Table of Contents
Welcome ....................................................................................................................................................... 3
Schedule of the Day ...................................................................................................................................... 5
Sponsorships ................................................................................................................................................. 8
Student Oral Presenters ................................................................................................................................ 9
    3 Minute Presenters ................................................................................................................................... 9
    7 Minute Presenters ................................................................................................................................... 10
Awards and Contests ..................................................................................................................................... 11
Abstracts ..................................................................................................................................................... 12
    3 Minute Oral Presentations Abstracts ................................................................................................... 13
    7 Minute Oral Presentations Abstracts ................................................................................................... 25
Poster Abstracts .......................................................................................................................................... 30
    Movement Science .................................................................................................................................. 31
    Occupational Science .......................................................................................................................... 43
    Practice Science .................................................................................................................................. 48
    Rehabilitation Health Services Studies ............................................................................................... 50
    Speech Language Pathology ................................................................................................................. 57
    Social and Cognitive Rehabilitation ....................................................................................................... 64
Welcome

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

The Rehabilitation Sciences Institute Research Day is our special annual event when all come together to recognize innovation, excellence, perseverance and our future leaders in research and knowledge exchange. I wish to extend a warm welcome to all our students, faculty, sponsors and guests who are joining us this year for what I consider the highlight of our academic year. A special thank you to our students who took leadership roles in making this event happen and all those who supported them. One of the greatest challenges we have is to try and capture all the amazing interdisciplinary activity of our faculty, students and staff. Our students, which grew in number by almost 20%, continue to attract the most prestigious awards. Student engagement in a range of leadership roles is at an all time high. rehabINK continues to grow with interest from Universities as far away as Australia. This year, we also launch our first strategic plan with a bold vision to address the needs of the 21st century. Rehabilitation science has never been more important globally and it is truly an honour to be part of this passionate and dedicated community.

A message from the Graduate Coordinator of RSI, Dr. Dina Brooks

We are very pleased to welcome you to the RSI Research Showcase. Our mission is to prepare students to be leaders in the rehabilitation sciences. As you will see today, our students strive for research excellence. Research Day represents a unique forum through which key research findings can be showcased to our community to advance science and practice. As rehabilitation is a multidisciplinary enterprise, the research presented by our outstanding students will capture the depth and breadth of the field.

As Graduate Coordinator, one of the most rewarding parts of the position has been interacting with our talented students. Their passion and commitment to learning is truly inspiring and today you will have the opportunity to experience it at the poster and oral presentations.

Enjoy the day!
A message from the Rehabilitation Sciences Graduate Students' Union

The RSI Research Day is a student-led initiative that is organized and supported by the Rehabilitation Sciences Graduate Students’ Union (RSGSU). Welcome to another year and another exciting research showcase of our student body. We, as the RSGSU, are excited to take part in highlighting all of our hard work and the diversity of our research. The RSI Research Day is a unique event as it is organized for the students, by the students. This event is a great environment to support our students, meet new people, and learn something new.

Take charge of today!
Ask challenging questions, encourage each other, and most importantly, have fun!

To learn more and find out how to get involved, email us: rehabsciencegsu@gmail.com and follow us on Twitter: @RSGSU and Facebook: Rehabilitation Graduate Student Union

Sincerely,
The RSGSU Executive Team

Tyler Saumur
Chen Xiong
Jessica Powers

Roni Propp
Gillian de Boer

2017 Research Day Committee
Roni Propp
MSc Student
Chen Xiong
PhD Student
Dana Swarbrick
MSc Student
Gillian de Boer
PhD Candidate
Kristina Kokorelias
PhD Student
Amie Kron
MSc Student
Tyler Saumur
MSc Student

Dr. Dina Brooks
Graduate Coordinator
Dr. Rena Park Helms
Associate Professor
Diane Wiltshire
Business Officer

A special thank you to the following staff members for their ongoing assistance:
Loida Ares
Administrative Coordinator
Jessica Boafo
Administrative Assistant

Rob Page
Manager of Information Technology
### Schedule of the Day

**Wednesday, May 17th, 2017**

9:00 a.m. – 5:00 p.m.

McLeod Auditorium and Stone Lobby

Medical Sciences Bldg. 1 King's College Circle

#### MORNING SESSION

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
</table>
| 9:00 – 9:30  | Registration

*MacLeod Auditorium*

Poster Set-up

*Stone Lobby*

| 9:30 – 10:30 | Faculty & Student Assembly

*MacLeod Auditorium*

- **Guest Speaker – Dr. Sharon Straus**, MD, FRCPC, MSc, HBSc
  Director, Knowledge Translation Program, St. Michael’s Hospital
  
  *Mentorship across the academic lifespan*

  Dr. Sharon Straus is a geriatrician and clinical epidemiologist who trained at the University of Toronto and the University of Oxford. She is the Director of the Knowledge Translation Program and Deputy Physician-in-Chief, St. Michael’s Hospital; Director, Division of Geriatric Medicine, University of Toronto; Vice Chair, and Professor, Department of Medicine, University of Toronto. She holds a Tier 1 Canada Research Chair in Knowledge Translation and Quality of Care and has authored more than 400 publications and 3 textbooks in evidence-based medicine, knowledge translation and mentorship. She is in the top 1% of highly cited clinical researchers as per Web of Science. She holds more than $57 million in peer reviewed research grants as a principal investigator. She has received national awards for mentorship, research and education.

| 10:30 – 10:40 | Refreshment Break

*MacLeod Auditorium*

| 10:40 – 11:00 | Opening Remarks

*MacLeod Auditorium*

- **Dr. Angela Colantonio**, PhD, RSI Director
- **Dr. Luc De Nil**, PhD, Vice-Dean, Students, School of Graduate Studies

| 11:00 – 11:45 | Student Presentations: 3 Minute Presentations

*MacLeod Auditorium*

- Examining the validity of accelerometry for measuring arm use in children
  *Jaclyn Dawe, MSc Student*

- How disabled youth negotiate ableism: the relevance for rehabilitation
  *Michelle Duncanson, PhD Student*

- An evaluation of the effectiveness of functional electrical stimulation to improve upper limb function in children with hemiplegic cerebral palsy
  *Luisa Garzon Mouthon, MSc Student*

- Does credit assignment of error affect learning of a novel balance-beam walking motor task?
  *Laksh Gill, MSc Student*

- Prefrontal cortex neuronal activity during single task versus dual-task performance
  *Ahmed Hassan, MSc Student*

- Construct validity of the Family Impact of Assistive Technology Scale for Augmentative and Alternative Communication (FIATS-AAC): assessment of convergence with child participation in the community
  *Amie Kron, MSc Student*
<table>
<thead>
<tr>
<th>11:45 – 12:00</th>
<th>Break</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MacLeod Auditorium</td>
</tr>
</tbody>
</table>

**AFTERNOON SESSION**

<table>
<thead>
<tr>
<th>12:00 – 1:00</th>
<th>Keynote Speaker</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MacLeod Auditorium</td>
</tr>
</tbody>
</table>

- **Ms. Christine Elliot, LLB**
  - *Patient Ombudsman*
  - *Ontario’s first Patient Ombudsman: why every experience matters*

Christine Elliott is a graduate of Western University Law School and was called to the Ontario Bar in 1980. She practiced law as a partner with Flaherty Dow Elliott & McCarthy until 2006, when she was elected as the MPP for Whitby-Ajax in a by-election. She was subsequently re-elected as the MPP for Whitby-Oshawa in 2007, 2011 and 2014. During her years at Queen’s Park Christine brought forward two private member’s bills, which resulted in Select Committees on Mental Health and Addictions and on Developmental Services. In December, 2015, Christine was appointed by the provincial government as the first Patient Ombudsman for the Province of Ontario.

Christine has been an advocate for vulnerable people for many years and has served as a volunteer with many community organizations, including the Grandview Children’s Centre and Durham Mental Health Services, which named one of their homes in her honour. She has also served on the board of directors of the Leukemia and Lymphoma Society and the Toronto Symphony Orchestra. Christine is the co-founder and a director of the Abilities Centre, a sports, recreation and arts facility for people of all abilities located in Whitby.

<table>
<thead>
<tr>
<th>1:00 – 2:15</th>
<th>Lunch and Networking</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MacLeod Auditorium</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1:10 – 1:40</th>
<th>Poster Judging Session 1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Stone Lobby</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1:45 – 2:15</th>
<th>Poster Judging Session 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Stone Lobby</td>
</tr>
<tr>
<td>Time</td>
<td>Event Description</td>
</tr>
<tr>
<td>----------</td>
<td>-------------------------------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| 2:15 – 3:10 | **Student Presentations: 7 Minute Presentations**<br>
_**MacLeod Auditorium**_<br>
- Development of speech therapy using augmented visual feedback in Parkinson’s disease<br>
  **Elaine Kearney, PhD Candidate**<br>
- Development and sensibility evaluation of the Muscular Dystrophy Child Health Index of Life with Disabilities questionnaire<br>
  **Roni Propp, MSc Student**<br>
- Deciding to participate in arts-based health research: a qualitative study of participants’ perspectives<br>
  **Hyun Ryu, MSc Student**<br>
- Prevalence and correlates to problem video gaming in youth<br>
  **Jing Shi, PhD Candidate**<br> |
| 3:10 – 3:15 | **Exercise Break**                                                                                   | _MacLeod Auditorium_          |
| 3:15 – 4:05 | **Panel Discussion**<br>
_**MacLeod Auditorium**_<br>
Differing views on disability in rehabilitation sciences<br>
**Facilitator: Dr. Karen Yoshida**, PhD, Department of Physical Therapy and RSI<br>
- **Dr. Katherine Berg**, PhD PT, Department of Physical Therapy and RSI<br>
  _Research_: Interested in improving the health and outcomes of persons across various health and social services through enhanced use of assessment information.<br>
- **Dr. Emily Nalder**, PhD, Assistant Professor, March of Dimes Canada, Paul J.J. Martin Early Career Professorship in the Department of Occupational Science and Occupational Therapy, RSI<br>
  _Research_: Interests in understanding the relationships between cognition and participation in everyday life, and identifying the critical components of rehabilitation that are needed to facilitate participation in meaningful activities for individuals with cognitive difficulties.<br>
- **Patrick Jachyra**, PhD Student, RSI, Bloorview Research Institute, Holland Bloorview Kids Rehabilitation Hospital<br>
  _Research_: Examines physical activity participation among children and youth diagnosed with Autism Spectrum Disorder.<br>
- **Dr. Stephanie Nixon**, PhD PT, Associate Professor, Departments of Physical Therapy, RSI, DLSPH Director, International Centre for Disability and Rehabilitation (ICDR)<br>
  _Research_: Explore intersections of disability and rehabilitation in the context of HIV in Canada and Southern Africa and explore capacity-building on privilege, oppression and allyship in the context of health research, clinical care, health professions education.<br>
- **Dr. Nancy Halifax**, PhD, Associate Professor and Grad Program Director, M.A. and Ph.D. Program in Critical Disability Studies, School of Health Policy and Management Faculty of Health, York University<br>
  _Research_: Her research is oriented by feminist new materialism toward body/s, illness, disability and difference, and a queer and crip commitment to the articulation of what flickers at the threshold. I live with chronic illness and disability. |
| 4:05 – 4:30 | **Awards Ceremony & Wrap-up**                                                                        | _MacLeod Auditorium_          |
| 4:30 – 5:00 | **Networking with Wine & Cheese**                                                                     | _Stone Lobby_                 |
Sponsorships

Thank you to our valued sponsors!

Gold Level

**Bloorview RESEARCH INSTITUTE**

**Heart & Stroke Foundation**

**Canadian Partnership for Stroke Recovery**

**Northern Digital Inc.**

**Sunnybrook RESEARCH INSTITUTE**

Silver Level

**Autodesk**

**UHN Toronto Rehabilitation Institute**

**Canadian Institutes of Health Research (CIHR IRSC)**

Dr. Angela Colantonio: Chair in Gender, Work, and Health

Bronze Level

Dr. Larry Robinson on behalf of **Sunnybrook ST. JOHN’S REHAB**

**International Centre for Disability and Rehabilitation (ICDR)**

Dr. Nora Cullen
Student Oral Presenters

Lauren Bechard
MSc Student

Jaclyn Dawe
MSc Student

Michelle Duncanson
PhD Student

Luisa Garzon
MSc Student

Laksh Gill
MSc Student

Ahmed Hassan
MSc Student

Amie Kron
MSc Student

Reema Shafi
PhD Student

Tiffany Toong
MSc Student
Karolina Urban  
*PhD Student*

Teresa Valenzano  
*PhD Candidate*

---

Elaine Kearney  
*PhD Candidate*

Roni Propp  
*MSc Student*

Jeff Hyu  
*MSc Student*

Jing Shi  
*PhD Candidate*
Awards and Contests
We appreciate our sponsors and in-kind donors for making these opportunities possible.

Three Minute Presentation Competition
The top 3 presentations will win a student travel award.
Submit your ballot by 1:00pm! The winners will be announced at the Wine & Cheese at 4:30pm!

Poster Competition
We have 4 student travel awards up for grabs:
- Best Poster – MSc
- Best Poster – PhD
- Best Poster – People’s Choice
- Best Poster – CIHR Gender, Work and Health award
Submit your ballot by 2:15pm! The winners will be announced at the Wine & Cheese at 4:30pm!

Social Media Contests

What better way to kick off RSI Research Day 2017 than with a giveaway! Here how’s to win:

Step 1: Like us on Facebook (Rehabilitation Sciences Institute) OR follow us on Twitter (@RSIUofT) to enter.

Step 2:
- If you entered through Facebook, LIKE our #RSIResearchDay post on May 17th!
- If you entered through Twitter, all you have to do is RETWEET the #RSIResearchDay #Giveaway post!

If you already like us on Facebook or follow us on Twitter, simply proceed to Step 2 for your chance to win!

The deadline to enter is Tuesday, May 17th, 2016 at 3:00pm!

All contest winners will be announced at the Wine & Cheese event starting at 4:30pm in the Stone Lobby.

Make sure to also join the conversation by using the hashtag #RSIResearchDay

Good luck!
Abstracts
3 Minute Oral Presentations Abstracts

in order of the schedule
Examining the Validity of Accelerometry for Measuring Arm Use in Children

Jaclyn Dawe, Rehabilitation Sciences Institute; Jirapat Likitlersuang, Institute of Biomaterials and Biomedical Engineering; Darcy Fehlings, Bloorview Research Institute; Peter Rumney, Bloorview Research Institute; José Zariffa, Institute of Biomaterials and Biomedical Engineering; Kristin Musselman, Department of Physical Therapy

Field of Research: Occupational Science
Funding: Supervisor’s TRI Start-up Funds & Rehabilitation Sciences Institute Bursary

Background: A primary goal of rehabilitative therapy for children with hemiparesis is to improve functional arm use during activities of daily living. However, current outcome measurement tools do not capture objective information about children’s post-treatment arm use in natural environments. This information is required to evaluate treatment protocols and to inform future treatment design. Arm-worn accelerometers, which can quantitatively measure arm use in individuals’ natural environments, can potentially provide some of this information. Accelerometry has been validated as a measure of affected arm use in adults with hemiparesis; however, its validity as an outcome measure for children was questioned and has not been tested (Sokal et al., 2015). Purpose: Initially, to assess the criterion validity of accelerometry as a measure of bilateral arm use in able-bodied children; subsequently, to perform this testing in children with hemiparesis.

Methods: Twenty-four able-bodied child participants were videotaped during 15 minutes of play while wearing wrist accelerometers (ActiGraph wGT3X-BT). For each 2-second interval, the accelerometer and video-based observations (completed by a researcher who scored for movement or no movement) were compared to determine agreement levels, sensitivity, and specificity. Receiver Operator Characteristic (ROC) Analysis was performed on each participant’s data, to determine optimal thresholds for the detection of movement.

Results: The agreement between accelerometer and video data was >80% for all participants, with higher agreement for dominant vs. non dominant arm use (p = 0.03). Regarding the accelerometers’ ability to detect arm movement, the mean value for sensitivity (88.27%) was slightly higher than for specificity (74.87%). Based on ROC analysis, a median threshold value of 5.5 (for the accelerometers’ detection of movement) was found to increase the sensitivity and specificity of all measurements by an average of 6%.

Implications: Preliminary evidence indicates that accelerometry is a valid measure of arm use in able-bodied children during play. ROC analysis indicates that the optimal threshold setting for children may be above zero, and different from the optimal threshold value used in adult studies of arm use (Uswatte et al., 2000). These findings warrant our ongoing research on this project which will next examine the psychometric properties of accelerometry in children with hemiparesis.
Presentation #2
How disabled youth negotiate ableism: The relevance for rehabilitation.
Michelle Duncanson, Rehabilitation Sciences Institute

Field of Research: Rehabilitation Health Services Studies
Funding: University of Toronto

Background: Ableism is a system of oppression, based on seemingly ‘self-evident’ truths about ‘ability’ and ‘disability.’ Through a system of beliefs, practices and processes that establishes certain abilities as ‘normal’ and co-relationally constructs deviation as ‘abnormal,’ ableism justifies the oppression of disabled people by positioning them as ‘other’ (Campbell, 2008). Ableism is embedded in all areas of western culture. Therefore, disabled people must negotiate a world that both presumes and privileges the abled bodied. Over time, targeting and oppression experienced by disabled people may lead to internalization of negative stereotypes and misconceptions about disability affecting how they view themselves and other disabled people (internalized ableism) (Campbell, 2008). Internalized ableism influences how disabled people respond to or perpetuate ableist constructs and ‘viewpoints.’ But, disabled people are not passive agents; they shape and are shaped by their experiences. They can challenge and/or resist ableism and have a positive view of themselves (Loja et al., 2013).

Purpose/Methods: In this paper, I used a critical social science perspective (Eakins et al., 2009) to explore the concept of ableism; the normative orientations that underpin, produce/sustain it; explore what is known about how disabled youth recognize (or not), resist or challenge ableism in the context of their lives; and finally, discussed the relevance of this information for rehabilitation.

Results: Disabled youth are social actors that use variety of different strategies to respond to oppressive experiences of ableism. In their responses, they appear to both resist and internalize some of the negative dominant normative understandings of disability.

Implications: Rehabilitation, through normative practices and social messages that devalue difference, perpetuates systems of ableism. However, by reframing notions of ‘normalcy’ in rehabilitation to value difference we can help disabled youth do the same. This is crucial for them to be able to develop a positive view of themselves.

References
Loja, E., et al. (2013). Disability, embodiment, and ableism: Stories of resistance. Disability & Society, 28(2), 190
Presentation #3 & Poster #31
An Evaluation of the Effectiveness of Functional Electrical Stimulation (FES) to Improve Upper Limb function in Children with Hemiplegic Cerebral Palsy (HCP)
Luisa Garzon, Rehabilitation Sciences Institute, University of Toronto & Holland Bloorview Kids Rehabilitation Hospital; Lauren Switzer, Holland Bloorview Kids Rehabilitation Hospital; Yvonne Ng, Holland Bloorview Kids Rehabilitation Hospital; Betty Chan, Holland Bloorview Kids Rehabilitation Hospital; Darcy Fehlings, Holland Bloorview Kids Rehabilitation Hospital & Rehabilitation Sciences Institute, University of Toronto

Field of Research: Rehabilitation Technology Science
Funding: Holland Bloorview Kids Rehabilitation Hospital

Background/Purpose: Motivated by a study demonstrating that Functional Electrical Stimulation (FES) improved upper limb (UL) function in pediatric chronic stroke patients, this study aimed to evaluate the use of a multichannel FES system for improving UL function in children with hemiplegic cerebral palsy (HCP).

Method: Case studies of three children with HCP (M= 9; SD= 3.6) who received up to 48 FES hourly sessions (M= 47.3; SD= 0.5), administered 3 times/week, for 16 weeks. Outcome measures were assessed pre- and post-intervention:
Primary: - Quality of Upper Extremity Skills Test (QUEST) grasp
Secondary: - QUEST (total), Jebsen-Taylor Hand Function Test (JTHFT - 6 subtests), Canadian Occupational Performance Measure (COPM), Children’s Hand-use Experience Questionnaire (CHEQ - % independent activities), proprioception (degrees of error), stereognosis (identifying 9 common objects), and grip strength (modified sphygmomanometer).

Results: Pre- and post-FES score differences ( represents clinically significant improvement):
Case 1: QUEST grasp (7.4 points), QUEST total (15.4 points), JTHFT (48 s), COPM Performance (3.7 points), CHEQ (-7.1%), proprioception (29.3), stereognosis (no change), grip strength (11 mmHg). Case summary: Improvement in grasp, and positive change in 5/7 secondary outcomes.
Case 2: QUEST grasp (-7.4 points), QUEST total (15.4 points), JTHFT (41 s), COPM Performance (-3 points), CHEQ (20.7%), proprioception (7.3), stereognosis (no change), grip strength (15 mmHg). Case summary: Decline in grasp, and positive change in 4/7 secondary outcomes.
Case 3: QUEST grasp (14.8 points), QUEST total (-42.1 points), JTHFT (48 s), COPM-Performance (-1.5 points), CHEQ (-0.5%), proprioception (4.8), stereognosis (7 objects), grip strength (12 mmHg). Case summary: Improvement in grasp, and positive change in 3/7 secondary outcomes.

Summary/Implications: Two children had clinically important gains in grasping ability, whereas a third child’s ability deteriorated. Only one case demonstrated consistent improvements across the majority of outcomes. The remaining cases showed mixed results. Interestingly, all children improved in both proprioception and grip strength. A 6-months post-FES follow-up assessment is planned to help assess maintenance of gains.
Presentation #4 & Poster #5
Does credit assignment of error affect learning of a novel balance-beam walking motor task?
Lakshdeep Gill, Rehabilitation Sciences Institute, University of Toronto; Kara K Patterson, University of Toronto- Department of Physical Therapy; Luc Tremblay, University of Toronto-Faculty of Kinesiology and Physical Education; Rosalie H Wang, University of Toronto-Department of Occupational Science and Occupational Therapy; Avril Mansfield, University of Toronto- Department of Physical Therapy

Field of Research: Movement Science
Funding: Avril Mansfield CIHR New Investigator Award (MSH-141983)

Background: The central nervous system (CNS) estimates the source of motor errors, which can be environmental (external) or arising from CNS’ own motor control (internal). If the CNS attributes error to poor motor control (i.e., internal credit assignment), adaptations may transfer across situations. In contrast, if the CNS interprets the error as caused by environmental/external factors, motor learning may be specific to that context. We tested this hypothesis by manipulating the perceived source of error as participants learned a novel balance-beam walking task.

Methods: Twenty-one healthy young adults (20-35 years old) practiced a balance-beam walking task during one session. The beam (3.8cm wide) was mounted onto a moving platform. Participants were randomly assigned to one of three groups: Aware (AW), Unaware (UN), or Control (CN; n=7 per group). Two of the groups experienced subthreshold platform perturbations while learning the task. One group was informed that the platform would move (AW - external credit assignment), and one group was told that the platform would not move (UN - internal credit assignment). CN practiced without platform perturbations. Participants subsequently performed the task unperturbed 24 hours later. Participants’ beam-walking performance was also tested on a narrow beam (2cm wide) at the end of the first session and after 24 hours (transfer task). An error was considered stepping off the beam. The measure of performance was step error %: ((step errors)/(step errors+successful steps)) *100

Results: The three groups were similar in step error % at pre-test (AW= 32.2%, UN= 39.5%, CN= 32.0%; p= 0.49). All groups performed significantly better at post-test (AW= 11.3%, UN= 13.3%, CN= 12.0%) than at pre-test (p<0.01). When controlling for performance at pre-test, there was no difference in performance between the groups at post-test (p= 0.95). Performance on the transfer task did not differ between groups on Session 1 (AW= 43.2%, UN= 51.3%, CN= 49.5%; p= 0.71) or Session 2 (AW= 49.3%, UN= 51.0%, CN= 58.8%; p= 0.62).

Conclusions: Preliminary results of this study suggest that credit assignment of error does not influence learning of a balance-beam walking task. However, current results may be influenced by low power, and are subject to change upon analysis of the final dataset (target sample=12/group). Clarifying the role of credit assignment of error in motor learning may influence how motor skills are taught in rehab settings.
Presentation #5 & Poster #6  
Prefrontal Cortex Neuronal Activity during Single Task versus Dual-Task Performance  
Ahmed Hassan, Rehabilitation Sciences Institute, Department of Physical Therapy, University of Toronto; Leandro Bonetti, Department of Physical Therapy, Universidade de Caxias do Sul; Kara Patterson, Department of Physical Therapy, University of Toronto; Darlene Reid, Department of Physical Therapy, University of Toronto

Field of Research: Movement Science  
Funding: Department of Physical Therapy, University of Toronto

Background: Cognitive impairment, attributed to aging and hypoxemic neural damage, affects over 16 million individuals in the United States. The prefrontal cortex (PFC) plays a role in executive functions and attention, which are required for balance and gait. Thus, alterations in PFC may result in cognitive impairment and affect motor performance. Dual-task performance is a powerful experimental paradigm that can provide insight into how central impairments affect motor performance.

Purpose. This pilot study assessed neural PFC activity and gait performance in healthy subjects during single and dual tasks.

Methods. Ten healthy individuals (5M:5F), aged 22-46 years, performed the following single tasks: (1) backwards spelling cognitive task (CT); (2) 30m fast paced walk (FPW); (3) 30m preferred paced walk (PPW); and (4) single leg stance (SLS). The dual tasks involved tasks 2-4 each in combination with the cognitive task (i.e. FPW+CT, PPW+CT and SLS+CT). Neural PFC activity was estimated by measuring oxygenated hemoglobin (O2Hb) levels using functional near-infrared spectroscopy (fNIRS), while the gait parameters (velocity, cadence and stride length) were measured using a pressure sensitive Zeno mat.

Results. PFC O2Hb significantly increased during FPW+CT compared to FPW alone (p=0.0009). PFC O2Hb increase during PPW+CT and SLS+CT in relation to PPW and SLS alone was not significant (p=0.11 and p=0.98, respectively); yet, PFC O2Hb levels were the highest for SLS+CT and SLS, but lowest for PPW+CT and PPW. Dual-task interference was also demonstrated during the FPW+CT dual-task compared to FPW alone as decrements in velocity (11.1%, p=0.0018), cadence (6.2%, p=0.012) and stride length (5.4%, p=0.010) were observed.

Summary/Implications. Neural PFC activity (O2Hb) increased during dual-tasks compared to single tasks and the greatest differences were observed during FPW+CT dual-task compared to the FPW single task. These findings advocate a strong link between PFC activity and motor function and feasibility of using fNIRS device to measure PFC neuronal activity. Thus, fNIRS may be used to assess neuronal activity of “at risk” populations such as those with a chronic respiratory disease. Understanding the decrements in dual-task performance and demands on PFC neural activity will provide insight into alternative strategies to improve motor performance, which could consequently decrease risk of falls and enhance patients’ quality of life.
**Presentation #6 & Poster #23**

**Construct Validity of the Family Impact of Assistive Technology Scale for Augmentative and Alternative Communication (FIATS-AAC): Assessment of Convergence with Child Participation in the Community**

Amie T. Kron, Rehabilitation Sciences Institute, Bloorview Research Institute; Dr. Stephen E. Ryan, Bloorview Research Institute; Dr. Virginia Wright, Bloorview Research Institute; Dr. Shauna Kingsnorth, Bloorview Research Institute

**Field of Research:** Rehabilitation Health Services Studies  
**Funding:** Canadian Institutes of Health Research & Rehabilitation Sciences Institute

**Background/Purpose:** AAC clinicians who take a family-centred service approach recognize that parents and other primary caregivers have a strong impact on the reception, implementation, and maintenance of AAC systems for children with CCN. This notion calls for sound parent-report outcome measures that assess the functional performance of children in ‘real-world’ environments. The FIATS-AAC is a multi-dimensional, parent-report questionnaire designed to measure the effect of AAC interventions on participation and other aspects of everyday life in children with CCN and their families. The primary aim of the present study was to evaluate the convergent construct validity of the overall FIATS-AAC when compared to a sound measure of community participation in children with AAC needs.

**Methods:** Parents of children with CCN who use aided AAC were invited to complete a mail-out survey comprising of a demographic form, the FIATS-AAC, and the community participation scale of the Participation and Environment Measure for Children and Youth (PEM-CY). Ratings on the FIATS-AAC were compared to the frequency and intensity of the child’s involvement in up to 10 different community activities using correlational analyses (Pearson’s product-moment correlation).

**Results:** Forty-seven parents completed the survey. No significant associations were found between the total score and the community participation levels of the PEM-CY. However, moderate, significant correlations ($0.32 < r < 0.40, p<0.05$) were found for four of the seven child-related subscales of the FIATS-AAC. Only one of the six family-related subscales showed a moderate, significant correlation ($0.xx, p<0.05$).

**Summary/Implications:** The results suggest that the FIATS-AAC overall is not tapping into constructs of related to community participation as measured by the PEM-CY. However, exploratory analyses provide emerging support for the construct validity for child-related subscales of the FIATS-AAC. Less support for convergence was shown for family-related dimensions. It is recommended that further validity studies be conducted to assess whether the subscales of the FIATS-AAC similarly align with child participation in school and home settings.
Background: Workplace violence is not only an occupational health and safety hazard but its consequences also carry a substantial economic loss burden (i.e., worker absenteeism, low productivity, increased care costs). As per the Canadian literature, up to 10% of all TBI admissions are a result of physical assault. There is evidence to suggest that individuals who have sustained physical assault score significantly lower on scales measuring reintegration into normal life.

Objectives: The aim of this study was to explore the contribution of intentional TBI (assault) versus nonintentional TBI on the outcomes related specifically to days off work while controlling for potential confounding factors such as age, sex, employment status and injury severity.

Methods: The dataset (n=3173) utilized for this study is based on claims made to WorkSafe Victoria (Australia) from 2004 to 2012; a nine year timeframe. Descriptive statistics were computed by generating frequency distributions for categorical variables. Chi-square test was used to examine the significance of association between and vocational variables of interest.

Results: Amongst all the workers who sustained wrTBI (n=3173), assault contributed to 9% as a mechanism. The distribution of sex in the sample population was balanced, i.e., there were 59% males and 42% females. The majority (70%) of the sample was aged 25 to 54 years of age; nearing approximately 20% for each of the three decades. A multivariate logistic regression analysis was performed to predict whether time off work was required (yes/no) for workers who had sustained wrTBI as a result of assault versus those who did not. Additional covariates included in the model were hospitalization (hospitalized versus not hospitalized as a measure of severity), sex, age (grouped by decades) and employment status (full-time, part-time and others). Workers who sustained their injury as the result of an assault were more likely to have days off work (OR = 1.694, 95% confidence interval 1.23, 2.32) compared to those who did not.

Conclusion: The results have policy-related implications for workplace safety and prevention of workplace violence. Work injuries due to assaults are associated with a greater likelihood of time off away from work, independent of injury severity (as measured by hospitalisation). Future work should explore other reasons that may explain this observation examining workplace and individual level factors.
Presentation #8
Grip Strength Performance in Youth Hockey Players: A Normative Study to Inform Concussion Management
Tiffany Toong, Rehabilitation Sciences Institute; Katherine Wilson, Bloorview Research Institute; Karolina Urban, Rehabilitation Sciences Institute; Melissa Paniccia, Rehabilitation Sciences Institute; Dr. Anne Hunt, Bloorview Research Institute; Dr. Nick Reed, Bloorview Research Institute

Field of Research: Social and Cognitive Rehabilitation
Funding: Canadian Institutes of Health Research

Background/Purpose: Concussion is a common injury in youth ice hockey, accounting for approximately 18% of all injuries. Strength has been shown to be impaired following a concussion, thus may be used in concussion assessment and evaluation. However, to date there is a paucity of up-to-date and developmentally sensitive grip strength norms for youth athletes. Furthermore, little is known about how age, sex, height, and other concussion factors influence grip strength performance. Therefore, the aims of this study are to 1) Describe normative grip strength values in youth hockey players at baseline 2) Explore the relationship between age, sex, height, concussion history, and presence of concussion-like symptoms (headache, fatigue) on grip strength.

Methods: A convenience sample of 695 male and female youth hockey players between the ages of 10 and 16 were included in this study. Participants completed pre-injury/baseline assessments of grip strength (Smedley dynamometer), self-report of concussion-like symptoms (PCSI-C & PCSI-Y), as well as demographic information (age, sex, concussion history).

Results: Regression analyses were performed to explore the effects of age, sex, height, concussion history, and the presence of concussion-like symptoms on grip strength performance. Results indicated significant effects for age and sex (p=0.000), whereby grip strength increased with age, and males had greater grip strength than females after the age of 12. Height also showed a significant effect (p=0.000), taller participants had higher performance. Finally, those who reported a headache at baseline had significantly lower grip strength (p=0.010).

Summary/Implications: This study addresses the need for grip strength normative data specific to youth hockey players. Further, results from this study provide insight into factors that influence grip strength, which may facilitate post-concussion evaluation and guide safe return-to-play decision making for this population.
Exploring functional connectivity during single and dual task paradigms in youth.

Karolina Urban, Rehabilitation Sciences Institute, University of Toronto; Larissa Schudlo, Bloorview Research Institute; Nick Reed, Bloorview Research Institute; Tom Chau Bloorview Research Institute

Field of Research: Rehabilitation Health Services Studies
Funding: ONF-REPAR

Background: Concussions, particularly while in youth, often result in lingering symptoms that cannot be identified with current clinical imaging methods. However, exploration of connectivity (i.e. communication) between brain regions have been able to identify disruptions while at rest and during a simple finger tapping task. Therefore it would be critical to identify connectivity patterns during more complex cognitive processes as dual-task paradigms, which are more sensitive to underlying disruptions following a concussion. The aim of this study is to compare inter- and intra- hemispheric connectivity of the dorsal lateral prefrontal cortex (DLPFC) between different cognitive demands.

Methods: Six healthy youth (age 15.1±1.9, mean±S.D, 1 male) completed 5-minute resting state, Stroop interference, postural sway, and then concurrently (i.e. dual task). DLPFC was measured using a Hitachi ETG-4000 functional near infrared spectroscopy (fNIRS) system (Hitachi Medical Co, Japan), with head cap placement according to the 10-20 EEG system 6. The left DLPFC was localized by 10-20 coordinate estimation and verified with maximal hemodynamic activity during the Stroop task. Pearson R correlation coefficient was used to evaluate intra- and inter-connectivity, followed by a pairwise T-test for comparison. Finally, correlations between connectivity values and performance accuracy and reaction time were evaluated.

Results: Intra-hemispheric connectivity was significantly greater during the Stroop task in comparison to resting state (M=0.23, SD=0.06, N=6, P<0.01), balance ((M=0.24, SD=0.18, p<0.01), and dual task (M=.23, SD=0.21, p<0.05). While interhemispheric connectivity was only significantly greater in Stroop task than in resting state (M=0.18, SD=.18, p>0.05), and during postural sway (M=0.16, SD=.14, p>0.05). There was no significant difference between rest, postural sway and dual-task intra- and inter- hemispheric connectivity to the left DLPFC. Increased accuracy during Stroop task was significantly correlated with increased inter- and intra- hemispheric connectivity during single (R=.87, p=0.04) and dual-task (R=.89, p=0.02), respectively.

Implications: Inter- and intra-hemispheric connectivity values are altered in specific brain regions during different cognitive or physically demanding tasks. By establishing connectivity patterns in healthy youth, a framework for evaluating youth who have sustained a concussion may be valuable.
Presentation #10
Respiratory Stability During Swallowing: Effect of Liquid Consistency on Respiratory Pattern and Pause Duration
Teresa Valenzano, Rehabilitation Sciences Institute; Melanie Peladeau-Pigeon, Toronto Rehabilitation Institute; Brittany MacKichan, Toronto Rehabilitation Institute; Catriona Steele, Toronto Rehabilitation Institute

Field of Research: Speech-Language Pathology
Funding: University of Toronto

Purpose: Respiratory-swallow coordination is vital for airway protection. Previous studies have found stable pre and post-swallow airflow patterns across bolus volumes, taste and viscosity contrasts (e.g. thin vs puree). Our purpose was to confirm that differences in liquid consistency, as defined by the International Dysphagia Diet Standardisation Initiative, do not affect the respiratory phase pattern (RPP) or respiratory pause duration (RPD) and to assess stability of these measures across repeated sessions.

Methods: Nasal airflow was recorded across more than 800 swallows from a pilot sample of 8 healthy adult women during cup-drinking of 5 liquid consistencies (thin to extremely thick). Three independent raters identified the pre- and post-swallow respiratory phase (inspiration/expiration). RPD was measured as the cessation of airflow occurring during the swallow. Chi-square statistics and repeated measures ANOVAs were used to study differences in pattern frequency and pause duration across factors of consistency, barium/non-barium, starch/gum thickener and repeated sessions.

Results: The raters achieved perfect agreement for identification of RPP. An exhalation-pause-exhalation pattern was seen on 91% of all swallows. Average RPD was 746 ms (95% confidence interval: 724-770). No significant differences in RPP frequency or RPD were found across factors of consistency, barium vs. non-barium, thickener type or repeated sessions.

Conclusions: These findings confirm stability in respiratory phase pattern and pause duration for healthy adults across different stimuli consistencies.
Presentation #11
Physical Activity Behaviours, Perceptions, and Participation Factors in Older Adults with Mild Cognitive Impairment and Alzheimer's Disease
Lauren E. Bechard, Rehabilitation Sciences Institute, University of Toronto; Dorcas E. Beaton, PhD, Li Ka Shing Knowledge Institute; Katherine S. McGilton, PhD, Lawrence S. Bloomberg, Faculty of Nursing, University of Toronto; Carmela Tartaglia, Krembil Research Institute, University Health Network; Sandra E. Black, Sunnybrook Research Institute

Field of Research: Rehabilitation Health Services Studies
Funding: Sunnybrook Research Institute & University of Toronto Faculty of Medicine

Background: Alzheimer’s disease (AD) is an insidious, progressive, neurodegenerative disorder that leads to catastrophic cognitive, social, and functional impairments. AD is the most common form of dementia and may be preceded by a diagnosis of Mild Cognitive Impairment (MCI). Physical activity (PA) is beneficial for reducing the risk of developing dementia in late life and progressing from MCI to AD, managing cognitive and behavioural symptoms, and maintaining independence in AD and MCI. Despite this, older adults (OA) (aged>64 years) in Canada report the lowest PA levels of any age group. OA with MCI and AD may have lower PA levels due to additional disease-related barriers. Little is known about the behaviours and perceptions of OA with MCI and AD and their participation in PA.

Purpose: The purpose of this qualitative study was to explore the PA behaviours, perceptions, and factors influencing PA participation of OA with MCI and AD.

Methods: 15 dyads (care recipient with MCI or mild to moderate AD (MMSE=18-28) aged >64 years and their caregiver) were purposively sampled from a cognitive neurology clinic at an urban teaching hospital. Dyad members individually participated in semi-structured interviews and self-reported weekly PA behaviours. Caregivers provided assessments of care recipients’ apathy levels. Interviews were transcribed verbatim and analyzed using qualitative thematic analysis. Quantitative data on PA and apathy levels were analyzed using descriptive statistics.

Results: OA with MCI and AD and their caregivers believe PA is important for healthy living, but lack specific knowledge of recommendations and benefits for OA with dementia. PA perceptions differ between individuals and within dyads, with PA experiences throughout the lifespan influencing current PA participation. As such, adapting PA participation to one’s preferences, available resources, and environment is important to maintaining PA. To do so, however, caregivers must overcome apathy to enable PA.

Implications: Few studies have explored PA behaviours, perceptions, and factors influencing PA participation of OA with MCI and AD. This study addresses this gap in the literature, and provides a stepping stone for adapting research on the benefits of PA for dementia prevention and management to community settings. These results may inform future research studying the effects of PA in MCI and AD and the development of initiatives promoting PA participation of OA with MCI and AD.
7 Minute Oral Presentations Abstracts
in order of the schedule
Presentation #12
Development of Speech Therapy using Augmented Visual Feedback in Parkinson’s Disease
Elaine Kearney, Rehabilitation Sciences Institute, Department of Speech-Language Pathology, University of Toronto; Brandon Haworth, Department of Electrical Engineering & Computer Science, York University; Jordan Scholl, Department of Speech-Language Pathology, University of Toronto; Renuka Giles, Department of Speech-Language Pathology, University of Toronto; Petros Faloutsos, Department of Electrical Engineering & Computer Science, York University; Melanie Baljko, Department of Electrical Engineering & Computer Science, York University; Yana Yunusova, Department of Speech-Language Pathology, University of Toronto

Field of Research: Speech-Language Pathology
Funding: Parkinson’s Society of Canada Pilot Project Grant Natural Sciences and Engineering Research Council of Canada

Background: Parkinson’s disease (PD) is a progressive neurodegenerative disease affecting voluntary movement, including speech movements. 45% of individuals with PD experience difficulties with articulation, leading to reduced intelligibility. Current treatment options that address the underlying movement disorder are limited. My doctoral work has focused on (1) understanding the speech movement disorder in PD to identify potential targets for therapy; and (2) developing a novel augmented visual feedback system to address these targets in therapy.

Study 1: A cross-sectional study was conducted to examine movements of the jaw, tongue blade, and dorsum during sentence production with respect to speech intelligibility. Method: 21 speakers with PD and 20 healthy controls produced sentences in their habitual speaking style. A 3D electromagnetic articulograph (EMA) tracked movements of the articulators, and speech intelligibility was obtained for the speakers with PD. Articulatory measures included movement size, speed, and sentence durations. Results: Speakers with PD demonstrated a significant reduction in jaw movements as well as shorter than normal sentence durations. Between-speaker variation in movement size of the jaw, tongue blade, and dorsum was associated with speech intelligibility in PD. Conclusion: Articulatory hypokinesia is related to functional communication in PD.

Study 2: An ABA single-subject design study was conducted to establish the preliminary efficacy of a treatment program using game-based visual feedback on speech movements and intelligibility in PD. Method: Five males diagnosed with PD attended a 10-session program over 5 weeks, aimed at increasing the size of tongue movements during sentence production. Participants were instructed to use large tongue movements and were provided with visual feedback relating to the size of their tongue movement, via EMA. Measures of tongue movement and speech intelligibility for both trained and untrained stimuli were taken pre and post treatment.

Results: All participants increased tongue movements during therapy sessions. Post treatment, 4/5 participants demonstrated large effect sizes for trained sentences (d > 1.0), and two participants generalized the effect of treatment to untrained sentences (d > 1.0). Analysis of corresponding intelligibility data is ongoing.

Conclusion: Movement-based therapy using augmented visual feedback can facilitate the treatment of articulatory hypokinesia in PD.
Development and sensibility evaluation of the Muscular Dystrophy Child Health Index of Life with Disabilities questionnaire

Roni Propp, Rehabilitation Sciences Institute, University of Toronto; Shannon Weir, Child Health Evaluative Sciences, SickKids Research Institute; Clarissa Encisa, Child Health Evaluative Sciences, SickKids Research Institute; Aileen Davis, Krembil Research Institute, University Health Network; Laura McAdam, Bloorview Research Institute, Holland Bloorview Kids Rehabilitation Hospital; Nancy Salbach, Department of Physical Therapy, University of Toronto; Unni Narayanan, Orthopaedic Surgery, The Hospital for Sick Children

Field of Research: Rehabilitation Health Services Studies

Funding: Ontario Graduate Scholarships & Pediatric Orthopaedic Society of North America (POSNA) Research Grant

Background: Duchenne muscular dystrophy (DMD) is one of the most common and severe neuromuscular disorders. Since there is no cure, treatments aim to improve health, prolong life and increase quality of life. Currently, tools to measure these outcomes are lacking. The Caregiver Priorities and Child Health Index of Life with Disabilities (CPCHILD) questionnaire is a multidimensional measure of health-related quality of life that was developed for children with severe disabilities and has been validated for children with severe (non-ambulant) cerebral palsy. Pilot testing of the CPCHILD in children with DMD and their parents has shown that it is important and relevant for this population.

Objective: To adapt the CPCHILD to develop an outcome measure that reflects the full breadth of health-related priorities of children with DMD and their parents.

Method: A two-part sensibility evaluation involving key stakeholders was undertaken. First, cognitive interviews were iteratively conducted with children with DMD and their parents to inform changes to the CPCHILD. The resulting pilot version of the new questionnaire (Muscular Dystrophy Child Health Index of Life with Disabilities [MDCHILD]) was evaluated by a survey of healthcare professionals, which led to further changes.

Results: 19 children with DMD (6-17yrs) and their parents were interviewed leading to the development of the pilot MDCHILD. This pilot version was evaluated by an international multidisciplinary group of 27 healthcare professionals with expertise in DMD, leading to further changes. In total, 15 items were added, 5 were removed, and 21 were modified by the input of these key stakeholders. The MDCHILD has 47 items distributed over 7 domains: Activities of Daily Living & Independence (11 items); Positioning, Transferring and Mobility (8 items); Comfort & Endurance (10 items); Emotions & Behaviour (5 items); Social Interaction & School (9 items); Health (3 items); and Overall Quality of Life (1 item).

Implications: Involvement of the key stakeholders in the development of the MDCHILD ensures that the outcome measure is relevant for the DMD population. Further work is underway to evaluate the psychometric properties of the MDCHILD in a large national cohort of children with DMD and their parents. If shown to be reliable and valid, the MDCHILD will serve as a much-needed tool to evaluate the effectiveness of interventions in line with the priorities and goals of these children and their parents.
Deciding to participate in arts-based health research: A qualitative study of participants’ perspectives

Hyun Ryu, Rehabilitation Sciences Institute, University of Toronto; Flora Matheson, Li Ka Shing Knowledge Institute, St. Michael’s Hospital; Alison Thompson, Leslie Dan Faculty of Pharmacy, University of Toronto; Bonnie Kirsh, Rehabilitation Sciences Institute, University of Toronto; Janet Parsons, Li Ka Shing Knowledge Institute, St. Michael’s Hospital

Field of Research: Social and Cognitive Rehabilitation

Background: Arts-based health research (ABHR) is a novel approach in qualitative inquiry that uses different forms of art within any part of the health research process to generate, analyze, and/or communicate scientific knowledge. The use of arts-based methods in health research encompasses numerous forms of art, such as photography, videography, drawing, poetry, theatre, and dance. While qualitative studies using arts-based methods have rapidly grown since the mid 2000s, ethical consideration for the use of arts-based methods in health research has been significantly lacking. More importantly, no effort has been made to understand how participants perceive and understand ethical issues in ABHR.

Objective: From a constructivist-interpretivist point of view, major factors incorporated in participants’ decision-making in ABHR was investigated to construct their perspectives and understanding of ethical issues in ABHR.

Methods: Semi-structured, in-depth interviews were conducted with participants from an urban arts charity organization called Urban Non-Violent Initiative Through Youth (UNITY). Purposive and maximum variation sampling were used to interview 10 participants (6 female) and constructivist grounded theory guided sampling, data collection, and analysis.

Results: Three major factors incorporated in participants’ decision-making in ABHR were constructed, which were participants’ identity as an artist, the expressiveness of art, and their perception of art as a story. These factors and its influence on decision-making illustrated participants’ perspective and understanding of ethical issues in ABHR.

Implications: Findings of this study contribute importantly to our knowledge in the ethics of ABHR. More importantly, participants’ perspectives, understandings, and factors involved in their decision-making will inform researchers, REBs, and guideline development of ABHR, which will result in a better protection of participants in all areas of this emerging approach. A better understanding of ethics in ABHR that attends to the concerns of participants as they articulate them, will contribute to the researchers’ and ethics boards’ confidence in the conduct of ABHR.
Presentation #15
Prevalence and Correlates to Problem Video Gaming in Youth
Jing Shi, Rehabilitation Sciences Institute, University of Toronto; Nigel E. Turner, Centre for Addiction and Mental Health; Rebecca Renwick, University of Toronto; Bonnie Kirsh, University of Toronto

Field of Research: Occupational Science

Background/purpose: There is currently no consensus on the defining criteria for video game addiction, its prevalence, and predictors. Much of the literature on gaming addiction grew out of discourses on substance addictions or other behavioural addictions (i.e. gambling). However, a distinct standpoint for gaming addiction in academic literature is needed. This study aims to examine video game addiction specifically, by using the social ecological model as a guiding theoretical framework. The social ecological framework acknowledges that humans live within a changing environment and larger social contexts (Brofenbrenner, 1977). It examines the relationships among factors at individual, interpersonal, organizational, community, and public policy levels. These five levels guide the research aims of this study and enable findings to be free of preconceptions from previously well-studied addictions. The research question is: What is the prevalence of and correlates to video game addiction in youth?

Methods: A secondary analysis of survey data will be conducted using the Ontario Student Drug Use and Health Survey (OSDUHS), 2015 cycle (N = 10,426). Students in grades 7 to 12 (ages 12 to 19) were surveyed in the province of Ontario, Canada. Measures embedded within the OSDUHS include the Problem Videogame Playing Scale (PVP) which was used to measure gaming addiction with a cut-off score of five or more (Tejeiro Salguero & Moran, 2002; Turner et al., 2012). Measures and variables embedded within the OSDUHS covering individual, interpersonal, organizational, and community factors will be examined.

Results: The current prevalence of problematic video gaming in youth is 11.6%. Results from the final logistic regression model indicated that those who are males (OR=8.6), experiences problem gambling (OR=27.9), have lower levels of self-rated mental health (OR=1.2), spends more time on screens (OR=1.6), is a bully (OR=1.9), has lower social status at school (OR=1.5), lives in Toronto (OR=1.7), and has not worked outside of the home (OR=2.2) are the best predictors of problem video gaming.

Summary/Implications: Problematic video gaming deserves further attention. This study identified at risk group and correlates at the individual, interpersonal, organizational, and community levels. Future studies should emphasize factors outside of individual level and focus especially on public policy and governmental roles.
Poster Abstracts
in order of field of research, then alphabetical order by last name
Biomechanical Risks When Walking on Glass Treads
Izabela Boyaninska, Toronto Rehabilitation Institute; Geoff Fernie, Toronto Rehabilitation Institute; Alison Novak, Toronto Rehabilitation Institute

Funding: Canadian Institutes of Health Research

Abstract: Stair walking is an essential skill for independent ambulation and community accessibility. Increased adoption and use of various architectural stair designs is becoming more common in our built environment. In particular, glass stair treads are commonly installed in homes and public buildings. However, such stair designs may elevate the risk of safety to the users who must ascend and descend these types of unique staircases. When walking up and down glass treads, many safety concerns arise including fear of falling/slipping due to the decreased visibility of the step edges or typical surfaces conditions that may be present. The visibility of step edges is also major aspect of stairway safety that may be compromised on glass, a material known to cause glare due to its reflective and translucent properties. It follows that for persons with reductions in contrast sensitivity (such as older adults with cataracts), ability to distinguish the step edge and transitions may be even more compromised. The goal of this research project is to gain a better understanding of glass stair tread usage from a safety perspective and to provide best practice recommendations for reducing stairway missteps and falls. Furthermore, in spite of the identification of specific risk factors, the evidence regarding current stair elements (ie. design criteria) is limited, resulting in difficulty identifying best practices and improving design guidelines. It is critical to understand the relationship between risk of falls, postural control and stepping behaviour that will ultimately provide insight for improving stair design, establishing evidence-based design guidelines and minimizing the risk of injurious falls. The testing will be entirely completed in one laboratory visit to the StairLab of the Challenging Environment Assessment Laboratory (CEAL), Toronto Rehab Institute University Center, with the visit lasing approximately 2 hours. Individuals will walk up and down a staircase made of glass treads under two vision conditions (1) intact vision and (2) blurred vision, two lights conditions (1) bright (normal) light and (2) low light. Removable wood covers will be used to create the open wood riser staircase and the closed wood riser staircase. These wood covers are securely placed on top of the glass treads. All participants will complete up to 3 walking trials for each condition. Results of this data are still in progress and are being currently analyzed.
Poster #2  
Quantifying Sub-Clinical Changes in Mobility Among Rollator Users with Multiple Sclerosis  
Justin Chee, Rehabilitation Sciences Institute, University of Toronto; Kara Patterson, University of Toronto; Alex Mihailidis, University of Toronto  

Funding: Multiple Sclerosis Society of Canada  

Background/Purpose: Persons with multiple sclerosis (PwMS) who use rollators (i.e. four-wheeled walkers) continue to experience falls and have difficulties with self-efficacy associated with activities of daily living. Self-management interventions and biofeedback training techniques have been shown, in previous work, to help them overcome challenges posed by fatigue and gait impairments respectively. In the present study, we seek to determine the capability of ambulatory monitoring devices to detect sub-clinical mobility changes in PwMS that may be associated with fatigue.  

Methods: Eight rollator users with multiple sclerosis (MS) were asked to use an instrumented rollator while performing three bouts of normal walking (10-m) before and after a potentially-fatiguing 6-Minute Walk Test (6-MWT) at Sunnybrook Health Sciences Centre. Tri-axial movement of the upper trunk, both feet, and the assistive device was measured using ambulatory monitoring sensors (e.g. accelerometer, gyroscope, etc.) at each position. All participants possessed a clinical diagnosis of MS and belonged to one of four clinical categories, ranging from fully ambulatory (EDSS 3.0-5.5) to requiring bilateral assistance (EDSS 6.5). We examined traditional gait outcomes (e.g. gait speed) as well as new outcome measures (e.g. medio-lateral (ML) rollator oscillations) to assess the effect of fatigue on spatio-temporal features of gait during rollator use.  

Results: We found significant differences in mean ML rollator oscillations and the variability of those oscillations among PwMS who used rollators regularly in everyday life (n = 4) compared to those PwMS who were fully ambulatory (n = 4) (p = 0.02). Furthermore, among the four daily rollator users, one participant exhibited discernably lower ML rollator oscillations than the others at the onset of the 6-MWT; however, this difference ceased to exist by the end of the 6-MWT.  

Summary/Implications: Gait-associated outcome measures on a rollator can be used to detect differences between PwMS at different levels of ambulatory ability. Preliminary analyses indicate potential sub-clinical differences in rollator-person interactions. This work may lead to an improved ability to track disease progression in PwMS and to more targeted treatment approaches. It also sets the stage for the development of a novel assistive mobility device that enhances MS patient outcomes using an on-board biofeedback training intervention.
Poster #3  
**Inhibition of Primary Cilia Resorption Increases Retinal Ganglion Cell Survival After Axotomy**  
Brian Choi, Rehabilitation Sciences Institute, University of Toronto; Philippe D'Onofrio, University of Toronto; Paulo Koeberl, University of Toronto  

**Funding:** Canadian Institutes of Health Research 119309

**Purpose:** Primary cilia inhibit cell division but it is unknown whether they can halt the abortive cell cycle re-entry exhibited by RGCs (retinal ganglion cells) during apoptosis. Aurora Kinase A, HDAC6 (histone deacetylase 6), Plk1 (Polo-like kinase 1), HEF1 (Human enhancer of filmanentation 1), and Nde1 (neurodevelopment protein 1) are proteins involved in the dissolution of the primary cilia and are elevated at various stages of the cell cycle. This study investigates the hypothesis that inhibiting the pathways responsible for ciliary resorption can prevent apoptotic cell cycle re-entry in RGCs after optic nerve transection.

**Methods:** Adult Sprague-Dawley rats received intraorbital optic nerve transections. At 3 and 8 days postaxotomy, animals received 4uL intraocular injections of an Aurora A kinase inhibitor I (AAi; N=6) or Tubastatin A (TBA; N=4), an inhibitor of HDAC6, delivered at 10mM or 20 mM concentrations respectively. To silence Plk1, HEF1, and Nde1 expression, Adeno-associated virus serotype 2 (AAV2) vectors were intraocularly injected 1 week before axotomy to express shRNAs against these proteins (N=4 each). At 14 days postaxotomy RGCs were imaged by immunofluorescence directed against RBPMS (RNA Binding Protein with Multiple Splicing) and survival was quantified from fixed, flat- mounted retinas. Data was analyzed using a one-way ANOVA followed by Tukey’s post-hoc test in order to identify statistically significant differences between control and experimental groups. To examine the effects of cilia disruption in RGCs, Ift88 (intraflagellar transport) shRNAs were used to interfere the trafficking system responsible for cilia maintenance. Survival after cilia knockdown was quantified 7 days after axotomy.

**Results:** RGC cilia were significantly shorter and in lesser amounts in axotomized retinas compared to normal. At 14 days postaxotomy retinas treated with AAi, TBA, or shRNAs had significantly higher RGC density compared to controls. Ift88 shRNA treated retina’s had significantly reduced RGC survival compared to those treated with scrambled control shRNA.

**Conclusions:** Our findings suggest that the primary cilia may play a role in keeping RGCs in a post mitotic state. Interfering with the pathways involved in cilia resorption appears to halt apoptotic cell cycle re-entry. These findings support a novel role of the primary cilium in regulating the survival of RGCs after injury.
ERK1/2 Induces RGC Degeneration via Necroptosis Following Optic Nerve Axotomy and Crush

Philippe D’Onofrio, Rehabilitation Sciences Institute, Department of Surgery, University of Toronto; Brian Choi, Rehabilitation Sciences Institute, Department of Surgery, University of Toronto; Dr. Paulo Koeberle, Rehabilitation Sciences Institute, Department of Surgery, University of Toronto

Funding: Natural Sciences and Engineering Research Council of Canada

Purpose: Extracellular signal-related kinases (ERKs) 1 and 2 are highly expressed in the brain and are involved in apoptosis signaling. However, a possible role in necroptosis remains poorly understood. We tested the hypothesis that ERK1/2 is implicated in RGC necroptosis via interactions with receptor interacting protein kinase 3 (RIP3), and that inhibition of ERK1/2 will block necroptotic cell death. This was assessed in vitro in N1E-115 cells and in vivo in retinal ganglion cells (RGCs) using the optic nerve transection model.

Methods: N1E-115 cell death was induced by ODQ toxicity (50µM/100µM), whereas adult female Sprague-Dawley rats (N=4/treatment) were used for optic nerve crush and transection procedures. In vivo treatments were administered via intra-ocular injection into the vitreous chamber, and results were assessed 14d after axotomy and 21d after crush. Protein levels and interactions were quantified by western blot and immunoprecipitation; localization was assessed via immunohistochemistry on cryosectioned tissue. RGC survival was quantified by retinal flat-mounting followed by immunohistochemistry and visual counting of surviving cells. ANOVA followed by Tukey’s post-hoc test was used for statistical analysis.

Results: Administration of RIP1 inhibitor increased the number of RGCs post-axotomy (1100 RGCs/mm²) and increased the number of axons extending beyond the damage site post-optic nerve crush (2-fold). RIP3 inhibitor significantly increased the number of RGCs post-axotomy (900 RGCs/mm²). ERK1/2 activation was maximal between 12 hours and 2 days post-axotomy and co-immunoprecipitation of ERK1/2 demonstrated RIP3 interaction, suggesting a role in necroptosis initiation. Blocking the ERK1/2 - RIP3 binding site increased survival in vitro and in vivo (1000 RGCs/mm²). Additionally, levels of p-MLKL, a crucial signaling molecule in necroptosis progression, were reduced in the ganglion cell layer following ERK1/2 inhibition.

Conclusions: Our results indicate that ERK1/2 plays a role in the initiation of necroptosis via the activation of RIP3 and leading to MLKL activation, an essential step in necroptosis progression. This supports the hypothesis of necroptosis as an alternative mechanism to apoptosis in RGCs following optic nerve transection and crush damage. It also suggests that it may be an alternative mechanism in other forms of RGC, as well as CNS, neuron death.
BeFAST or BeSTRONG: a feasibility study protocol for children with cerebral palsy

Hilderley, AJ, Rehabilitation Sciences Institute, University of Toronto; Fehlings, D, Bloorview Research Institute, Holland Bloorview Kids Rehabilitation Hospital; Taylor, MJ, Diagnostic Imaging, The Hospital for Sick Children; Chen, JL, Sunnybrook Research Institute, Sunnybrook Health Sciences Centre; Wright, FV, Bloorview Research Institute, Holland Bloorview Kids Rehabilitation Hospital

Funding: Pedal-with-Pete grant, American Academy for Cerebral Palsy and Developmental Medicine; CP-NET, Ontario Brain Institute

Background: Improvement of advanced gross motor (AGM) skills is a key functional goal for ambulatory children with cerebral palsy (CP) who have disordered movement due to permanent brain damage. Lower limb strength training is a common rehabilitation approach, yet motor learning (ML)-based AGM training is gaining attention. ML-based training is designed to encourage functional improvement linked with changes in the brain, which may lead to long-term skill gains. A multi-centre randomized control trial (RCT) is needed to evaluate whether ML-based AGM training is superior to strength training to improve the physical, functional and participation potential of children with CP. This poster details the feasibility study that is needed to inform the design of a future multi-centre RCT.

Methods: This study is a two-group, parallel arm RCT in which twenty independently ambulatory children with CP ages 8-16 years are randomly allocated to a 6-week, 16-session program of: (i) ML-based AGM training, or (ii) lower limb strength training. A set of process, resource, management and scientific indicators address the feasibility components to directly inform the design and subsequent implementation of a future full-scale RCT. Scientific indicators include assessment results from three time points: baseline; post-intervention; and 4-months post-intervention to evaluate longevity of gains. We assessed: Changes in AGM skills (via Challenge Assessment), neural function and microstructure (via functional magnetic resonance imaging [fMRI] and diffusion tensor imaging [DTI]), walking abilities (via 6-minute walk test), physical activity participation (via accelerometry and child/parent-report questionnaires) and individualized goal achievement (COPM and GAS).

Results: This RCT is on-going, with investigators blinded to scientific outcomes. Process/resource indicators to date will be presented, including recruitment, retention rate and adherence.

Implications: The scientific outcomes of this feasibility trial will provide valuable data of the extent of the association between changes in function and changes in neural activity that, to date, have had only preliminary exploration in children with CP. Feasibility outcomes will provide a strong foundation for a full-scale RCT to determine whether ML-based training is superior to the clinical model of strength training to promote changes in AGM skills, physical activity participation and underlying neural function.
Poster #8

Visual feedback to improve temporal gait asymmetry in people with stroke

Jessica Powers, Rehabilitation Sciences Institute, University of Toronto; Jennifer S Wong, Toronto Rehabilitation Institute; Avril Mansfield, Toronto Rehabilitation Institute; George Mochizuki, Sunnybrook Research Institute; Dina Brooks, U of T, Dept of PT; Kara Patterson, U of T, Dept of PT

Funding: Dalton Whitebread Scholarship Fund

Background: Temporal gait asymmetry (TGA), characterized as unequal timing of gait phases between the legs, affects 55% of people with stroke1. TGA is clinically important because it is associated with long term consequences like poor balance and musculoskeletal injury to the legs, but it is resistant to conventional therapy1,2. Therefore, new approaches are required. One approach may be to apply the principles of motor learning during gait training, specifically feedback (FB). FB improves motor skill acquisition in healthy adults, with optimal frequency of FB following ~50% of attempts3. However, the optimal FB frequency for motor learning in people with stroke is largely unknown. This study aimed to determine the optimal amount of visual FB during practice to improve TGA post-stroke.

Methods: Demographics were collected and participants were characterized with motor impairment and cognition measures. TGA visual FB was provided on a tablet during an acquisition session of 25 over-ground walking trials (30sec each) at 1 of 3 randomly assigned frequencies: after every trial, after every 2nd trial, and never. TGA for each trial was recorded with a pressure sensitive mat. At a retention session 24hrs later, TGA of walking was measured over 10 trials without FB. For each participant, TGA during acquisition was averaged over 5 blocks of 5 trials each and over the 10 retention trials. Group means for TGA in each block was then calculated, and mixed model ANOVA was used to test for differences in TGA between FB groups and over trial blocks.

Results: Preliminary analysis includes 9 participants (mean (SD) 51.9 (33.53) months post-stroke; 63.6 (13.6) years old). Demographics, motor impairment, cognition and TGA were similar across FB groups (all p > .05). There was no main effect of FB group (F(2,6,) = 1.02, p > .05) or block (F(3,6) = 4.28, p > .05), and no interaction between group and block (F(6,6) = 1.64, p > .05).

Conclusions: Thus far, there is no significant effect of feedback frequency on change in TGA. However, data collection is ongoing and target sample size is n=30. Knowledge about optimal feedback frequency that improves motor performance in people with stroke can be used to inform the design of future interventions utilizing feedback to improve TGA and improve gait outcomes.

Understanding the Use of Motor Learning Strategies during Physiotherapy Intervention for Children with Cerebral Palsy

Jennifer Ryan, PT, Rehabilitation Sciences Institute, Bloorview Research Institute; Virginia Wright, PT, PhD, Bloorview Research Institute; Nick Reed, OT Reg.(Ont.), PhD, Bloorview Research Institute; Danielle Levac, PT, PhD, Northeastern University

Funding: Bloorview Childrens Hospital Foundation Chair in Pediatric Rehabilitation

Background/Purpose: A common goal for children with cerebral palsy (CP) is motor learning (ML), the transfer of newly acquired motor skills from physiotherapy (physio) to use in everyday life (1,2). Motor learning strategies (MLS) are the observable therapeutic actions of the physiotherapist (PT), involving the selection and manipulation of ML variables during intervention, based on client- and task-specific factors (3). MLS use actively engages the child in problem-solving and is thought to stimulate neuroplasticity (4). Studies in children with CP often suggest efficacy of a treatment approach based on its ML properties, but usually fail to specify how the treatment is ML-based (5-7). The Motor Learning Strategies Rating Instrument (MLSRI-20) addresses this concern by documenting the ML-content of a video-recorded physio session and measuring the extent to which various MLS are observed (8). However, simply observing a MLS does not indicate the PT’s intentions. Therefore, MLS use must also be explored from the PT’s perspective.

Purpose: 1) evaluate the inter-/intra-rater reliability of the MLSRI-20; and, 2) explore PTs’ experiences using MLS in physio sessions for children with CP. This presentation will focus on study design.

Methods: The first phase of the study will evaluate the inter- and intra-rater reliability of the MLSRI-20 in physio intervention (either traditional, functional gait-based physio or robotic-assisted gait training using the Lokomat®) for children with CP. Four PTs will each rate 15 videos from traditional and Lokomat physio sessions. Reliability will be estimated via intra-class correlation coefficients (9), 95% CIs, and coefficients of variation (10). The second phase will explore MLS use from the treating PT’s perspective. Individual semi-structured interviews will be conducted with the treating PTs (n=8) from the videos used in phase one. Data from these interviews will be analyzed using a modified version of the constant comparison method (11) to understand MLS use among: a) PTs, b) treatment approaches, and c) children.

Results: Reliability evaluation and interview results are pending as the research is underway at time of abstract writing.

Summary/Implications: Assuming its reliability is established, MLSRI-20 scores can then be analyzed and considered in combination with the interview data to elucidate how the interactions among the PT, child, and treatment approach influence MLS use.
Characterizing cortical and spinal markers of preparation for lower limb movement

Tyler M. Saumur, Rehabilitation Sciences Institute, University of Toronto; Robert Chen, Toronto Western Hospital; Chetan P. Phadke, West Park Healthcare Centre; George Mochizuki, Sunnybrook Research Institute

Funding: Natural Sciences and Engineering Research Council of Canada CGS-M, U of T Top-Up Award

Background: Action preparation involves inhibitory and excitatory processes that influence the efficiency and scaling of movement. Understanding the modulation of these processes at the cortical and spinal level when predictability is altered can advance our knowledge of how people prepare for urgent scenarios experienced in everyday life (i.e. rapidly depressing the brake pedal in an automobile). The purpose of this study was to determine the cortical/spinal contributions to regulating preparatory excitability during differentially cued lower limb tasks.

Methods: Twenty-six participants performed 2 reaction time (RT) tasks using a go/no-go paradigm. Simple and complex RT tasks were implemented to assess the modulation of central nervous system (CNS) gain during motor preparation for tasks of varying predictability. The RT tasks consisted of seated dorsiflexion of the foot to go tones and not responding when no-go tones were presented. During the foreperiod, transcranial magnetic stimulation and/or percutaneous electrical stimulation were performed to evoke a muscle response in tibialis anterior as measures of cortical/spinal excitability, respectively. Results: No significant effect of task on cortical [F(1,5)=2.79,p=0.11] and spinal measures was found [F(1,5)=0.25,p=0.64]. A significant time effect on cortical excitability was present irrespective of task [F(5,125)=2.46,p=0.04]. The influence of strategy on cortical and spinal excitability showed a visible trend of increased cortical excitability when participants used an anticipatory preparation strategy rather than a sit-and-wait strategy for the complex task, although not statistically significant [F(3,22)=1.49,p=0.25].

Summary/Implications: This study demonstrated no effect of task predictability and strategy on cortical/spinal excitability. This finding may be attributed to lack of arousal being elicited within the tasks, limiting the need to change preparatory processes. It is speculated that these RT tasks may modify preparatory processes over time, which may indicate a gradual modification of preparatory processes as participants become familiar with the task. Context and testing environment that mimics real world situations may modulate these processes and should be explored further. Future work should explore testing individuals with stroke and other deficits where motor control and preparation are impaired, to understand neurophysiological compensatory changes to lower limb preparatory drive.
Poster #11
A longitudinal evaluation of gait recovery trajectory following Traumatic Brain Injury
Conor Sheridan, Rehabilitation Sciences Institute, University of Toronto; Chelsea MacKinnon, Music and Health Science Research Center, Faculty of Music, University of Toronto; Michael H Thaut, Music and Health Science Research Center, Faculty of Music, University of Toronto; Kara K Patterson, Department of Physical Therapy, University of Toronto

Abstract: Gait deficits after traumatic brain injury (TBI) are associated with limited community integration. Gait deficits include reduced gait speed and increased step time and step length variability compared to healthy adults. However, changes in spatiotemporal gait parameters during the first year of recovery are not well researched yet. A better understanding of characteristics of the gait recovery trajectory will better inform the development of gait interventions for people with TBI to improve outcomes including community integration. A secondary analysis of a research database was conducted. The database contained results from over-ground gait assessment with a pressure sensitive mat of people admitted to an inpatient rehabilitation program. Spatiotemporal parameters of preferred pace gait were recorded at 2, 5 and 12 months post admission. Variables of interest were speed, cadence, stride length, cycle time, double support, and single support. Other variables extracted were gender, age and length of post traumatic amnesia (LPTA) as a measure of severity. People were classified by LPTA as follows: short: 1-7 days, moderate: 1-4 weeks, long: >4 weeks. A two-way mixed model analysis of variance (ANOVA) was conducted to examine the effect of LPTA group and time on the gait variables of interest. Post hoc Tukey’s test was used to examine pairwise differences in the case of significance. A total of 79 people with TBI were included in the analysis. Mean age (sd) for the group was 38.6 (17.0) yrs (20 female, 59 male). There were 12, 47 and 20 people classified as short, moderate and long LPTA. Mixed model ANOVA revealed a significant main effect of time on speed, cadence, stride length and cycle time. Post hoc Tukey revealed significant differences between 1st and 2nd time point and the 1st and 3rd time point for speed (increased), cadence (increased) and cycle time (decreased). Stride length significantly increased across all 3 time points. There was no main effect of LPTA on any variable. There was a significant interaction between time and LPTA for speed and stride length. This study showed significant improvements in speed with corresponding changes in cycle time, step length and cadence over 12 months post admission to TBI rehabilitation. In most cases the significant change occurred between 2 and 5 months post admission. Severity of TBI appears to influence recovery of speed and step length.
Poster #12
The Hull-Ellis Concussion and Research Rapid Access Clinic: Preliminary analysis of balance recovery using symptom, observational and posturographic measures.
Michelle Sweeny, Toronto Rehabilitation Institute (TRI) & Rehabilitation Sciences Institute (RSI); Elizabeth Inness, TRI & Sunnybrook Research Institute (SRI), Mark Bayley, Physiatry & TRI; Tharshini Chandra, TRI; Paul Comper, TRI & RSI; Olinda Habib Perez, TRI & RSI; Ryan Lyn, TRI; George Mochizuki, TRI, RSI, SRI

Funding: The Hull-Ellis Concussion Clinic

Abstract: Although much sport-related concussion research exists, there is a lack of research relevant to individuals with acute concussion among the general public. In response, the Hull-Ellis Concussion Research Clinic was developed to prospectively understand and characterize the trajectory of recovery related to concussion among the general population, while providing routine medical care. Balance impairments post-concussion are common and clinical practice guidelines recommend screening for balance dysfunction. The purpose of the present study was to characterize balance impairments and recovery across symptom-based, observational and posturographic measures among the general population with concussion.

Patients were referred to the Clinic within 72 hours of ER visit. Each patient received physician care and was approached to participate in a prospective research study, collecting data outwards to 16 weeks post-concussion. Participants with complete balance-related data at Weeks 1, 2, 4 and 8 were included. Symptom Evaluation Severity (SCAT3 – balance), BESS (Balance Error Scoring System) total score (/60), and centre-of-pressure root mean square and velocity (anteroposterior and mediolateral) during 45 seconds of quiet standing with eyes open and closed on force plates characterized self-perceived, observer, and posturographic measures of balance, respectively. The proportion of participants at each time point exceeding the 95% confidence limit of age-matched healthy reference values for each outcome were determined.

Fifteen participants were included in the analysis. Across time points, SCAT3-balance severity was proportionately, 53%, 47%, 23% and 13% of participants reported balance problems. In parallel, the proportions of participants with BESS scores exceeding reference values were 80%, 73%, 67% and 53%. Across all posturographic measures, 20-53%, 13-60%, 13-47% and 13-67% of individuals, at Weeks 1, 2, 4 and 8, respectively, fell outside of reference values.

The Clinic model enabled collection of balance related-data in the general population over the first 8 weeks of recovery post-concussion. The number of individuals self-reporting balance problems reduced over time; whereas, BESS and posturographic data identified the persistence of balance impairment 8 weeks post-injury. These preliminary results differ from existing knowledge related to balance impairment and recovery after sport-related concussion.
A 3D Architectural Analysis of the Para-oral Musculature at the Fiber Bundle Level
John Tran, Rehabilitation Sciences Institute; Zhi Li, Division of Anatomy, Department of Surgery; Anne M.R. Agur, Rehabilitation Sciences Institute

Background: The para-oral muscles are integral in producing the movements involved in smiling. Asymmetry of these muscles has been reported, but their 3D fiber bundle architecture has not been studied. This limits the ability to generate models that simulate realistic facial soft tissue deformation i.e. smiling. The purpose of this study was to model seven para-oral muscles at the fiber bundle level and quantify their architectural parameters.

Methods: Zygomaticus major (Zma), zygomaticus minor, levator labii superioris, levator anguli oris, depressor labii inferioris, depressor anguli oris, and risorius were serially dissected in five formalin-embalmed specimens, the fiber bundles were digitized with a Microscribe® G2X Digitizer and reconstructed in 3D with Autodesk® Maya®. Architectural parameters quantified included: fiber bundle length (FBL), pennation angle, physiological cross-sectional area (PCSA), and volume. The 3D model and architectural parameters were used to assess symmetry.

Results: Across five specimens, all seven para-oral muscles were found to be asymmetric with varying architectural parameters between the right and left side. For example, the Zma had a 4%-19% difference in mean FBL between sides, and PCSA differences ranged from 8%-106%. In addition, in two specimens the Zma of the left side had a broader attachment site that included the angle of the mouth and superior portion of the orbicularis oris, whereas on the right side the attachment was narrow and directed mainly towards the superior portion of the orbicularis oris.

Summary: The seven para-oral muscles were asymmetric in all specimens suggesting that symmetry is a consideration when developing simulations to inform treatment plans for patients recovering from facial paralysis. Further in vivo study is needed to assess normal parameters of facial asymmetry.
Oxygen requirements and relationship to exercise capacity and aerobic training in advanced interstitial lung disease

Lisa Wickerson, Rehabilitation Sciences Institute, University of Toronto; Dina Brooks, University of Toronto; Sunita Mathur, University of Toronto; Lianne G. Singer, University Health Network; Darlene Reid, University of Toronto; John Granton, University Health Network

Funding: University of Toronto, Lung Association

Background: There is emerging evidence of the efficacy of pulmonary rehabilitation (PR) in interstitial lung disease (ILD). Little is known of oxygen administration practices during PR, how oxygen requirements change during PR or how exertional oxygen requirements are related to functional capacity and exercise training. The aims of this study were to describe oxygen requirements during PR and examine the relationships between exertional oxygen use, exercise capacity and aerobic training in individuals with advanced ILD.

Methods: A retrospective cohort study of 375 lung transplant candidates with ILD who underwent four weeks of outpatient PR following listing for transplant between 2004 and 2014.

Results: The sample had a median age of 61 (IQR 11) years and was 57% male. The forced vital capacity (FVC) was 49 (22)% predicted, median pulmonary artery pressure was 22 (IQR 11) mmHg, and most were diagnosed with idiopathic pulmonary fibrosis [n=214 (57%)]. The baseline six-minute walk distance (6MWD) was 318 (IQR 151) m (47 (23)% predicted), and baseline intensity of treadmill training was 1.9 (IQR 0.5) metabolic equivalents (METS) per minute for 20 (IQR 5) minutes. An oxygen saturation (SpO2) of 88% for exertion was the prescribed titration in the majority of individuals. A variety of oxygen delivery systems were used, and exertional oxygen requirements (estimated fraction of inspired oxygen) were higher than at rest [0.5 (IQR 0.2) vs. 0.32 (IQR 0.12), p<0.0001]. An increased use of high flow and/or reservoir oxygen systems was used during exertion. Higher exertional oxygen requirement was associated with a lower baseline 6MWD (r= -0.4, p<0.0001) and lower baseline aerobic training METS (r= -0.24, p<0.001). After four weeks, individuals were prescribed a higher exertional oxygen requirement [mean 0.50 (0.15) vs. 0.53 (0.16), p<0.0001], 6MWD was maintained [318 (IQR 150) m vs. 328 (IQR 149) m, p=0.29] and aerobic training METS increased [1.9 (IQR 0.5) vs. 2.2 (IQR 0.8), p<0.0001]. Higher exertional oxygen requirement at four weeks was also associated with the 6MWD (r= -0.42, p<0.0001) and aerobic training METS (r=-0.31, p<0.0001).

Implications: Individuals with advanced ILD have high exertional oxygen requirements which are associated with a lower exercise capacity and aerobic training parameters. Higher exertional oxygen administration may be required to optimize increased aerobic training intensities.
Occupational Science

Poster #15
Exploring the needs of cancer survivors who are returning to or staying in the workforce
Ivona Berger, Rehabilitation Sciences Institute, University of Toronto; Lydia Beck, Princess Margaret Cancer Centre; Bonnie Kirsh, University of Toronto

Funding: Canadian Institutes of Health Research/Social Sciences and Humanities Research Council, Ontario Graduate Scholarships

Purpose: Cancer survivors have strong personal desires to go back to work to resume their roles and meet their financial needs. However, they may be faced with physical and psychological challenges. Supports can help improve work outcomes when they are customized to meet the specific demands of the individual, but currently there is little information about how supports and services should be provided through recovery and rehabilitation. Therefore, this study examined the supports cancer survivors need, as perceived by survivors themselves. The study also explored sex and gender differences related to these needs, and identified the factors that influence needed supports when returning to work or staying in the workforce.

Methods: An exploratory qualitative design was used. The study had 2 phases: 1) focus groups with survivors that included an educational component on return to work, and 2) one-on-one semi-structured interviews. Both phases were conducted to discuss the return to work experience. Directed content analysis was used to analyze the data.

Results: This study is ongoing and the results are forthcoming.

Summary: The implications of cancer on individuals’ ability to integrate into work are becoming increasingly evident, and there is a growing interest in developing interventions and strategies to improve work outcomes. This study informs cancer rehabilitation research by developing an understanding of what supports should be implemented to help cancer survivors return to work successfully, and improve their overall quality of life.
Exploring the nature of social support in an online support group for youth with physical disabilities: A qualitative approach

Celia Cassiani, Rehabilitation Sciences Institute, University of Toronto; Jennifer Stinson, The Hospital for Sick Children; Emily Nalder, University of Toronto; Sally Lindsay, Bloorview Research Institute

Funding: Social Science and Humanities Research Council of Canada

Background: Youth with physical disabilities are under-represented in the workforce compared to their typically developing peers. Although some employment readiness interventions are available, they often lack social support components and are difficult for youth to access. Peer e-mentoring is a promising and accessible approach to address these issues and is a method of delivering social support. However, the nature of social support in online groups is not fully described within the literature for youth with physical disabilities. This study aimed to describe the nature of social support exchanged within an online group intervention for employment readiness, compared between two groups of participants; an e-mentored peer group (i.e., experimental group), and a non-e-mentored peer group (i.e., control group).

Methods: Using a qualitative method, textual data from discussion forums of two groups (i.e., experimental versus control) of an online employment readiness intervention were analyzed. Both groups were exposed to 12-weeks of evidence based employment readiness resources and teaching components fully online. The mentored group was lead by a peer mentor that participated in discussion, and the non-mentored group solely contained peer participants. An inductive content analysis was applied to the data to understand the content of the discussions and provide a description of social support interactions between participants over time in each group.

Results: The mentored group consisted of nine youth aged 15-21, and the non-mentored group with seven youth aged 14-16, all with physical disabilities. Overarching themes related to the nature of social support were derived from the data, with strong indicators of social support found prominently throughout the mentored program, and less frequently or prominently during the non-mentored program. The themes were: 1) providing positive feedback and encouragement; 2) providing experiential advice; and 3) seeking advice on current challenges.

Summary: Social support is the provision of guidance for the benefit of another individual thus group e-mentoring and peer support groups are a method of providing social support. In this study, youth with physical disabilities participated in an employment readiness focused online intervention, under two different conditions, where an e-mentored skill-based environment allowed for more varied forms of social support to be provided than a non-mentored environment.
Poster #17
The Development of The "PEP" (Personal Energy Planning) Program for Adults on Long-Term Dialysis with Fatigue
Janine F. Farragher, Rehabilitation Sciences Institute, University of Toronto; Sarbjit V. Jassal, University of Toronto; Sara McEwen, University of Toronto; Helene J. Polatajko, University of Toronto

Funding: Vanier Canada Graduate Scholarship & KRESCENT program

Background: Adults on long-term dialysis treatment for end-stage renal disease frequently experience disease-related fatigue, which is a prominent barrier to their occupational participation and/or engagement. Energy conservation (also known as energy management, or energy budgeting), has been found to be an effective approach to managing fatigue in other clinical populations, but has never been studied in patients on dialysis. There are theoretical and practical barriers to applying existing energy conservation training programs in the dialysis client population.

Purpose: To develop an energy conservation training program for adults on long-term dialysis with fatigue.

Methods: The intervention mapping framework outlined by Bartholomew, Parcel and Kok (1998) was used to guide the intervention development process. Proximal program objectives were developed, based on personal and external determinants of the causes of fatigue and related occupational disruption in dialysis patients. Theoretical methods and practical strategies targeting the specified learning and change objectives were then selected for the program design.

Results: The “PEP” (Personal Energy Planning) Program is designed to facilitate improvements in occupational performance and fatigue in people on dialysis, via increases in energy management knowledge, skills, and self-efficacy. The program is a two-part, web-based intervention that incorporates self-administered and therapist-guided components. Part 1 employs a direct teaching method to build energy management knowledge and skills in the target population via two concise computer modules, while Part 2 uses the Cognitive Orientation to Occupational Performance (CO-OP) approach to improve performance on self-selected, energy-based occupational goals.

Summary/Implications: The “PEP” Program may fill an important gap in the clinical care of renal patients, by providing patients and clinicians with a feasible way to address fatigue and related occupational performance issues. Further feasibility and efficacy testing of the intervention in the target population is warranted.
Mindfulness-based Yoga for Youth with Persistent Concussion Symptoms: A Pilot Study on Bridging Functional and Neurophysiological Outcomes

Melissa Paniccia, Rehabilitation Sciences Institute, University of Toronto; Ruby Knafo, Department of Occupational Science and Occupational Therapy, University of Toronto; Scott Thomas, Faculty of Kinesiology and Physical Education, University of Toronto; Tim Taha, Faculty of Kinesiology and Physical Education, University of Toronto; Alysha Ladha, Holland Bloorview Kids Rehabilitation Hospital; Laura Thompson, Holland Bloorview Kids Rehabilitation Hospital; Nick Reed, Bloorview Research Institute, Holland Bloorview Kids Rehabilitation Hospital

Funding: Canadian Institutes of Health Research

Background: Limited interventions address persistent concussion symptoms in youth in a way that targets functional and neurophysiological outcomes. Mindfulness-based yoga (MBY) is a mind and body intervention that focuses on the present moment, with a purposeful attention on breath and awareness of thoughts. Heart rate variability (HRV) is emerging in concussion research as a neurophysiological measure that captures an individual’s ability to be flexible and adaptable in their environment. Examining HRV in the context of MBY can provide insights into a youth’s ability to self-regulate in the context of persistent concussion symptoms. The purpose of this study was to investigate the impact of MBY on participation, self-efficacy and HRV in youth with persistent concussion symptoms over pre-, post- and 3 months following MBY.

Methods: Case series design. Youth ages 13-17 years old (N=6) participated in an 8-week MBY intervention, 1x/week, for 45 minutes. Participation, self-efficacy and heart rate variability (24 hours) were collected pre-, post-, and 3 months following mindfulness-based yoga. Heart rate variability was also collected during each mindfulness-based yoga session.

Results: Trends towards increasing self-efficacy in academic, social and emotional domains were found following MBY and maintained at the 3-month follow-up. Trends of increasing HRV were also found following intervention and across the 8 sessions of MBY. Concussion symptoms across physical, cognitive, fatigue and emotional domains illustrated trend of significant decline following MBY and maintenance at 3-month follow-up.

Implications: MBY is a functional intervention that can potentially have a direct impact on youth with persistent concussion symptoms, improving their self-efficacy and neurophysiological function. Future research is warranted.
Life After Sexual Assault: An Occupational Perspective
Katherine E. Stewart, Rehabilitation Sciences Institute, University of Toronto; Dr. Janice Du Mont, Women's College Research Institute; Dr. Helene J. Polatajko, Department of Occupational Science and Occupational Therapy, University of Toronto

Funding: The Carol Mitchell and Richard Venn Graduate Student Fellowship in Women's Mental Health & Ontario Graduate Scholarship

Background/Purpose: Violence against women in the form of sexual assault is a human rights violation that can have devastating impacts on women’s lives. The deleterious impacts of sexual assault on women’s physical and psychological health are well established. However, the broader changes to women’s lives after sexual assault—including changes to women’s occupations—have only been minimally examined within the occupational science and occupational therapy literature. Literature from fields outside of occupational science and occupational therapy may be useful for informing our understanding of life after sexual assault from an occupational perspective. This study explores the sexual assault literature to provide a comprehensive description of what is known about the occupational aftermath of sexual assault.

Methods: A narrative overview and synthesis (Green, Johnson, & Adams, 2006) of the sexual assault literature was conducted. Findings related to the aftermath of sexual assault from the sexual assault literature were “reframed” using an occupational perspective.

Results: Preliminary findings suggest that women experience changes to their occupations, including those related to school, work, and relationships, following sexual assault. A framework for understanding the ways in which the impacts of sexual assault from the sexual assault literature have been reframed to be understood as occupation-related will be proposed.

Summary/Implications: It is anticipated that an enhanced understanding of what is known about the occupational aftermath of sexual assault will inform future research, with the ultimate aim of deepening our understanding of human occupation and generating practice recommendations for occupational therapists working with women who have experienced sexual assault.
Background: Arts-based research can draw upon many different forms of art to examine and understand the experiences of both participants and researchers during any phase of qualitative research. Drawing is one genre used in arts-based research. While participant-created drawings, used as a process of producing knowledge, are well known, similar approaches with researcher-created drawings are less common, and not as well understood.

Purpose: To demonstrate the application of researcher-created drawings to analyze and represent qualitative data, and explore the added analytic value of this approach.

Methods: An interpretive qualitative study using participant observation was conducted to explore the decisional needs of youth, parents and health professionals in a paediatric clinic setting. Specifically, the observation of care processes was the initial stage of a research project to develop a Decision Aid for youth with Obstetrical Brachial Plexus Palsy. In the style of graphic recording, the researcher (ESH) generated drawings after each participant observation session to reflect upon the interactions between the family and clinic staff. Seminology and compositional interpretation visual methodologies were applied to synthesize and represent concepts. Using a social constructivist framework, constant comparative method and domain analysis were used by the researcher (ESH) to analyze the drawings and text-based field notes.

Results: Fifteen clinic observations were drawn and analyzed alongside field notes. Drawing acted as an analytical catalyst, encouraging the researcher to look beyond factual and procedural information. As a tangible process, drawing helped the researcher synthesize knowledge in a highly efficient manner. The design process forced the researcher to succinctly cluster associated ideas and identify key concepts. The use of position, space and composition focused the researcher to attend to relationships between participants and/or ideas. Colouring encouraged the researcher to reflect upon the emotions elicited in the researcher and participants. The drawing process brought new perspective, depth and authenticity in the analytical process that added to the text-based analysis.

Summary/Implications: Drawing can help qualitative researchers to animate their analysis, add new dimensions and bring data to life through a visible process of constructing new knowledge and meaning.
Poster #21
Development and testing of a measure of balance confidence for children and youth with physical disabilities
Megan Towns, Rehabilitation Sciences Institute, University of Toronto; Virginia Wright, Bloorview Research Institute; Avril Mansfield, University Health Network; Sally Lindsay, Bloorview Research Institute; Kelly Arbour-Nicitopoulos, Faculty of Kinesiology and Physical Education, University of Toronto

Funding: Holland Bloorview Kids Rehabilitation Hospital Chair in Pediatric Rehabilitation & Rehabilitation Sciences Institute, University of Toronto

Background/Purpose: Children with physical disabilities generally participate in physical activities less frequently and with less diversity than typically-developing children. Balance deficits are common and well-documented in children with lower extremity disabilities, however balance confidence (i.e., self-perception of one’s ability to maintain balance during specific activities or certain situations) has received little attention. Balance confidence may be important to measure because, in adults, it better predicts activity, participation and community integration than balance capabilities. Unfortunately, adult balance confidence measures are inappropriate for children. Thus, it has not been possible to study the combined impact of balance confidence and balance abilities on activity participation in paediatrics. The current study will examine connections among balance confidence, balance capabilities and participation by: (1) developing a measure of balance confidence for ambulatory youth ages 9 to 18 years; (2) testing the measure with youth with physical disabilities and typically developing youth; and (3) using the measure to explore relationships among balance confidence, balance capabilities, and participation in physical activities.

Methods: Youth with physical disabilities (n=8), their parents (n=8) and typically-developing youth (n=8) will participate in creation of this measure through interviews. The measure will be computer-based with a pictorial format to enhance youth engagement. Test-retest reliability and construct and predictive validity testing will be completed.

Implications: These findings are expected to be very relevant to youth, parents and clinicians in providing new insights into a potentially important and modifiable barrier to participation in physical activities that may be addressed by clinicians through well-targeted participation-centred goals.
Background: Physical activity is a self-management strategy with the potential to address
health-related challenges and enhance health outcomes for people living with HIV (PLWH).
Wireless physical activity monitors (WPAM) are becoming increasingly popular as an objective
tool to measure physical activity. However, little is known about the use of WPAM and their
measurement properties among PLWH.
Purpose: To characterize the literature pertaining to wireless physical activity monitor use
among PLWH.

Methods: We have conducted a scoping review using the Arksey and O’Malley Framework to
answer the question: What is the nature and extent of evidence pertaining to WPAM use
among PLWH? We have searched databases including: MEDLINE, EMBASE, CINAHL, PsycINFO,
PubMed, Cochrane, reports, and websites from January 1980-January 2017 for literature
pertaining to WPAM use among PLWH. We have independently screen abstracts to include
peer-reviewed and grey literature evidence pertaining to WPAM use among PLWH with any
study design, and published in English. We will extract data from included studies including:
authors, study location, year published, study design, purpose, population, outcomes of
interest (and measures), intervention (if applicable), type of WPAM use, context for WPAM use,
results, and overall conclusions. We will describe the characteristics of the literature using
frequencies (percent) and medians (interquartile ranges) for categorical and continuous
variables, respectively. We will synthesize data pertaining to results and conclusions using
content analytical techniques. Where applicable, we will specifically report on: a) the
measurement properties of WPAM and b) their use as an intervention to enhance physical
activity among PLWH.

Preliminary Results: The final number of included articles was N=53 studies. The preliminary
results show that the publication years ranged from 2001-2016. The overarching themes for
using WPAM are: measuring physical activity, measuring sleep, promoting physical activity, and
comparing a WPAM to another subjective measurement tool for assessing physical activity.

Conclusion: We will continue to extract data from the included articles. Our results will help to
map the nature and extent of evidence pertaining to wireless physical activity monitors and
their use among adults living with HIV.
Poster #26
Generating parents’ therapy expectations in paediatric rehabilitation: Applying recommendations from the mental health literature to advance family-centered care
Eric Smart, Rehabilitation Sciences Institute; Gillian King, BRI

Funding: Kimel Family Graduate Student Scholarship in Paediatric Disability Research & Joseph-Armand Bombardier Canada Graduate Scholarship

Background/Purpose: Family-Centered Care (FCC) represents the ideal service delivery approach in paediatric rehabilitation. Nonetheless, translating FCC as intended into clinical practice continues to be hindered by knowledge gaps. One largely overlooked gap is our understanding of clients’ in-session therapy expectations. The objective of this review article is to describe how explicit and meaningful therapy expectations can be generated in paediatric rehabilitation settings, with the aim of improving FCC implementation, using strategies recommended in adult and child mental health settings, where the topic of generating therapy expectations has already received significant research attention.

Methods: A systematic literature review approach structures this review article. Previous review articles on therapy expectation generating strategies were systematically identified in the databases MEDLINE, EMBASE, CINAHL, and PsycINFO. Thirteen relevant review articles were collected and data related to generating therapy expectations were extracted. Additional empirical studies from the literature search and reference sections of collected review articles were included for review based on relevance and conceptual contributions.

Results: Review findings describing therapy expectation generating strategies were organized by the Dimensions of the Measure of Processes of Care, an assessment tool that measures parents’ perceptions of the extent a service is family-centered: 1) Providing Respectful and Supportive Care (assessing and validating clients’ expectations); 2) General and Specific Information (foreshadowing treatment journey, explaining treatment rationale, and conveying service provider qualifications); 3) Coordinated and Comprehensive Care (offering in-session role preparation and appreciating role socialization beyond sessions); and 4) Enabling and Partnership (formalizing a negotiation process and creating safe spaces to critique therapeutic perspectives).

Summary/Implications: This review article can help paediatric rehabilitation service providers work with families to reframe unrealistic expectations, establish congruent beliefs, and prevent possible disillusionment with therapy over time.
Vision Therapy Following Mild Traumatic Brain Injury: A Case Series
Pavel Tselichtchev, Rehabilitation Sciences Institute, University of Toronto; Tanya Polonenko, Vaughan Family Vision Care; Angela Peddle, Vaughan Family Vision Care; Nora Cullen, Rehabilitation Sciences Institute, University of Toronto

Funding: University of Toronto Fellowship

Background / Purpose: A common sequela following mild traumatic brain injury (mTBI) is post-vision syndrome. This is defined as visual deficits caused by mTBI including blurred or double vision, eye fatigue, appearance of words moving on the page, loss of place when reading, difficulty sustaining attention on a visual task, and difficulty judging distances, which are common complaints in adults with mTBI. In addition, significant deficits in binocular vision (convergence), accommodative (focusing), and saccadic (eye movement) disorders have been reported in adults with mTBI. A growing number of optometrists treat these symptoms using Vision Therapy. Vision therapy is a rehabilitation technique that is individually prescribed and is a non-surgical, and non-pharmacological. It consists of various tasks aimed to improve visual impairments that result from mTBI. Treatment may involve the use of lenses, prisms, occlusion, and other appropriate materials, modalities, and equipment. In theory, this work is believed to improve symptoms, quality of life, and the ability to perform activities of daily living (e.g. Driving, working, studying, reading).

Methods: We present a case series of 3 patients who sustained an mTBI and were subsequently diagnosed with post-vision syndrome. Patients underwent vision therapy for 40-50 weeks and progress was monitored over 10 week intervals.

Results: Following prescribed vision therapy, all 3 patients showed significant improvements in symptoms. Patients demonstrated improvement in oculomotor accuracy, vergence ability, accommodative ability, and stamina. Furthermore, symptoms such as headache and nausea also showed improvement and Activities of daily living such as returning to work full time were improved.

Summary / Implications: These results suggest that vision therapy is a viable form of rehabilitation for those who have suffered from an mTBI and experience detrimental visual symptoms. More robust studies are needed to solidify the efficacy of vision therapy as a form of rehabilitation. Long term follow up, quality of life, and the effect of homework adherence on outcome are areas of focus in the future.
Poster #28
Understanding Support Needs in Spouses and Adult Children caring for seniors with depression
Chen Daniel Wang, Rehabilitation Sciences Institute; Dr. Bonnie Kirsh, RSI; Dr. David Conn, Baycrest; Dr. Jill Cameron, RSI

Abstract: The aging population and increasing diagnoses of seniors with depression requires family members to take on the role of caregiver to provide support and assist with treatment. The majority of caregivers for seniors consist of spouses and offspring (adult children), both of which are often unprepared for their caregiving responsibilities. With limited resources from the health care in place, many caregivers encounter difficulties and experience depressive symptoms as a result. To date, family members’ experiences and support needs associated with providing care to a senior with depression is not clear. Therefore, the objectives of this descriptive qualitative study are to: (1) explore the experiences and support needs of being a spouse or adult child caregiver of a senior with depression, and (2) compare and contrast the experiences and support needs between spouse and adult child caregivers. Family caregivers to depressed seniors were recruited through health facilities across the Greater Toronto Area, and each family caregiver participated in a semi-structured one-on-one interview either in-person or over the phone. Interviews were audiotaped, transcribed verbatim, and analyzed using Braun and Clark’s thematic analysis. Preliminary results suggested spouse and adult child caregivers experience distinctive challenges but do seek similar supports. Spouse caregivers reported feeling “trapped”, and their lives tend to revolve around the care recipient. In contrast, adult child caregivers considered themselves as the “sandwich generation” and reported difficulties in finding balance in life. Both groups shared feelings of helplessness and frustration, and they advocated the need for more resources and guidance from the health care system (e.g., support groups and information centres). The results of the study contribute to our understanding of this caregiving population, and may inform intervention and/or system change for caregivers in need of psychosocial support.
Movement Initiation and Movement Inhibition for People with Autism: A Scoping Study
Christie Welch, Rehabilitation Sciences Institute, U of T; Helene Polatajko, OSOT & RSI U of T; Patty Rigby, OSOT & RSI U of T

Background: Autism science is increasingly exploring movement difficulties among people with autism. This scoping study focused specifically on movement initiation and inhibition.

Methods: A scoping review was conducted using methods described by Arksey and O’Malley (2005): a process of delineating the topic, identifying relevant studies, selecting studies, charting data, descriptive and numerical analysis, consultation and reporting.

Results: Sixteen articles were included for review from 817 retrieved articles. Little agreement was found regarding movement inhibition, with some articles suggesting difficulties for people with autism and others indicating this function is spared. The articles that investigated movement initiation suggest that it is negatively impacted.

Implications: The evidence suggests that at least some people with autism experience differences in movement inhibition and initiation.
Predictors of discharge destination from acute care in patients with Traumatic Brain Injury: A systematic review protocol
Sareh Zarshenas, Rehabilitation Sciences Institute, University of Toronto; Laetitia Tam, Toronto Rehabilitation Institute; Angela Colantonio, University of Toronto; Nora Cullen, Toronto Rehabilitation Institute

Background/Purpose: Many studies have assessed the predictors of morbidity/mortality of patients with TBI in acute care. However, with the increasing rate of survival after TBI, more attention has been given to discharge destinations from acute care as an important measure of system of care. This study aimed to elaborate the design of a systematic review to compile and synthesize studies on the prognostic factors of discharge settings from acute care in patients with TBI.

Methods: This narrative systematic review will be conducted on peer-reviewed studies using seven databases including Medline/Medline in-Process, Embase, Cochrane Database of Systematic Reviews, Cochrane CENTRAL, PsycINFO, CINAHL, Supplemental PubMed. The reference list of selected articles and Google Scholar will also be reviewed to find the rest of relevant articles. This study will include all English language observational studies that focus on adult patients with TBI in acute care settings. The quality of articles will be assessed by the Quality in Progress Tool. This systematic review has been registered with the international Prospective Register of Systematic Reviews (PROSPERO) (registry number: CRD42016033046)

Results: To our knowledge, this study will be the first systematic review on predictors of discharge destinations from acute care in patients with TBI.

Summary/Implications: Recognizing predictors of discharge destination early in the recovery period of acute care will help health care providers to design more accurate and realistic care and referral plans. In addition, health care providers can inform patients and their families of the most likely discharge destination so that they can prepare themselves for potential changes in the living location.
Assessing velocity-dependent features of post-stroke spasticity using robotic assessment methods
Myles Resnick, Rehabilitation Sciences Institute, University of Toronto; Joyce Chen, Sunnybrook Research Institute; Stephen Scott, Queen's University; George Mochizuki, Sunnybrook Research Institute

Funding: University of Toronto

Background: Spasticity is a common consequence of stroke affecting the ability to perform volitional movement. It is traditionally defined as velocity-dependent resistance to passive movement, however several non-velocity-dependent complications arise in tandem. These include hypertonicity, contracture, and pain; all of which contribute to impairment as they restrict range of motion, increase limb stiffness, and disrupt the ability to perform smooth, purposeful movement. The term “spasticity” is often used clinically to describe a range of symptoms associated with all or none of these impairments. The Modified Ashworth Scale (MAS) is the most common tool to measure spasticity. When using the MAS, one assumes that increased resistance is associated with increased velocity-dependent reflex activity, implying that the MAS only quantifies velocity-dependent changes. Recent work suggests non-velocity-dependent factors may be responsible for these changes, questioning the construct validity of the MAS. This represents a disconnect between the traditional definition of spasticity and real-world manifestations. Quantifying spasticity more robustly may allow for better classification and sensitivity.

Objective: To determine whether a passive movement task performed on the KINARM Robotic Exoskeleton is able to differentiate velocity-dependent and non-velocity dependent components of resistance to passive movement in the upper-limb. It is hypothesized that velocity-dependent variables such as catch angle will not be observable at slow speeds, but slow speeds will be characterized by a decreased end angle.

Methods: Forty-six individuals with stroke were recruited. Using the KINARM, participants performed the Elbow Stretch Test, a task that moves a participant’s upper-limb passively through range at two speeds. Clinical assessment of spasticity (MAS) was performed by a trained investigator prior to KINARM assessment.

Results: A significant difference between speeds was found for catch angle and creep (p<0.05). No significant difference was found between speeds for final angle.

Conclusion: The Elbow Stretch test detected a significant difference between speeds for catch angle and creep, but not final angle. The KINARM offers a novel and objective alternative to current assessment methods. Further characterization of post-stroke spasticity may lead to the development of therapeutic strategies which specifically target the different contributors to impaired function.
Influence of altered auditory feedback on oral-nasal balance in speakers of Brazilian Portuguese

Gillian de Boer, Rehabilitation Sciences Institute, University of Toronto; Viviane Cristina de Castro Mariño, UNESP - Marília; Evelyn Spazzapan, UNESP - Marília; Larissa Cristina Berti, UNESP - Marília; Eliana Maria Gradim Fabbrón, UNESP - Marília; Tim Bressmann, University of Toronto

Funding: Mitacs Globalink Research Award

Background: Adaptation studies explore the role of auditory feedback on speech. The compensatory response is often in the direction opposite to the changed parameter, indicating that auditory feedback mechanisms help the speaker reach a constant motor target. A prior study built on this research paradigm by exploring the role of auditory feedback in the regulation of oral-nasal balance in normal speakers of English. It found increased nasal feedback led to a reduction of nasality. A decrease in nasal feedback led to a smaller and inconsistent increase in nasality. The present study repeated the methodology among speakers of Brazilian Portuguese (BP), whose language includes phonological and phonetic vowel nasalization.

Method: Twenty typical speakers of BP (10F, 10M) were recorded. The participants wore a Nasometer headset and headphones. Oral-nasal balance was quantified as a nasalance score. Two additional microphones were attached to the Nasometer sound separation plate, one for the nasal sound signal and one for the oral sound signal. The signals from the two additional microphones were fed to a digital multitrack recorder. The participants continuously repeated two stimuli sentences containing both oral and nasal sounds. The volume level of the nasal channel microphone was gradually altered to change the relative loudness of the nasal channel in the mix, so that the speakers heard themselves as more or less nasal.

Results: Repeated measures ANOVA was run for the mean nasalance scores for both stimuli by gender across five nasal feedback level conditions (three control, one maximum and one minimum). There was a main effect of nasal feedback level ($F(4, 72) = 32.10, p < 0.0001$) and stimuli ($F(1,17) = 48.98, p < 0.0001$). The maximum condition produced the lowest mean nasalance scores and the minimum condition had scores higher than two of three control conditions.

Conclusions: Increased nasal feedback led to a compensatory adjustment in the opposite direction. However, as with speakers of English, a lack of nasal feedback did not lead to a consistent increase in nasalance. The compensatory response in the maximum nasal feedback condition confirms that oral-nasal balance is regulated by auditory feedback. For the minimum nasal feedback condition, the compensatory response is smaller and inconsistent. This suggests that, even in a language with phonological and phonetic vowel nasalization, hyponasality was not perceived as critically by the speaker.
Using music and movement to support school-readiness skills in preschool children with hearing loss
Glynnis Dubois, Rehabilitation Sciences Institute, University of Toronto; Sandra Trehub, University of Toronto; Michael Thaut, University of Toronto; Glenn Schellenberg, University of Toronto; Alice Eriks-Brophy, University of Toronto

Funding: University of Toronto

Background: Researchers and therapists have long been intrigued by the potential of musical activities in childhood to facilitate the development of literacy skills. Theorists have speculated that language, reading, and music overlap in meaningful structural and functional ways that extend well beyond a simple association with audition (Patel, 2014; Tierney & Kraus, 2014) and suggest that these abilities may be scaffolded by the skills acquired through sharing or making music.

There have been some investigations of those aspects of childhood music and movement exposure that may help to scaffold development in the areas of phonological awareness (Kraus & Chandrasekaran, 2010; Moritz, et al, 2013), vocabulary, and social skills (Gerry, Unrau & Trainor, 2012). There is, unfortunately, a paucity of research on the potential benefits of music activities for children with hearing loss (HL). Since recent advances in hearing technology for this population now provides them with access to both spoken language and music, the potential benefits of the use of music is now becoming an innovative and exciting focus for research.

Methods: The goal of this quasi-randomized experimental intervention study proposal is to examine the impact of the addition of music and movement to traditional listening and spoken language therapy for preschool children with HL. Participants will be matched and placed into a music and movement group, a craft-based group, or a control group. Pre- and post-intervention assessments focusing on outcomes in the areas of speech, language, pre-literacy, audition, balance, and social skills will be completed.

Results: Preliminary results will be available late 2017

Implications: With evidence to support the benefits of music and movement, it is hoped that practitioners will be encouraged to incorporate these elements into best practices for children with HL. Such evidence would also contribute to the development of resources guiding practice in how to best prepare this population for success in integrated classroom settings.
Abstract: The Language ENvironment Analysis (LENA) System is a relatively new recording technology that can be used to investigate typical child language acquisition and populations with language disorders. The purpose of this paper is to familiarize language acquisition researchers and speech-language pathologists with how the LENA System is currently being used in research. The authors outline issues in peer-reviewed research based on the device. Considerations when using the LENA System are discussed.
Poster #36
A Cross-Sectional Study of Severe Dysphagia in Patients Up to 5 Years following Completion of Curative IMRT
Elissa Greco, Rehabilitation Sciences Institute, University of Toronto; Jolie Ringash, University Health Network; George Tomlinson, University Health Network; Rosemary Martino, University of Toronto

**Background:** Select patients with advanced head and neck cancer (HNC) (stages III or IV) are typically treated with curative intensity-modulated radiotherapy (IMRT). Among other associated toxicities, these patients often experience acute and/or chronic swallowing difficulties (dysphagia). Severe dysphagia may necessitate reliance on a percutaneous endoscopic gastrostomy (PEG) tube for survival. However, available estimates of the long-term prevalence of severe dysphagia following IMRT for HNC rarely go beyond 3 years and are limited by participant heterogeneity.

**Objective:** To determine the prevalence of severe dysphagia, as identified by PEG dependence, 1-5 years after completion of IMRT for HNC.

**Methods:** Using an existing database from the Princess Margaret Cancer Centre, we conducted a cross-sectional study of all advanced HNC patients treated with curative IMRT between September 2011 and July 2016. Included patients were diagnosed with cancer of oropharynx, nasopharynx, hypopharynx, larynx or of unknown primary site. Excluded patients had: surgical treatment or previous RT for HNC; cancer recurrence; or, dysphagia unrelated to HNC. Participants were stratified by year since completion of IMRT and PEG in situ served as our primary surrogate outcome for presence of severe dysphagia.

**Results:** Overall, 757 patients were included in analysis. 622 participants were male (82.2%) and the mean age of participants was 62.8 years (SD 11.4). Cancers of the oropharynx were most common (n=482, 63.7%) and were predominantly diagnosed in stage IV (n=577, 76.2%). There were no significant differences in baseline demographics, cancer or cancer treatment details between strata. The prevalence of severe dysphagia as indicated by PEG dependency is 3.2% (n=5) at 1 year, 2.5% (n=4) at 2 years, 5.8% (n=9) at 3 years, 7.4% (n=10) at 4 years and 4.8% (n=7) at 5 years after curative IMRT completion.

**Conclusions:** The presence of severe dysphagia persists up to 5 years after completion of IMRT and the prevalence fluctuates between yearly cohorts. These conservative estimates of severe dysphagia prevalence over time highlight that in addition to survival, prevention, identification and treatment of dysphagia related to IMRT may also be a priority. Future multi-institutional studies with objective assessment of dysphagia are warranted to refine estimates of severe dysphagia prevalence up to and beyond 5 years after IMRT for HNC.
Poster #37

**Neuroanatomical correlates of bulbar amyotrophic lateral sclerosis**

Sanjana Shellikeri, Rehabilitation Sciences Institute, University of Toronto; Matthew Myers, University of Toronto; Sandra E. Black, Sunnybrook Health Sciences Center; Lorne Zinman, Sunnybrook Health Sciences Center; Yana Yunusova, University of Toronto

**Funding:** NIH R01 DC009890

**Field:** Rehabilitation Health Services Studies

**Background/Purpose:** ALS is a neurodegenerative disorder with involvement of the motor and extra-motor - language and cognitive - systems. 30% of patients present with bulbar-onset ALS, characterized by initial involvement of the speech and swallowing muscles; however, up to 85% of all patients exhibit bulbar disease as ALS progresses. Some behavioural studies propose that the degree of bulbar dysfunction may be associated with an increased burden of extra-motor impairments, suggesting a unique neurodegenerative subtype. Yet, measures that are able to detect relevant neuroanatomical changes are unavailable. Furthermore, MRI studies examining associations between bulbar ALS and extramotor involvement are limited in their methodologies. The objectives of this study are to: (1) clinically validate a novel method of primary motor cortex (PMC) partitioning; and (2) examine associations between bulbar motor dysfunction and cognitive/language neuroanatomy.

**Methods:** T1-weighted (res = 1 mm3) and DTI images (res = 1.4 mm3) were used to measure gray and white matter integrity in 16 patients with varying degrees of bulbar ALS and 13 age-, sex-, and education-matched healthy controls. Measures included cortical thickness, gray matter volume, surface area, and DTI indices of bulbar motor and language regions, including Broca and Wernicke areas, and the bulbar and limb regions of the PMC, as well as the underlying white matter tracts. Bulbar-specific areas were identified using a novel semi-automatic method (Freesurfer) and reliability and validity were established. Associations were examined between extramotor regions and bulbar motor dysfunction and disease severity measures.

**Results:** The novel method for partitioning the PMC had high interrater reliability and was validated with clinical measures of motor dysfunction. Group effects indicated increased pathology in left Broca (p=.050) and Wernicke (p=.036) areas, compared to healthy controls. Articulatory rate was significantly correlated with changes in right Broca and Heschl’s gyrus, and left Wernicke. Limb dysfunction and disease severity models were not significant.

**Summary/Implications:** Patients with bulbar ALS show gray and white matter involvement in speech and language motor and extramotor cortical areas. Further, the degree of clinical bulbar impairment was related to the neuroanatomic changes in language regions, suggesting that bulbar ALS may be uniquely associated with extramotor impairments.
**Poster #38**

Is executive control ability a predictor of language therapy outcomes?

Tijana Simic, Rehabilitation Sciences Institute, University of Toronto; Elizabeth Rochon, University of Toronto

**Funding:** Canadian Partnership for Stroke Recovery Trainee Award

**Background:** Roughly 38% of stroke survivors present with aphasia, a difficulty producing or understanding language. Though many successful treatments exist for aphasia, the critical factors contributing to treatment success remain somewhat unclear. Evidence suggests that executive control (EC) may be one such critical factor. EC is a collection of higher-level cognitive processes (1) such as: task-switching, updating the contents of working memory, and inhibition.

**Purpose:** Based on our systematic review findings, it appears that both pre-treatment EC and language abilities are important indicators of treatment success, especially in moderate-severe aphasia. However, this is based on a small and heterogeneous body of evidence lacking a theoretical framework of EC. The purpose of this study, therefore, is to use a well-established EC framework to determine which aspects of EC relate to treatment efficacy in post-stroke aphasia.

**Methods:** To date, six individuals with chronic post-stroke aphasia (ranging from mild to severe) have participated in this study. All participants underwent extensive pre-treatment language and EC assessments, after which they received Phonological Components Analysis (PCA) therapy for word-finding difficulties. Treatment was administered three times a week for five weeks. Follow-up language assessments were then completed to ascertain treatment efficacy. Pre-treatment EC abilities were then correlated to post-treatment gains in naming accuracy.

**Results:** Preliminary findings show excellent language gains immediately post-treatment in all participants: the naming accuracy of words treated in therapy significantly improved pre-to post-treatment; similar improvements in accuracy were not seen in matched, untreated words. The pre-treatment EC abilities of task-switching and updating working memory appear to be related to post-treatment naming performance. Better inhibitory control also appears to be related to better maintenance of treatment effects at follow-up.

**Summary:** These preliminary data indicate that EC is a promising prognostic variable for language recovery in post-stroke aphasia, and that different EC processes may influence various periods of language recovery differentially.

**Implications:** Findings from this study could help to elucidate the role of EC in predicting language recovery, which may impact how individuals with aphasia are assessed and treated in the future.
Poster #39
Reduced pharyngeal constriction is associated with impaired swallowing efficiency in Amyotrophic Lateral Sclerosis (ALS)
Ashley A. Waito, Rehabilitation Sciences Institute - University of Toronto; Lauren C. Tabor, Swallow Systems Core - University of Florida; Catriona M. Steele, Toronto Rehabilitation Institute - University Health Network; Emily K Plowman, Swallow Systems Core - University of Florida

Background/Purpose: Amyotrophic lateral sclerosis (ALS) is a neurodegenerative disease, primarily affecting function of upper and lower motor neurons. More than 80% of patients with ALS will experience oropharyngeal dysphagia, characterized by impairments in swallowing safety and efficiency. Still, it remains unclear which physiological parameters of swallowing contribute most significantly to these impairments. As reduced pharyngeal strength and reduced constriction of the pharyngeal lumen are commonly reported in videofluoroscopic and manometric studies of patients with ALS, our aim was to determine whether reduced pharyngeal constriction contributes to decreased swallowing efficiency in this population.

Methods: Videofluoroscopic swallowing studies collected from 26 adults with confirmed or probable ALS (Revised El-Escorial criteria) were segmented into individual bolus clips and randomized for quantitative analysis. The total number of swallows for a single bolus was recorded, and pixel-based measurements of pharyngeal constriction and post-swallow residue were obtained for 3mL thin, 20mL thin, and 3mL pudding consistency tasks. Pearson’s correlation and chi-square analyses revealed relationships between reduced pharyngeal constriction, disease progression, and swallowing efficiency.

Results: Impaired pharyngeal constriction and vallecular residue were significantly more common in bulbar- versus spinal-onset patient groups. Significant associations were found between impaired pharyngeal constriction and vallecular residue (R2=0.732), pyriform sinus residue (R2=0.595), and the number of swallows per bolus (R2=0.348), across all bolus types.

Summary/Implications: Maximum pharyngeal constriction appears to be a significant physiological parameter related to swallow inefficiency in patients with ALS, particularly in cases with bulbar-onset symptomology. This information is an early step in exploring physiological parameters of swallowing which influence safety, efficiency, and diet tolerance in individuals with ALS.
Long-term reproductive health outcomes in women following traumatic brain injury: A feasibility study

Melissa Biscardi, Rehabilitation Sciences Institute, University of Toronto; Dr. Angela Colantonio, Rehabilitation Sciences Institute, University of Toronto; Dr. Gillian Einstein, Department of Psychology, University of Toronto; Dr. Nora Cullen, Rehabilitation Sciences Institute, University of Toronto

Funding: Canadian Institutes of Health Research: Dr. Colantonio's Chair in Gender, Work and Health

Background: Traumatic brain injury (TBI) is a public health concern with almost 18,000 hospitalizations in Canada alone each year. Of these, approximately one-third are sustained by women. Research on long-term health related consequences of TBI unique to women is lacking despite women being more likely to report greater problems associated with the reproductive system compared to age matched controls. This is significant as the mean age at TBI for women is 31, well within reproductive age. Research has indicated that premature menopause, resulting in reduced estrogen exposure, may be a risk factor for cognitive decline. Knowledge of potential long-term changes in sex hormones can guide healthcare practitioners in counselling women post TBI about reproductive decisions and hormone replacement therapies. To date research has not examined long-term changes in anti-Müllerian hormone (AMH) post TBI. AMH is the gold standard indicator for time to menopause. This research would provide objective evidence of the impact of TBI on reproductive functioning in premenopausal women.

Objectives: This project will address the following: 1. Assess the feasibility of a recruiting completion of study procedures by 44 eligible participants in 6 months; 2. Evaluate the extent to which premenopausal women living with TBI experience AMH deficit; 3. Examine the relationship between TBI severity and AMH levels in premenopausal women; 4. Examine the relationship between AMH levels and cognition.

Methods: Using a prospective cohort design, a convenience sample will be recruited from Toronto Rehabilitation Institute. At least 144 participants will be recruited from consecutive health records. Eligible participants will be premenopausal women who had a TBI between the ages of 20 - 50 and who are 2-10 years post injury. Comparison data will be published expected ranges. Data Collection: Data collection will involve medical chart abstraction, a Women’s Health Questionnaire, the Repeatable Battery for the Assessment of Neurological Status and a single hormone assay.

Impact: Despite growing consensus about its importance, hormone imbalance is not routinely assessed post TBI. Generating new knowledge about sex-specific endocrine abnormalities resulting from TBI is vital for clinical decision making around reproductive decisions and possible later cognitive decline. This study will help inform a larger study and provide vital preliminary information on AMH and cognition post TBI.
Financial management after acquired brain injury: a conceptual framework based on qualitative inquiry

Lisa Engel, Rehabilitation Sciences Institute, University of Toronto; Dorcas E. Beaton, St. Michael’s Hospital; Robin E. Green, Toronto Rehabilitation Institute; Deirdre R. Dawson, Baycrest

Funding: Canadian Institutes for Health Research & Ontario Neurotrauma Foundation

Background: Financial management is a vital everyday living activity for most adults, but over 30% of people living with acquired brain injury report difficulties with financial management tasks. While many rehabilitation practitioners often address limitations in this area for clients living with brain injury, there is little evidence guiding practice, resulting in variability in how it is assessed and addressed.

Purpose: To develop a conceptual framework for financial management after acquired brain injury that can guide rehabilitation practice in this area.

Methods: This grounded theory qualitative study is based on semi-structured interviews, and aims to gain perspectives of at least 12 adults living with brain injury and close-others who help the person with brain injury with financial management activities. Participants living with brain injury are being recruited from brain injury and stroke organizations and are included if they sustained a brain injury at age 18 or older, are at least one year post-injury, and are able to participate in a face-to-face verbal interview. Close-others are recruited via discussions with participants who have had a brain injury about people that help them with their financial management activities. Interview audio recordings are transcribed and coded, and a conceptual framework is being developed iteratively with analysis of past interviews refining the interview process for subsequent interviews and the framework until no new information is found.

Results: Preliminary results show that everyday financial management performance after brain injury is a complex interaction of financial management task factors (e.g., budgeting, monitoring spending), person factors (e.g., cognitive abilities; financial resources), and environmental factors (e.g., social relationships, technology available), all which change over time. However, the use of financial management strategies and supports (e.g., automatic payments, learning from knowledgeable others) can help bridge performance issues when person and environmental factors do not align with financial management task demands.

Implications: Understanding survivors’ experiences will help identify the key financial management issues relevant to this population, thereby guiding practice in this area to maximize brain injury survivors’ future financial management independence and success.
The effect of transcranial direct current stimulation (tDCS) on dual-task performance: A systematic review
Keelia Quinn de Launay, Rehabilitation Sciences Institute, Bloorview Research Institute, Holland Bloorview Kids Rehabilitation Hospital; Deryk Beal, Bloorview Research Institute, Holland Bloorview Kids Rehabilitation Hospital

Background: The is growing evidence that transcranial direct current stimulation (tDCS) improves isolated performance on numerous cognitive and motor tasks via the modulation of cortical activity. While these findings support the potential of tDCS to promote neuroplasticity and skill acquisition, in everyday life tasks seldom occur in isolation as they do in the experimental setting. Dual-task paradigms require participants to perform two different tasks simultaneously, demanding a greater cognitive load to manage task interference and prevent decreased performance. As such, dual-task paradigms are more representative of daily cognitive demands than single-task designs. Older adults and neurologically-involved clinical populations are especially susceptible to dual-task interference, but the potential for tDCS to alter this phenomenon remains poorly understood.

Objective: Our review aimed to 1) analyze the current state of research methodologies used in dual-task tDCS paradigms, as well as to 2) assess the impact of tDCS on dual-task performance and evaluate the existence of differential effects depending on dual-task type, sample characteristics, and tDCS dosage.

Methods: Comprehensive, systematized searches using predefined keywords and subject headings for tDCS and dual-task performance were conducted in three databases (OVID MedLine, Embase, and PsycINFO).

Results: Ten experimental trials met the predefined inclusion criteria. There was cohesiveness in the methodological paradigms used in tDCS dual-task trials, with 9/10 studies applying the tDCS anode to the dorsolateral prefrontal cortex, and 7/10 studies using a cognitive-motor dual-task. While 10/10 studies found a beneficial effect of tDCS on at least one outcome measure, there was conflicting evidence on the impact of tDCS when paired with long-term rehabilitation interventions. Our findings provide preliminary support for the ability of tDCS to assist in the prioritization of cognitive resources and therefore improve dual-task performance across a variety of task combinations in healthy controls and clinical populations.

Implications: Gaining insight into the effects of tDCS on complex tasks mimicking daily cognitive demands contributes to a better understanding of the ability of tDCS to modulate executive functions and cognitive control. This knowledge is of considerable value for rehabilitation, as dual-task conditions are often challenging for many clinical populations of interest.
Funding: University of Toronto Fellowship

Purpose: Disability rights has advanced in many areas, for example physical accessibility of the built environment, but harmful social stigma regarding attractiveness, sexual function, and abilities related to fulfilling a partnership role, continue to enact barriers for disabled people when seeking and enjoying romantic relationships. Drawing from concepts of disability studies, the social construction of normalcy, and the affirmation of disability positive identities, my goal is to explore the lived experience of disability, romance and love. The overarching questions that guide this research are; how is disability experienced in romantic relationships? And; do these experiences reflect, reject or reimagine dominant social assumptions about disability, disabled people, romantic relationships and love?

Methods: Critical ethnography is utilized to both explore the experiences of disability within romantic relationships, and also expose the assumptions about disability that lead to social imbalances for disabled romance seekers and couples with disability. Ten to fifteen couples where one, or both members identify as disabled will participate together in a semi-structured interview. Interviews will focus on the experiences of their relationship and the assumptions of other people about their relationship. Narrative analysis will be used as a way to identify themes between and across participants and also as a way to access the stories that participants tell about their experiences with disability and romantic relationships.

Results: Results of this study are forthcoming, but it is anticipated that participants will tell a wide variety of stories about their relationships and the nuanced, complex and multifaceted role of disability, and other identities, within them.

Summary: Social assumptions about what it is to live with disability have contributed to the discrimination of disabled people when seeking and enjoying romantic relationships. I seek to challenge these assumptions through exploring the real stories and experiences of couples with disability. Through my analysis of these stories I hope to put forth a complex and dynamic view of disability in romantic relationships that challenges dominant assumptions. Challenging these assumptions can serve as a first step to dismantling the discrimination and social imbalances that disabled people have traditionally experienced while seeking and participating in romantic relationships.
Poster #44

The conceptualization of stigma within a rehabilitation framework using HIV as an example

Marianne Stevens, Rehabilitation Sciences Institute, University of Toronto; Janet Parsons, Li Ka Shing Knowledge Institute; Stephanie Nixon, Rehabilitation Sciences Institute, University of Toronto

Funding: Canadian Institutes of Health Research Fellowship, HIV/AIDS Priority & Canadian Institutes of Health Research New Investigator Award

Background: Stigma and stigma theories are frequently concerned with inclusion and shaping opportunities and well-being. Rehabilitation and rehabilitation theory are also concerned with inclusion and well-being. However, the fields of stigma and rehabilitation, specifically using the World Health Organization’s Classification of functioning, disability and health (ICF), do not appear to have been interrelated to date. Using HIV as an example, this study will address the following aim in our understanding of stigma and rehabilitation.

Purpose: The purpose of this article is to present an analysis of the various ways that stigma may be conceptualized within the context of the World Health Organization’s ICF. We use examples from the field of HIV in order to illustrate how these intersections may be understood.

Methods: Through a series of analytic conversations amongst authors, as well as the use of relevant literature, three broad spheres of stigma were identified that enhanced our understanding of stigma in relation to the ICF: enacted, self and structural stigma.

Results: Using HIV as a test case, we found that aspects of the stigma theories were aligned with three particular constructs of the ICF, namely participation, environmental and personal contextual factors.

Summary/Implications: As a result of our analyses, three spheres of stigma were interrelated in unique ways with three domains of the ICF. This conceptualization offers an opportunity for rehabilitation professionals and other practitioners, policy makers and researchers to better understand stigma as it relates to rehabilitation and HIV.
Thank you for attending and participating in the 2017 Rehabilitation Sciences Institute Research Day.

See you next year!