INTRODUCTION

I am pleased to introduce the first Annual Rehabilitation Sciences* Research Report. This report covers the period of July 1 2013 to June 30, 2014 and presents the research products (grants received and publications) and activities (presentations) of the faculty members of the College of Rehabilitation Sciences faculty during this period. The accomplishments of faculty members in each of the Departments of Occupational Therapy, Physical Therapy and Respiratory Therapy as well as those of the Canadian Chiropractic Research Foundation Professor are presented.

Also in this report are stories and highlights about the research that takes place in our College. Highlights from this past year include the opening of our newest research laboratory – Enhancing Participation in the Community (EPIC). This new lab was an initiative of collaborators from occupational therapy, Jacquie Ripat and Ed Giesbrecht, and physical therapy, Ruth Barclay. Our newest researcher, Sandra Webber, joined the Department of Physical Therapy in 2012 and has quickly established her research program focused on understanding the effects of physical activity. A long standing research focus of Tony Szturm has been the development and study of the use of video gaming as a rehabilitation platform. This work has secured significant funding and has attracted many graduate students who have done numerous experiments on the application of video gaming to realize rehabilitation goals.

*2013-2014 has been an important year of transition for the School of Medical Rehabilitation to becoming the College of Rehabilitation Sciences in a New Faculty of Health Sciences. See the 2013-14 annual report of the Council of the School of Medial Rehabilitation for more information.

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A collaboration between the departments of Occupational Therapy and Physical Therapy, the goal of this research initiative is to enhance participation in the community through innovative research, education, collaboration, and knowledge translation.

EPIC Lab (Enhancing Participation In the Community) has many aims:

• Conducting research that enhances mobility, participation and health-related quality of life across the lifespan.

• Exploring areas of research that include understanding and measuring factors that impact the participation experience and innovating interventions that address individuals, assistive technology, and the environment.

• Provide a quality learning environment that attracts high-quality trainees to succeed and contribute to the clinical and research community.

• Collaborate with stakeholders in the knowledge translation process ensuring it is relevant and progressive.

• Create linkages and collaborations with local, national and international researchers in complementary areas of investigation.

• Encourage involvement of multiple disciplines within our research.

To address the aims of the lab, EPIC Lab investigators employ a variety of research methodologies including quantitative, qualitative, and mixed methods designs.

The EPIC Lab is located in room RR367 in the Health Sciences Centre Rehabilitation Hospital and is part of the School of Medical Rehabilitation at the University of Manitoba, Bannatyne Campus. The 1000 square foot lab has space for mobility-based data collection; private assessment areas with plinths; equipment for a standardized Wheelchair Skills Test and training; computer stations and meeting space for graduate students; and two private offices for students and research assistants.
Resting on one of the walls in Sandra Webber’s office is a poster with the words “Believe in Yourself” etched in large red font. At the bottom of the poster is a child sitting on a gym room floor, holding a basketball and looking up at the hoop.

“I think it’s appropriate. It’s how I feel somedays, that I’m at the bottom of the hoop and that there’s hardly any chance that I’m going to get the ball in there,” chuckles Webber. “But it does happen. With some growth, you’ll be able to slam dunk it. Anything is possible.”

One could say Sandra Webber has been making slam dunks her whole research career. With a CV of nearly 20 pages, brimming with awards, grants, peer-reviewed publications and professional articles, Webber’s research into the mobility of older adults and the physical activity and sedentary behaviour of people with chronic diseases continues to open doors and answer questions. But she feels like there’s still more to accomplish.

“As my research develops and grows, we’re building toward the point where we’ll have confidence in our measurement tools so that we’ll be able to perform interventions and register effects,” says Webber.

Webber, who earned all of her academic degrees within the walls of the University of Manitoba, says the process of growing and research building is dependent on collaborations with other like-minded researchers. Before her appointment as an Assistant Professor in Department of Physical Therapy at the U of M, Webber spent time as an Assistant Professor of Physical Therapy at the University of Saskatchewan. She also has research contacts in Alberta and has made in-roads with researchers and graduate students in the U of M’s Faculty of Kinesiology and Recreation Management.

“Through my collaborations and making more contacts, my research will continue to build and translate into a greater number of projects, more success on grants and projects that will be relevant to actual intervention in older adults and/or in chronic diseased populations,” says Webber.

It could be argued that behind every strong researcher is, usually, a stronger mentor. Webber’s had plenty of those. There’s her high school physical education teacher from back home in Pinawa, Man. whom she credits for introducing her to the world of sports and exercise. And there’s also Brenda Loveridge, the former head of the Physical Therapy Department and Director of the School of Medical Rehabilitation. Webber speaks fondly of Loveridge as the person she credits for igniting a passion for research in her.

“She really got me interested in research,” says Webber. “She gave me a research assistant position between my first and second year of physio. She was the first person to expose me to research. You could say she got the bug started.”
Who says video games are a waste of time?

A research group from the School of Medical Rehabilitation (SMR), involving Physical Therapy Department Head Barbara Shay, Associate Professor of Physical Therapy Dr. Tony Szturm, and PhD graduate student Cynthia Swarnalatha Srikesavan, has developed a video game based rehabilitation platform that provides therapy and outcome monitoring for people living with arthritis of the hands.

Nearly any object, utensil and/or body part can be changed to function exactly as a computer mouse by attaching the motion sensor. This smart device converts signals from miniature motion sensors to signals equivalent to that of a computer mouse.

Multiple objects with varied sizes, shapes, weights and functional demands for precision can be used for exercise and to practice a variety of gross or fine motor skills – all the while having fun playing computer games. The data is then relayed back to Srikesavan and her team, where evaluations and recommendations are made.

The platform, recently highlighted in a Canadian Institutes of Health Research (CIHR) Institute of Musculoskeletal Health and Arthritis (CIHR–IMHA) publication titled Celebrating the impact of health research: success stories in arthritis, bone, muscle, musculoskeletal rehabilitation, oral health, and skin, aims to improve hand function in people with arthritis and, in doing so, restore some of the satisfactions of daily life.

Cynthia Swarnalatha Srikesavan, a PhD graduate student in the Applied Health Sciences Program at the U of M, says the platform and application developed by her team will have a unique and long-lasting impact on those living with the joint disorder.

“As it stands right now, there is currently no viable long-term home-based rehab program for people with arthritis of the hands. Typically, home-based programs are difficult to monitor, and often patients lose interest in the programs themselves,” explains Srikesavan.

“This technology is catered and individualized to each person’s preferences, so it remains fun and interesting. We can also monitor each individual session, which helps us evaluate each person’s progress.”

The technology for the platform was first developed in 2006. SMR, along with the department of electrical and computer engineering, designed a device that could effectively replace a standard computer mouse when doing exercises to rehabilitate hand function.

According to Srikesavan, this technology will greatly benefit those living in rural and remote areas, where immediate access to rehab programs and specialists are limited at best. “Since we can customize the platforms and evaluate the data from afar, we can minimize the frequency of visits arthritic rehab patients make to see specialists, which benefits the rural populations.”
RESEARCH GRANTS, PUBLICATIONS, PRESENTATIONS
JULY 1, 2013 – JUNE 30, 2014

Grants (Ongoing & New)


Barclay-Goddard, Ruth, King Judy Ripat Jacquie Dubouloz Claire-Jehanne, Schwartz Carolyn. How do Occupational Therapists and Physiotherapists understand the concept of personal change that occurs in rehabilitation clients over time? Rehabilitation Research Grant, School of Medical Rehabilitation and Faculty of Medicine, University of Manitoba, $19,910.33 (2011-14).


Brown, C., Wener, P., Schorr, R., Boyd, J., Leclair, L., Johnson, L., Fricke, M., Diamond-Burchuk, L. What is the Extent and Quality of Understanding of Occupational Therapy and Physical Therapy Roles by Interprofessional Teams in Primary Care?, ReHabilitation Research Grant Fund, School of Medical Rehabilitation, University of Manitoba, $19,097.30 (Awarded October 2013)

Kosny, A., Beaton, D., Cooper, J., Furlan, A., Koehoorn, M., MacEachen, E., Neis, B. Engaging health care providers in the return to work process. $174,252 for 2014-2016 from Research and Workplace Innovation Program, WCB Manitoba (Awarded)


Lauckner, H., & Leclair, L. Occupational Therapy Practice Process at the Community Level. Canadian Occupational Therapy Foundation (COTF). $5,000 (Co-Principal Investigator) (2013-2014)

DeVos, G., & Leclair, L. Value, Meaning, and Use of Meal Preparation Group for Clients in an In-Patient Mental Health Setting. Health Sciences Centre Foundation Allied Health Research Grant. ($5,090) (Co-Investigator) (2013-2014)


Mendez, L., & Johnson, L. Moving to Learn: Dynamic Classroom Seating. School of Medical Rehabilitation Endowment Fund (Collaborator), $678. (2014)


Passmore SR Workers Compensation Board of Manitoba (WCB), Research and Workplace Intervention Program Grant. Award of $195,000 for the application entitled “Synthesizing Occupational Health and Safety Knowledge for Local Stakeholders” Role: Collaborator Collaborators: Stephen Bornstein (PI), PhD, Emma Irvin (PI), PhD, Dwayne Van Eerd, PhD, Ron Saunders, PhD. Status: Funded (commencing project)
Passmore SR, Manitoba Health Research Council (MHRC) Establishment Grant award of $82,965.16 for the research program “An exploration of spinal manipulation dosage”. Role: Principal Investigator


Wittmeier, K., & Restall, G. (2013). *Manitoba Child and Youth Rehabilitation Research Collaborative (M-CYRRC): Moving forward within the community.* Grant from the School of Medical Rehabilitation Endowment Fund, $3486


Pooyania S., *Szturm T.* Effects of innovative technology-assisted circuit training for dynamic balance and mobility; a community-based group training program as an alternate to out-patient rehabilitation post stroke; Manitoba Medical Services Foundation, $12,000 (2013-2014).

Webber SC, Bohm E, Jones A, *Ripat J., Strachan, S.* “*Sedentary behaviour and physical activity before and after total knee replacement.”* University of Manitoba Faculty of Medicine ReHabilitation Grant Program, $19,933 (2014-2016).


Webber SC “University of Manitoba Start-up Funds– Faculty of Medicine, School of Medical Rehabilitation and Office of the VP, $45,000 (2012-2015).

Publications


Biesheuvel, S. “How do we measure the quality of a respiratory therapy education program?” Canadian Journal of Respiratory Ther Vol 50 No 1 Spring 2014


Presentations


R. Barclay AEROBICS recommendations: CIHR meeting to discuss implementation of aerobic guidelines post stroke with clinicians and researchers from across Canada, Halifax, Nova Scotia – June 6-7, 2013

R.Barclay with L McClimens (USA), Dr.B King-Kallimanis (Ireland), and Dr. S Nolte (Germany) An Introduction to Response Shift - International Society for Quality of Life Research -September, 2013


Cooper, J. (2014, June 11). From diffidence to confidence: The legacy of Thelma Cardwell and the “Maxwell Report”. 2014 Annual Thelma Cardwell Research Day, Department of Occupational Science and Occupational Therapy, Faculty of Medicine, University of Toronto.

Cooper, J. (2014, January 17). Occupational therapy in the community: Innovation or foundation? Professional Development Committee Conference, Department of Occupational Therapy, Faculty of Rehabilitation Medicine, University of Alberta.

Cooper, J. (2013, November 25). The top 10 research itches of an aging researcher. Students Targeting Aging Research (STAR) group of the Centre on Aging, University of Manitoba.

Cooper, J. (2013, October 24). Fifty years and counting: Reflections on the past, present and future of occupational therapy. OT Month Celebrations, Ottawa Hospital, Ottawa ON.


Norman, K.E., Roots, R.K., Corpuz, J.C. & Fricke, M. Who we admit is who we will become: Examining diversity among learners in physiotherapy programs and the implications for physiotherapists’ contributions to healthcare in Canada. Canadian Physiotherapy Association Congress, (Edmonton, AB. June 20, 2014).


Zheng, R., Passmore, S., Glazebrook, C.M. The impact of disrupted sensory feedback on movement performance. (Accepted Poster) NASPSPA, Minneapolis, MN, June 2014.*

Brown, K., Marrotta, J., Passmore, S., Glazebrook, C.M. Reaching and grasping with induced paresthesia: associated movement strategies. (Accepted Poster) NASPSPA, Minneapolis, MN, June 2014*.


**Ripat, J.** *PhotoVoice: Applications and Opportunities.* Riverview Health Centre Research Day, April 22, 2014, Winnipeg, MB

Barclay-Goddard, R., King, J., Dubouloz, C-J., **Ripat, J.,** & Schwartz, C. *Response shift and transformative learning – do rehabilitation professionals use these concepts of change in their practice?* ISQOL, Miami, Florida, October 10, 2013.

**Ripat, J.** Promoting participation through assistive technology and environmental adaptations. Canadian Federation of University Women 12th Annual Charitable Trust Breakfast, Featured Keynote Speaker - July 13, 2013, Saskatoon, SK


Graham Leverick, **Tony Szturm,** Christine Qiong Wu *Investigation of the suitability of utilizing permutation entropy to characterize gait dynamics,* 6th Annual Dynamic Systems and Control Conference, October 2013, Stanford University.

Robinson, A., **Sullivan, T.,** & Tanchuk, C. (2014, June 17). *Professionalism: An Exploration of Occupational Therapy Student and Faculty Perspectives.* A one-hour presentation at Health Sciences Centre Occupational Therapy Rounds.


Erickson M, Fehr R, Mack K, Sawatsky M, Tennant B, Magill S, Schafer J, Wilson K, Basran J, **Webber S,** Arnold C. *Predicting fall risk: iTUG points to turn duration. Accepted for presentation at the Canadian Physiotherapy Association National Congress (Montreal, QC, May 23-26, 2013).*


Halas G., Katz A., Shultz A, Carpick K, Goertzen L, Rothney J, Khawaja M, **Wener P.** *Scoping a decade of tobacco dependence research: Where have we been and where can we go?* The Cancer and Primary Care Research International Network Conference (Ca-PRI), June 10-13, 2014.


Katz, A., Halas, G., Rothney, J., Schultz, A., Wener, P. Team approaches for creating a foundation of primary prevention research: A scoping review of reviews, Coming Out of Silos, Manitoba Centre for Nursing Health Research and the Winnipeg Regional Health Authority, Winnipeg, Manitoba, May 23, 2014.


