CIHR Funded grant

**Background:** Children with autism spectrum disorder (ASD) often present with impairments in social, educational, and occupational settings. Impairments in these settings are often caused by comorbid deficits in self-regulation, whereby attempts to manage emotions or behaviors often lead to problems including aggression towards the self and others, unregulated inhibitory control, and disruptive and impulsive behavior. Thus, interventions targeted toward self-regulation are needed to reduce the emotional and economic burden that these impairments bring.

**Purpose/Hypothesis:** To address this need for health knowledge, we ask: is it feasible and tolerable to carry out a randomized control trial to determine if 15 sessions of rTMS therapy can improve clinical outcomes associated with self-regulation in children with ASD?

**Methods:** With funding from CIHR, we will carry out a randomized controlled trial with a sham comparison group. All 56 participants will be children with ASD. Participants will be blind to condition, with 28 participants receiving active rTMS targeted to the dorsolateral prefrontal cortex and 28 participants receiving sham rTMS. All participants will receive 15 rTMS sessions, delivered 5 days/week for 3 weeks. To measure self-regulation, parents of participants will complete the Severe Moods Problem Scale, the Emotion Dysregulation Inventory for reactivity, the Aberrant Behavior Checklist for irritability and the Emotion Regulation Checklist. All outcomes will be measured at week 0 (T0), week 6 (T1), and week 18 (T2).

**Discussion:** The demand from families and caregivers for novel alternative therapies to promote positive self-regulatory behavior is high. Recent literature has suggested the potential of rTMS for managing maladaptive behaviors in ASD, creating an urgent need for an investigation into the efficacy of this intervention. By addressing the efficacy of rTMS, we will fill an important gap in health knowledge globally, and rTMS may also serve to improve function, participation and activity in children with ASD.

**Implication for Future of Rehabilitation:** Hospitals and healthcare centers providing rehabilitative services will benefit from more affordable, safe, and efficient treatment options. Implementation of this neurotechnology across healthcare settings will help to change the face of rehabilitation sciences moving forward, improving both quality and access to rehabilitative interventions for ASD.

## **Poster #55: Social Support and Concussion: Exploring the experiences of youth facing barriers**

Grossinger, Zane, 1; Wilson, Katherine, 2; Tamminen, Katherine, 3; Hunt, Anne, 1,2; Reed, Nick, 1,2

1 Rehabilitation Sciences Institute, Temerty Faculty of Medicine, University of Toronto; 2 Occupational Science & Occupational Therapy, Temerty Faculty of Medicine, University of Toronto; 3 Faculty of Kinesiology & Physical Education, University of Toronto;

**Field of Research:** Social and Cognitive Rehabilitation; Occupational Science

**Funding:** 2021-2022 Ontario Graduate Scholarship, Dr. Nick Reed's (Supervisor's) Canada Research Chair in Pediatric Concussion, University of Toronto Athletics

**Background:** Concussion is a common paediatric injury that often results in emotional sequelae that can impede the recovery process. Psychosocial factors such as symptom invalidation, social isolation and participation restrictions are recognized to contribute to these challenges. Social support is a process associated with mitigating these psychosocial concerns and improving one's well-being following concussion. To date, there is clear paucity of concussion research that incorporates aspects of inclusivity and diversity. Youth facing barriers to positive development is a vulnerable population defined as youth who may require extra support in various facets of life to reach their full potential and can include racialized, low-income and under-housed youth. As concussions can impact all youth and the provision of social support may lead to improved health outcomes, there is a need for the exploration of social support amongst underserved youth with concussions.

**Purpose/Hypothesis:** The purpose of the proposed research is to explore the experiences of youth facing barriers who have sustained a concussion to: 1) develop a detailed and rich understanding of what constitutes meaningful social support during concussion recovery; and 2) explore how social support may be understood differently amongst youth who have been underrepresented in concussion research to date.

**Methods:** The proposed qualitative study will operate within a constructivist paradigm that assumes a relativist ontology and subjectivist/transactional epistemology. Young adults aged 18-22 years who received social support during a concussion recovery and self-identified as a youth facing barriers will be recruited from concussion clinics and community agencies. Following a phenomenological methodology, data will be collected via one-on-one semi-structured interviews and an interpretive phenomenological analysis will be used to analyze the transcripts and co-construct study findings. Member reflections and reflexive journaling will be used to achieve rigour through embracing co-construction and transparently acknowledging researcher subjectivity.

**Implication for Future of Rehabilitation:** This study will allow for a detailed exploration of social support and concussion amongst an at-risk population underrepresented across all concussion research. Findings will inform the development of a population-specific social support intervention that promotes positive health outcomes for underserved populations by addressing a concussion's emotional and psychosocial concerns.



# Thank you!

From the 2021/22 RSI Research Day Committee

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**Sara Hanafy**

*PhD Candidate*

**Daniela Testani**

*PhD Student*

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