

RRP Annual Report 2018-19

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Message from the RRP's Director

This past year saw tremendous growth of our program with two new Assistant Professors, Drs. Courtney Pollock and Julia Schmidt, moving into the RRP space at the GF Strong Rehab Centre. In addition, one of the RRP's own post-doctoral fellows, Dr. Brodie Sakakibara commenced a position at the new Chronic Disease Prevention Program with the UBC Faculty of Medicine Southern Medical Program and will continue as an RRP Associate Member.

Why is the RRP an attractive site for researchers? The RRP is uniquely located within the GF Strong Rehab Centre, the largest stand-alone rehabilitation centre in BC. As such, researchers and their trainees can walk upstairs to recruit a patient with stroke or amputation and do their assessment or go down the hall to hold a lunch hour focus group with occupational therapists or recreation therapists to get their input on a study. More so, our hallway conversations between researchers and clinicians are often what percolates the next big idea. The on-site research program is critical for fostering an environment which bridges research development and clinical practice. Lastly, our existing cadre of faculty continue to have national and international impact as shown in this Annual Report. In addition, they provide the mentorship and guidance that is so critical in helping junior faculty to develop their independent programs.

Janice Eng, PhD Professor and Canada Research Chair, UBC

Highlights 2018-19

New Faculty Recruitment

Dr. Courtney Pollock, PhD, PT joined the RRP in July 2018 and commenced as an Assistant Professor within the UBC Department of Physical Therapy. Her research explores the control of balance and walking and how aging, disease, injury and treatment, impact these. She is currently the Vancouver site lead for a multi-site trial funded by Brain Canada to determine whether an anti-depressant can open the window of motor recovery to improve walking after stroke.

Dr. Julia Schmidt, PhD, OT joined the RRP in March 2019 with her home department being UBC Occupational Science and Occupational Therapy. Julia's research focuses on improving everyday life for people after brain injury through investigation of neurological and cognitive-psychological impact of brain injury to determine effective individualized interventions.

Former RRP post-doc, **Dr. Brodie Sakakibara** was selected as a new Assistant Professor for the Chronic Disease Prevention Program, Southern Medical Program, UBC Okanagan. He topped the year off with a Michael Smith Foundation for Health Research Scholar Award. He will continue as an Associate faculty member of the RRP.







Faculty Funding

The RRP faculty secured *\$4,311,662* of grant funding in 2018 as principal investigators.

As an example, RRP faculty **Dr. Bill Miller** and post-doctoral fellow Delphine Labbé were awarded a Social Sciences and Humanities Research Council of Canada grant to understand the experiences of people with disabilities in participating in adaptive snow sports. This research, and their partner BC Adaptive Sports will help raise awareness, increase access, and build capacity of snow sports organizations for people with disabilities.

International Leadership

RRP faculty continue to be leaders of national and international initiatives around the world. To highlight some examples: **Dr. Bill Miller** is the Scientific Committee Chair of the International Society of Prosthetics and Orthotics Canada, **Dr. Noah Silverberg** is Chair of the Mild Traumatic Brain Injury Task Force for the American Congress of Rehabilitation Medicine, **Dr. Janice Eng** is on the Board of Directors of the Heart and Stroke Foundation Canadian Partnership for Stroke Recovery and **Dr. Jennifer Yao** is Committee Chair of the Royal College Specialty Committee in Physical Medicine and Rehabilitation Education Committee.

Trainee Development and Success

The RRP faculty supervised 15 thesis-based Master students, 18 PhD students, and 17 Postdoctoral fellows in 2018. We highlight activities of a few of our outstanding trainees:

Research training with physician resi-

dents. Twelve residents were trained at GF Strong Rehab Centre over 2018 in the Physical Medicine and Rehabilitation Specialty with 10 being involved in research. **Dr. Hugh Anton** is the Coordinator of the Resident Research Training Program. We highlight Dr. Kaila Holtz who was supervised by RRP faculty Patricia Mills to publish the 2018 paper "Treatment patterns of inpatient spasticity medication use after traumatic spinal cord injury: a prospective cohort study" in the journal *Spinal Cord*. This paper studied over 900 patients with spinal cord injuries and found that Baclofen was the most commonly used first line oral therapy for spasticity. This paper may help to guide care for this community population.

Holtz, K. A., Szefer, E., Noonan, V. K., Kwon, B. K., & Mills, P. B. (2018). Treatment patterns of in-patient spasticity medication use after traumatic spinal cord injury: a prospective cohort study. *Spinal cord*, *56*(12), 1176.

A call to Rideau Hall for Emma

Smith. Congratulations to **Emma Smith** on completing her PhD and being awarded the Sovereign's Medal for Volunteers! On April 17, 2018 Emma had the honour of receiving the medal from Her Excellency Julie Payette, the 29th Governor General of Canada. Joined by other exceptional individuals at Rideau Hall in Ottawa, it was a day of celebration for volunteer achievements of Canadians from across the country.



Peer-reviewed Journal Publications

In 2018, the RRP published a total of 49 peerreviewed publications.

We highlight one exemplary paper. A GF Strong Rehab Centre study was recognized as the most cited in 2018 for the journal Spinal Cord and this honour came with an award of 400 Euros. The study was part of Dr. Dominik Zbogar's doctoral studies and his Canadian Institute of Health Research Doctoral Award, which was supervised by RRP faculty Dr. Janice Eng and Dr. Bill Miller. The study followed 103 spinal cord injured patients and found that exercise repetitions are markedly lower than those that have been reported to be necessary for optimizing neuroplastic changes or for musculoskeletal or endurance functions. This paper provides a baseline for which to apply methods to increase repetitions to optimize clinical outcomes.

The 9th Annual Research Day was held on May 4, 2018 with a record attendance of over 170 people, including RRP faculty and trainees, GF Strong clinicians and other rehabilitation trainees from SFU and UBC. Dr. Mark Bayley, from the Toronto University Health Network, presented the plenary lecture on Concussion Guidelines. Dr. Mark Bayley, Dr. Noah Silverberg and Dr. Jennifer Yao judged the podium presentations, awarding prizes for the best overall and runner-up podium presentation, alongside the best graduate/Post-doctoral podium presentation. Dr. Brodie Sakakibara, Dr. Ben Mortenson, Dr. Laura Nimmon and Dr. Rhonda Willms judged the poster presentations awarding prizes for the best overall poster presentation and the best graduate/Post-doctoral poster presentation. Thanks to Dr. Hugh Anton, Maria Canvin and Tasha Klotz for organizing this event.



The best of *Spinal Cord* 2017 – 2018

Zbogar, D., Eng, J. J., Miller, W. C., Krassioukov, A. V., & Verrier, M. C. (2017). Movement repetitions in physical and occupational therapy during spinal cord injury rehabilitation. *Spinal cord*, *55*(2), 172.

Rehab Research Day





Knowledge Translation

While statistics show that, on average, it can take decades to move research to practice, RRP faculty and trainees are ensuring that their research is **transferred quickly to the real world** setting to immediately improve the lives of patients.

Bringing stakeholders together to solve problems. In January 2019, **Dr. Bill Miller** and doctoral student Emma Smith hosted a gathering of assistive technology experts for the establishment of a regional hub in the northwest USA and Canada to advance assistive technology excellence. An assembly of 40 experts, ranging from end users, service providers, advocates and researchers from BC, Alberta, and Washington met in Vancouver to network, brainstorm, and problem solve issues related to assistive technology. The 2-day event was a great success and generated new pathways to move forward on policy, provision, education, and research related to assistive technology.

Tech Transfer to improve patient lives. RRP faculty **Dr. Carlo Menon** is developing innovative rehabilitation technologies to assist patients with motor function impairments. His team made advances in controlling tremors with a motorized orthosis; developing textile-based sensors that detect when an individual is speaking; developing vestibular stimulation paradigms to alleviate some motor symptoms in Parkinson's disease and sensors to control prostheses after amputation. His team spun off the company Biointeractive Technologies, which is now commercializing wearable sensor technologies to measure, monitor and improve hand impairments after stroke and Carpal Tunnel Syndrome.



Implementing programs from research results. Over the last year, **Dr. Janice Eng** and post-doc **Dr. Marie-Louise Bird** implemented the Fitness and Mobility Exercise (FAME) program for Stroke at community centres in Vancouver, West Vancouver, Kelowna, and Richmond. These are now operating on a cost-recovery basis without any research support. Dr. Eng developed and validated FAME through a series of randomized controlled trials before embarking on implementation activities.

Spinal Cord Injury Research Evidence Project. RRP faculty **Dr. Bill Miller, Dr. Ben Mortenson, Dr. Andrea Townson, Dr. Patricia Mills** and **Dr. Andrei Krassioukov** all contribute their expertise to scireproject.com led by **Dr. Janice Eng** with partners from Ontario. The site has over ¼ million users per year. A published evaluation showed that this web-based knowledge resource is an inexpensive method to increase access to evidence-based information, inform changes to the health providers' practice, and influence their clinical decision-making. A recent evaluation of consumers who use this website elicited unanimous positive comments:

"I really liked that it was all in one place" "It's at my fingertips to access it anytime I want" -family member. -person with SCI.

> "I feel like I know I have a place I can go to get reliable information that's been vetted by researchers who are engaged in the field" -person with SCI

RRP Investigators

Investigators whose primary space is at GF Strong Rehab Centre

Dr. Hugh Anton | *MD FRCPC, Clinical Professor, Physical Medicine and Rehabilitation, UBC.* | **Focus:** Fatigue in neurological disorders; rehabilitation outcomes.

Dr. Janice Eng|*PhD, BSc(PT/OT), Professor and Canada Research Chair, Physical Therapy, UBC.*| **Focus:** Neurological rehabilitation, clinical trials and implementation science.

Dr. Bill Miller |*PhD, OT, Professor, Occupational Science and Occupational Therapy, UBC.* | **Focus:** Mobility disability and participation of older adults; wheeled mobility devices, measurement tools and assistive technology.

Dr. Patricia Mills *MD FRCPC, Clinical Associate Professor, Physical Medicine and Rehabilitation, UBC.* **Focus:** Management of spasticity in spinal cord injuries, multiple sclerosis, stroke, and brain injury.

Dr. Ben Mortenson* |*PhD, Associate Professor and CIHR New Investigator, Occupational Science and Occupational Therapy, UBC* | **Focus:** Assistive technology, social participation, caregiving and outcome measurement.

Dr. Courtney Pollock |*PhD, PT, Assistant Professor, Physical Therapy, UBC.* | **Focus:** Mechanisms and treatments of walking and balance from neurological changes associated with aging, disease and injury.

Dr. Julia Schmidt | *PhD, OT, Assistant Professor, Occupational Science and Occupational Therapy, UBC.* | **Focus:** Brain injury, rehabilitation, cognition, and self-identity.

Dr. Noah Silverberg | *PhD, R Psych, ABPP, Clinical Associate Professor and Michael Smith Health Professional Investigator, Physical Medicine and Rehabilitation, UBC; Acquired Brain Injury Program, GF Strong Rehab Centre* | **Focus:** Prognosis and treatment of mild traumatic brain injury.

Dr. Andrea Townson | *MD FRCPC, Clinical Associate Professor, Physical Medicine and Rehabilitation, UBC.* | **Focus:** Spinal cord injury rehabilitation, health provider education and competency.

Dr. Jennifer Yao | *MD FRCPC, Clinical Assistant Professor, Physical Medicine and Rehabilitation, UBC.* | **Focus:** Stroke in young adults; brain injury and cancer rehabilitation.

Investigators whose primary space is at another site

Dr. Carlo Menon | PhD, Professor and Canada Research Chair, Engineering Science, SFU. | Focus: Robotics, mechatronics,

smart materials and structures, artificial muscles.

Dr. Andrei Krassioukov |*MD PhD FRCPC, Professor, Physical Medicine and Rehabilitation, UBC.* | **Focus:** Autonomic dysreflexia and function in spinal cord injury.

Dr. Brodie Sakakibara |*PhD, OT, Assistant Professor and Michael Smith Scholar, Occupational Science and Occupational Therapy and Southern Medical Program, UBC*| **Focus:** Chronic disease self-management; secondary prevention of stroke and cardiovascular disease.

Appendix

2018 Funding 2018 Publications

2018 Funding

Only PI funding listed.

New funding 2018 \$ 1,087,576

FUNDING IN 2018 \$4,311,662 Total Funding \$15,082,122

Agency	Title	2018 Total	Total	PI
Rick Hansen Institute	SCIRE Professional	\$155,000	\$465,000	Eng
PVA	Bowel clinical practice guidelines	\$65,000	\$65,000	Eng
CPSR	Near-infrared spectroscopy in stroke	\$20,000	\$20,000	Eng
Rick Hansen	SCIRE Community	\$150,000	\$150,000	Eng
Brain Canada	Stroke recovery clinical trials platform	\$500,000	\$1,500,000	Bayley, Eng
CIHR (Foundation)	Optimizing ability after stroke	\$354,478	\$2,481,346	Eng
Heart/Stroke	Robotic exoskeletons for stroke	\$73,333	\$220,000	Eng
SSHRC Insight Grant	Adaptive leisure opportunities for people with disabilities	\$30,233	\$82,547	Miller
AGEWELL NCE Inc. CRP Plus Fund Grant	Collaborative power mobility innovative learning opportunity	\$28,500	\$28,500	Miller
MSFHR Convening & Collab- orating (C ²) Program	Advance assistive technology excellence	\$14,900	\$14,900	Miller
CIHR Project Scheme	An eHealth approach for pre-surgical hip replacement education	\$112,764	\$225,528	Miller Westby Watson
AGEWELL NCE Inc.	Collaborative power mobility for an aging population	\$40,000	\$200,000	Miller, Pineau
CIHR Transitional Open Op- erating Grant	One-to-one training for scooter skills	\$72,016	\$72,016	Mortenson
Craig H. Neilsen Foundation Grant	Improving self-management skills among people with Spinal Cord Injury	\$165,923	\$165,923	Mortenson
Networks of Centres of Ex- cellence (NCE)	Innovative Technology for Caregivers	\$85,861	\$429,303	Mortenson & Routhier
Networks of Centres of Ex-	E-decision support for self-selection of assistive technology by elders	\$79,046	\$158,091	Mortenson &
SSHRC Insight Grant	Assistive technology access and utiliza-	\$399,864	\$399,864	Mortenson
CIHR	Operating Grant	\$122,127	\$366,380	Silverberg
VGH & UBC Hospital Foun- dation	Enhanced screening for concussion	\$19,000	\$38,000	Silverberg
VCHRI (Innovation and Translational Research Award)	Implementing concussion return to activ- ity guidelines in primary care	\$25,000	\$50,000	Silverberg
Rick Hansen Institute	Near infrared spectroscopy for limb spas- ticity: a pilot study.	\$6,250	\$12,500	Mills

2018 Funding

Only PI funding listed.

NSERC	Seamless interaction	\$168,608	\$505,823	Menon
Canadian Frailty Network	Community- and home-based frailty preven- tion and management	\$100,000	\$100,000	Song, Menon, D'Arcy
NSERC	Soft wearable technology for knee rehabili- tation	\$25,000	\$25,000	Menon
AGE-WELL	Wearable technology for hand function in seniors	\$21,000	\$21,000	Menon
CFI (Operating budget)	Transformative approaches biomedical technology to assist motor function	\$29,750	\$119,000	Menon
Government of Canada	Canadian research chair (Tier 1) biomedical technologies	\$300,000	\$2,100,000	Menon
CIHR	Wearable technology to assist with hand and finger function	\$265,510	\$1,858,570	Menon
CIHR/NSERC	Bimanual wearable robotic orthoses and recovery from stroke	\$150,333	\$451,000	Menon, Boyd
Heart and Stroke founda- tion	Haptic feedback via bimanual elbow robotic orthoses	\$68,464	\$205,391	Menon
NSERC	Improving human-robot cooperation	\$224,780	\$1,123,900	Menon
NSERC	Transformative adhesives	\$29,000	\$145,000	Menon
MSFHR	A wearable assistive device	\$79 <i>,</i> 375	\$635,000	Menon
NSERC/CIHR	Restoring normal gait	\$172,050	\$172,050	Menon
CHRP	Transformative ankle bracelet	\$158,497	\$475,490	Menon

Publications

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