

12. Gonzalez, D., **Kowalski, K.**, Carnahan, H., & Dubrowski, A. Magnification of the visual field and haptic perception when exploring surfaces with surgical snaps. SCAPPS. Hamilton, ON, Canada, November 2003.
13. **Kowalski, K.**, Gonzalez, D., Dubrowski, A., & Carnahan, H.). The integration of visual and haptic inputs when perceiving surface roughness. SCAPPS. Hamilton, ON, Canada, November 2003.

Publications

1. **Kowalski, K.**, Jeznach, A., and Tuokko, H. (2014). Stages of driving behaviour change within the Transtheoretical model (TM). *Journal of Safety Research*, 50, 17-25.
2. Latimer-Cheung, A.E, Rhodes, R.E., Kho, M.K., Tomasone, J.R., Gainforth, H., **Kowalski, K.** Nasuti, G., Perrier, M., & Duggan, M (2013). Evidence-informed recommendations for constructing and disseminating messages supplementing the new Canadian Physical Activity Guidelines. *BMC Public Health*, 13, 419.
3. Rhodes, R. & **Kowalski, K.** (2013). Skill Building to Promote Physical Activity. In Claudio R. Nigg (Ed). *ACSM's Behavioral Aspects of Exercise* (p. 71-101). Philadelphia, PA: Lippincott, Williams & Wilkins.
4. Kowalski, K., Rhodes, R., Naylor P.J., Tuokko, H. & MacDonald (2012). Direct and indirect measurement of physical activity in older adults: A Systematic review of the literature. *International Journal of Behavioural Nutrition and Physical Activity*, 9, 148.
5. **Kowalski, K.**, Love, J. , Tuokko, H. MacDonald, S., Hultsch, D. & Strauss., E. (2012). The influence of cognitive impairment with no dementia on driving restriction and cessation in older adults. *Accident Analysis & Prevention*, 49, 308-315.
6. **Kowalski, K.** Tuokko, T., Tallman, K., On-road Evaluation: It's use for the Identification and Remediation of Older Drivers. *Physical & Occupational Therapy in Geriatrics*, 28(1), 75-85
7. Lillie, R.A., **Kowalski, K.**, Patry, B., Sira, C., Tuokko, H. & Mateer, C.M. (2010). Everyday Impact of Traumatic Brain Injury. In T.D. Marcotte & I. Grant (Eds.), *Everyday Functioning: Translating Laboratory Performance to the Real World* (p. 302-330). New York, NY, USA: The Guilford Press.
8. Tuokko, H. & **Kowalski, K.** Thoughts on older driver safety: The roles of cognition & social cognition (2009). In D. Cloutier-Fisher, L. Foster & D. Hultsch (Eds.), *Health & Aging in British Columbia: Vulnerability and resilience* (p. 199-223). Victoria, BC, Canada: Western Geographical Press.
9. Gonzalez, D., **Kowalski, K.**, Dubrowski, A., & Carnahan, H. (2007). Visual Field Magnification and Touch Perception When Exploring Surfaces with the Index Finger and a Rigid Instrument. *Human Factors: The Journal of the Human Factors and Ergonomics Society*, 49(4), 679-687.



University
of Victoria

Graduate Studies

PROGRAMME

The Final Oral Examination for the Degree of

DOCTOR OF PHILOSOPHY

Interdisciplinary Studies

(School of Exercise Science, Physical and Health Education
& Department of Psychology)

Kristina Kowalski

2008

University of Victoria

MSc

2005

University of Waterloo

BSc

**“The Effects of a Supervised Walking Program on the
Cognitive Function, Gait, Fitness and Behaviour of Inactive
Older Adults”**

Tuesday, August 19, 2014

10:00am

McKinnon Building, room 0025

Supervisory Committee:

Dr. Ryan Rhodes, School of Exercise Science, Physical and Health Education, University of Victoria (Co-Supervisor)

Dr. Holly Tuokko, Department of Psychology, UVic (Co-supervisor)

Dr. Patti-Jean Naylor, School of Exercise Science, Physical and Health Education, UVic (Member)

Dr. Stuart MacDonald, Department of Psychology, UVic (Member)

External Examiner:

Dr. Teresa Liu-Ambrose, Department of Physical Therapy, University of British Columbia

Chair of Oral Examination:

Dr. Richard Keeler, Department of Physics and Astronomy

Abstract

Background & Objectives: Participation in cognitive, social and physical activity (PA) may play a role in prevention of cognitive decline in older adults. Literature supporting the benefits of healthy lifestyle behaviours, especially PA, on cognition continues to accumulate. Moreover, a strong association between gait and cognitive health is increasingly being recognized. Yet, a firm understanding of the individual differences and between-person effects of PA on cognition and gait of older adults is lacking. Thus, the primary objective of the main study was to distinguish the within- and between-person sources of variation in PA on cognition in a group of inactive older adults. Study 2 examined the within- and between-person effects of a) PA on gait and b) gait on cognition. Study 3 examined the social cognitive predictors of walking.

Methods: The between- and within-person of PA on cognition were examined in a single-group longitudinal design. Participants (n=159) were enrolled in a four-month supervised walking program and provided with materials and coaching to promote the adoption of behaviours to enhance and maintain their cognitive health. Group participants walked at least 3 times per week at a brisk intensity and were encouraged to get 150 minutes of moderate-to-vigorous PA per week. At baseline, participants completed measures of social cognitive predictors of walking. Assessments of cognition, diet, fitness, gait, PA and other health behaviours occurred at baseline, and at 6, 9, 12, and 16 weeks follow-up.

Results and Discussion: Multilevel models revealed significant: 1) within-person effects of PA on select measures of executive functioning and 2) consistent between-group effects of cognitive activity, but not other lifestyle behaviours, on cognition. Study 2 revealed consistent significant 1) within-person effects of PA on gait velocity and stride time variability during dual task walking, 2) between-person effects of PA on gait velocity during both dual task and normal walking, and 3) between-person effects of gait velocity and stride time variability on cognition during both normal and dual task walking. Significant within-person effects of gait on cognition were limited. In study 3, self-monitoring emerged as a significant predictor of change in walking.

Conclusion: Distinct patterns of within- and between-person effects on the PA, cognition and gait were observed. Further work will need to continue to clearly elucidate the within- and between-person sources of variation in relations between PA, gait and cognition using well-designed longitudinal and experimental designs.

Awards, Scholarships, Fellowships

2012	Graduate Award, Saanich Rotary Club
2012	Sara Spencer Foundation Research Fellowship
2009-2011	SSHRC, Canada Graduate Scholarship, Doctoral
2007-2009	Alzheimer Society of Canada, Research Award

2006-2009	President's Research Scholarship Award, UVic
2006	SSHRC, Canada Graduate Scholarship, Masters
2006	Canadian Driving Research Initiative for Safety Vehicular in the Elderly, Research Award

Presentations

1. Olmstead, D., **Kowalski, K.**, Townsend, C., Mulligan, G., Gaul, C., Hundza, S., & Rhodes, R. (2014). Fitness, Gait, And Participation Of Previously Inactive Older Adults Over A 12-week Supervised Walking Program. 2014 American College of Sports Medicine Annual Meeting. Orlando, Florida, USA. May 2014 (poster).
2. Rhodes, R. & **Kowalski, K.** Let's get physical: The how, the way, and what it can do for you. International Day of the Older Persons, Victoria, BC, Canada. October 2013 (oral)
3. **Kowalski, K.**, Rhodes, R., Naylor, P.J., Tuokko, H. & MacDonald, S. Direct and Indirect Measures of Physical Activity in Older Adults. Society of Behavioural Medicine Annual Meeting, San Francisco, California, USA. March 2013 (poster).
4. **Kowalski, K.** & Tuokko, H. To Drive or Not to Drive: What are the Options? Community Forum 2008, Victoria, BC. February 2008 (oral).
5. **Kowalski, K.**, Tuokko, H., Strauss, E. & Hultsch, D. Driving Restriction and Cessation in Older Adults with Mild Cognitive Impairment. Annual Meeting of the International Neuropsychological Society, Waikoloa, Hawaii USA. February, 2008 (poster)
6. Stepaniuk, J., **Kowalski, K.**, Tuokko, H., Hultsch, D., & Strauss, E. Who's behind the wheel? Self-imposed driving restriction and cessation in individuals with MCI. Canadian Association of Gerontologists Annual Conference. London, Ontario, Canada. October 2008.
7. Lindstrom-Forneri, W., **Kowalski, K.**, Tuokko, H., Malakuti, K., Branzan-Albu, A., Porter, M. The Process of Interdisciplinary Education: Re-design of a software tool for the self-assessment of driving behaviours by older adults. Canadian Association of Gerontologists Annual Conference. London, Ontario, Canada. October 2008.
8. Lindstrom-Forneri, W., **Kowalski, K.**, Tuokko, H., & Porter, M. Do Older Driver Attitudes And Beliefs Change Following A Self-Assessment? Canadian Association of Gerontologists Annual Conference. London, Ontario, Canada. October 2008 (Poster)
9. **Kowalski, K.**, Roy, E.A., Black, S.E. Tool and Action Recognition & Gesture Production in Left Hemisphere Stroke. Annual Meeting of the International Neuropsychological Society, Portland, Oregon, USA. February 2007 (Poster)
10. **Kowalski, K.** & Tuokko, H. To Drive or Not to Drive: Perceptions of Older Adults. Showcase of Health Research in Aging, Victoria, British Columbia, Canada. June 2007 (oral)
11. Carnahan, H., Gonzalez, D., Brydges, R., **Kowalski, K.**, & Dubrowski, A.. Haptic feedback for texture discrimination: From open to minimally invasive surgery. Association for Surgical Education. Houston, TX, May 2004.