Bradford J. McFadyen, PhD, is a full professor within the Department of Rehabilitation at Université Laval in Quebec City. He is a researcher and member of the research council of the Centre for Interdisciplinary Research in Rehabilitation and Social Integration (CIRRIS/CIUSSS-CN) within the Quebec Rehabilitation Institute. Dr. McFadyen’s research is focused on studying adapted locomotor control in healthy and pathological populations. This research is driven by the need to understand the complex, multi-factor, systemic nature of mobility. His research is supported by different federal and provincial funding agencies and has resulted in over 95 publications in refereed journals.

Dr. Avril Mansfield is a Scientist at the Toronto Rehabilitation Institute, Affiliate Scientist with the Sunnybrook Research Institute, and Assistant Professor (status only) in the Department of Physical Therapy at the University of Toronto. Her research aims to determine how aging and neurologic injury or disease affect balance control and mobility, how to exploit principles of optimal learning to develop exercise programs that improve balance and mobility, and how to encourage participation in daily physical activity. She is particularly interested in applying this work to developing clinically feasible interventions. Her research is supported by grants from the Canadian Institutes of Health Research and the Natural Sciences and Engineering Research Council of Canada, among others.

Dr. Ted Milner (Professor, Department of Kinesiology and Physical Education, McGill University)
Control of Balance During Voluntary and Involuntary Disturbances to Posture: When we perform actions we maintain balance even when unpredictable forces are applied to the arms. Our research suggests that the hand senses direction and magnitude of a disturbing force and that this information is rapidly processed by the brain, allowing ankle muscles to be activated almost as quickly as arm muscles.

Dr. Laurent Bouyer (Professor, Dept. of Rehabilitation, Laval University; Researcher at CIRRIS, Quebec City)
Using robotics and elastics to study locomotor control and locomotor learning: To remain functional throughout life, gait has to be adaptable to body and environmental changes. This presentation summarizes experiments that used controlled perturbations to study the signals that trigger this adaptive capacity, and unravel some of its underlying neural mechanism. The knowledge gained will help optimizing future gait rehabilitation paradigms.

Dr. Olivier Beauchet (Joseph Kaufmann Chair in Geriatrics, Director of the Centre of Excellence on Aging and Chronic Disease, McGill University)
Hippocampal volume, early cognitive decline and gait variability: which association? The involvement of the hippocampus in gait control is still matter of debate. The present talk aimed to examine the association of the hippocampal volume with mean values and coefficients of variation of spatio-temporal gait parameters among cognitively healthy individuals and patients with mild cognitive impairment.

Dr. Caroline Paquette (Assistant Professor, Dept. of Kinesiology and Physical Education, McGill University)
Brain control of complex walking: Falls become more common with aging and neurological disorders such as stroke. Most of these falls occur during complex walking, i.e. when walking and turning or during transitions and unfortunately, we still know very little on how complex locomotion is controlled within the brain. Our recent work using 18F-FDG-PET imaging to examine neural mechanisms of complex locomotion in contrast to uninterrupted straight ahead walking will be presented.

Dr. Julie Nantel (Assistant Professor, School of Human Kinetics, University of Ottawa)
Postural instability and freezing of gait in individuals with Parkinson’s disease: Postural instability and gait impairments are among the most disabling motor symptoms in PD. Gait also becomes more attention-demanding as disease progresses. During my talk, I will present some of our work on these topics and discuss the potential benefits of physical activity on mobility in individuals with PD.

Dr. David Conradsson (Post-Doctoral Fellow, Dept. of Kinesiology and Physical Education, McGill University)
The effects of highly challenging balance training in elderly with Parkinson’s disease: This talk will focus on a recent randomized controlled trial investigating highly challenging balance training including dual-tasking in individuals with Parkinson’s disease. The effects of this intervention on gait, balance control and physical activity will be presented and discussed.