



THE INAUGURAL

MULTIDISCIPLINARY PERSPECTIVES IN AGING RESEARCH

Student Symposium

MAY 12, 2016

York University
Toronto, ON

York University Centre for Aging Research and Education

Canadian Association on Gerontology-Student Connection



Multi-disciplinary Perspectives in Aging Research Symposium

Hosted by: The York University Centre for Aging Research and Education &

Canadian Association on Gerontology – Student Connection

Conference Agenda

May 12, 2016, 9 am – 4 pm

Behavioural Science Building, Room 163

York University

9:00 – 9:45	Registration/Breakfast
9:45 – 10:00	Welcome, YU-CARE/CAG-S
10:00 – 10:40	1st Keynote Presentation, Network dynamics and neurocognitive aging. <i>Dr. Nathan Spreng (Cornell University).</i>
10:40 – 11:00	Is sport good for older adults? A systematic review of psychosocial outcomes for older adults' sport participation. <i>Dr. Amy Gayman</i>
11:00 – 11:20	Aging and negotiating social stigma: Stereotypes and stairs. <i>Rachael Stone</i>
11:20 – 11:40	Exploring the value of sport participation on life satisfaction in adults 50+. <i>Rona El-Bakri</i>
11:40 - 12:00	Mitochondrial degradation in skeletal muscle with aging and exercise. <i>Chris Chen</i>
12:00 – 1:00	Lunch
12:30 – 1:30	Poster Session
1:30 – 2:10	2nd Keynote Presentation, A function-focused program of research in gerontological nursing. <i>Dr. Mary Fox (York University).</i>
2:10 – 2:30	Relationship between role conflict, role ambiguity, and inter-professional team collaboration among nurses caring for older adults in the intensive care unit (ICU). <i>Ike Ejesi</i>
2:30 – 2:50	Intergenerational community gardening and herbs production project – A green social enterprise in Toronto initiated by Nobel Institutions for Environmental Peace (NIEP). <i>Dr. Kazi Abdur Rouf</i>
2:50 – 3:10	Understanding outcomes of sport participation in older adults: Injury and chronic disease. <i>Shruti Patelia</i>
3:10 – 3:30	Do age-stereotypes affect self-esteem of older adults? <i>Maryam Bagherzadeh</i>
3:30 – 3:45	Closing Remarks

Keynote Speakers

Dr. Nathan Spreng (PhD) is an Assistant Professor and the director of the Laboratory of Brain and Cognition in the Department of Human Development at Cornell University. His research examines large-scale brain network dynamics and their role in cognition, and he uses advanced neuroimaging methods to better understand how the brain functions and changes as we age. Dr. Spreng is a Rebecca Q. and James C. Morgan Sesquicentennial Faculty Fellow, and he earned his PhD from the University of Toronto.



Dr. Mary Fox (RN, PhD) is an Associate Professor in the School of Nursing in the Faculty of Health at York University. Her research examines function-focused interprofessional interventions to improve outcomes during older adults' hospitalization using various qualitative and quantitative methodologies. She is a prior Ontario Ministry of Health Career Scientist and a current Ontario Ministry of Research and Innovation Early Researcher award recipient.



Is Sport Good for Older Adults? A Systematic Review of Psychosocial Outcomes of Older Adults' Sport Participation

Amy M. Gayman¹, Jessica Fraser-Thomas¹, Rylee A. Dionigi², Sean Horton³, & Joseph Baker¹

¹School of Kinesiology and Health Science, York University

²School of Exercise Science, Sport & Health, Charles Sturt University

³Department of Kinesiology, University of Windsor

Although sport is promoted as a vehicle to enhance health and well-being throughout the life course, little is known about the psychosocial benefits and costs associated with sport participation in older adulthood. A mixed studies systematic review of English-language, peer-reviewed, original research articles (from the earliest record until March 2015) was undertaken to identify psychosocial outcomes of sport for adults over age 65 and to determine whether sport provides psychosocial outcomes that are distinct from other forms of physical activity. Results suggest sport involvement later in life was related to ageing, cognitive/perceptual, emotional, social, and motivational outcomes but it remains unclear whether these effects were solely related to participation in sport. Additional work with increased attention to methodological design and participant recruitment is needed to better understand psychosocial outcomes of older adults' sport participation and to inform potential interventions. Recommendations to enhance the quality of future studies in the area will be discussed.

Aging and Negotiating Social Stigma: Stereotypes and Stairs

Rachael Stone¹, Will Gage¹, & Joseph Baker¹

¹School of Kinesiology & Health Science, York University, Toronto, ON

Older adults are faced with negotiating biopsychosocial changes while entrenched in a youth-oriented society. Research has shown age-stereotypes can influence older adult physical and psychological well-being; however this notion has not been examined regarding stair navigation. The present research investigates the influence of age-stereotypes on physical and psychological processes related to stair navigation for both healthy older adults and those with osteoarthritis. After establishing baseline psychological health, older adults (aged 50+ years; N=63) were randomized into control or stereotype-priming groups (i.e., reading a positive article vs. negative). Post-prime exposure, participants' stair motion was analyzed in addition to potential changes in their baseline psychological well-being (e.g., self-efficacy for stairs, stigma consciousness, etc.). Participants in priming groups were contacted four-weeks post-experiment to assess differences in article recall. Healthy adults in prime conditions had significantly worse self-efficacy and stigma consciousness compared to controls; however, those positively primed ascended and descended the stairs faster than negative. On the other hand, primed participants with osteoarthritis did not statistically differ from one another, but navigated the stairs significantly slower than healthy adults in any group. At four-week follow-up, those who were negatively primed during the experiment had significantly better recall than those who were positively primed. Considering ubiquitous media and health messages regarding the aging process, promoting positive stereotypes may be most beneficial for older adults undergoing biopsychosocial changes. With implications for built environments, health messaging, and medical communication, future research should continue to explore the potential impact of age-stereotypes.

Exploring the Value of Sport Participation on Life Satisfaction in Adults 50+

Rona El-Bakri, Rachael Stone, Shruti Patelia, & Joseph Baker
York University, Toronto, Canada

Despite the growing body of knowledge supporting the link between physical activity and life satisfaction, no research has examined the potential association between involvement in competitive sport and life satisfaction in later life. Based on previous work in the area arguing the benefits accompanying sport surpass those gained from exercise and physical activity alone (Dionigi, Baker, & Horton, 2011; Gayman, Fraser-Thomas, Dionigi, Horton, & Baker, 2015), this study explores the hypothesis that participation in competitive sport during older adulthood is associated with increased life satisfaction compared to age-matched peers. The following study will compare measures of life satisfaction (spanning facets of physical, emotional, and mental satisfaction) in diverse subsets of adults (i.e., master athletes, active adults, and sedentary adults) over the age of 50. Results from this study will help further our understanding of the types and frequencies of physical activity associated with higher levels of life satisfaction.

Mitochondrial Degradation in Skeletal Muscle with Aging and Exercise

Chris C.W. Chen and David A. Hood
Muscle Health Research Centre,
School of Kinesiology and Health Science, York University, Toronto, ON

In skeletal muscle, the progressive age-related loss of muscle mass and strength is known as sarcopenia. Alterations in muscle mitochondria are a contributing factor in the aging process. When mitochondria are no longer able to sustain the energetic requirements of the cell, selective degradative (“mito-phagy”) pathways are induced to promote the clearance of damaged mitochondria. In aged muscle, dysfunctional mitochondria generate reactive oxygen species (ROS) and this can impair quality control mechanisms that facilitate their removal. It remains unclear if mitophagy mediates this reduced response in aged muscle. To evaluate mitophagy in aged muscle, young (3 months) and aged (18 months) mice were assigned to three groups: control, acute exercise, or acute exercise plus 2 hours of recovery. Muscle mass was reduced by 50% in aged mice when compared to their young counterparts. Furthermore, aged animals displayed a 25% decrease in whole muscle mitochondria. This was accompanied by a 40% reduction in mitochondrial respiration in aged animals. In response to exercise, aged mice exhibited ~30% declines in running performance, and increased lactic acidosis by 2.1-fold. Our findings indicate that the expression of mitophagy-related proteins and their localization to mitochondria are not decreased in aged muscle. However, attenuation of exercise-induced mitophagy in response to aging may contribute to mitochondrial accumulation and dysfunction in aged muscle.

Relationship between Role Conflict, Role Ambiguity, and Interprofessional Team Collaboration Among Nurses Caring for Older Adults in the Intensive Care Units (ICU).

Ike Ejesi
School of Nursing, York University

Older adults admitted to the ICU have complex health care needs due to decreased physiologic tolerance and multiple comorbidities. The interplay of multiple comorbidities, iatrogenic complications and functional decline lead to increased need for polypharmacy resulting in the complex state of frailty that predispose this population to poor health outcomes and greater care needs. There is paramount need for clarity of roles as nurses collaborate with physicians, and other health care professionals in the delivery of care to older adults in the ICU. The reliance of the various healthcare teams on each other's specialized skills in delivery of care leads to multiple subordination, role conflict, role ambiguity and deficiency in collaboration. Although significant body of research exist on the relationship between individual's role stress and their consequences on the individual, a clear theoretical understanding of the relationship between role stresses and their antecedents or consequences on the team is very limited and where they exist, they have been inconsistent. Guided by the theoretical framework that proposes that working under stress such as role conflict and role ambiguity harms team performance and patient outcome, this study, explores the relationship between role conflict, role ambiguity and interprofessional team collaboration among nurses caring for older adults in critical and intensive care settings.

Intergenerational Community Gardening and Herbs Production Project - A Green Social Enterprise in Toronto Initiated by Nobel Institutions for Environmental Peace (NIEP)

Dr. Kazi Abdur Rouf

Seniors are very good at homestead gardening, and seeds processing, seeds preservation in a traditional ways. School students and neighboring youths are learning seeds productions technology at the household level in the NIEP community gardening program in Toronto. The Nobel Institutions for Environmental Peace (NIEP) pots herbs production project intends to engage Bed Ford marginalized families and Black Creek Community Gardeners (children, youths, adults and seniors) in Toronto to encourage backyard homestead gardening and pots herbs productions for their home grown source of fresh organic vegetables, herbs/food income. This individual voluntary pilot project has another component: organic seeds production, seeds preservation and planting seeds in the homestead gardening. In the project, seeds processing and preservation activities are done by the seniors using youths. NIEP intends to assist them (exchange of know-how among grandmothers and grandchildren, neighboring seniors and youths) engaging in permaculture green social enterprises as a source of earning and create jobs in the community. The project also targets herbs growers be permaculture entrepreneurs in the long run. This pilot project is a green social enterprise, which has three folds benefit- the project itself can earn revenue to cover its costs and project herbs growers can earn income. Intergenerational know-how exchange (seniors' traditional know-how organic herbs production exchange between seniors and young/school students. The earned income of the project will be reinvested to expand its services to new outreach. Hence this green enterprise herbs production project has plenty of room for growth in Toronto and recovers project costs.

Understanding Outcomes of Sport Participation in Older Adults: Injury and Chronic Disease

Shruti Patelia, Rachael Stone, Rona El-Bakri, & Joseph Baker
York University

The aging process often includes declines in physical capabilities, subsequently increasing risks for injury and related complications. Interestingly, researchers and policy makers continue to highlight the health benefits of physical activity for older adults although the prevalence of injury and chronic conditions in active older age groups remains considerably under-researched. Older adults participating in Masters sport have been presented as an ideal model for successful aging and as a result, Masters athletes are a particularly interesting group to investigate issues of aging, due to their continued participation in higher than average levels of physical activity and competitive sport. This project is currently exploring the rates and types of physical injuries and chronic conditions experienced in groups of older adults aged 50 years and above, that differ by activity level (i.e., Master Athletes, moderately-active adults, and sedentary adults). Preliminary results have indicated that Masters athletes have higher rates of all types of injuries, but a decreased prevalence of chronic conditions compared to the other activity groups. In addition to expanding our limited knowledge of injuries and sport within older adults, results from this study will help to clarify whether Masters athletes reflect the gold standard for successful aging.

Do Age-Stereotypes Affect Self-Esteem of Older Adults?

Maryam Bagherzadeh
Specialized Honours Bachelor of Science, Kinesiology and Health Science, York University

Given the increase in the number of older adults worldwide, and the social implications of these demographic changes, understanding the biopsychosocial processes of aging amongst this aging population is crucial. One category of variables that negatively influence biopsychosocial processes are age stereotypes and ageism. Interestingly, the direct impact of age stereotypes on self-esteem amongst older adults has not yet been determined. This study examined the relationships between age stereotype priming (positive, negative, control) and a global measure of self-esteem amongst older adults above the age of 50 years. Surprisingly, findings indicated that explicitly priming age stereotypes, either positively or negatively, does not impact on self-esteem of older adults. While implications such as sampling bias, age stereotype priming via task-specific stereotypes, and the absence of an assessment of the longitudinal impact of ageism on self-esteem may have influenced the conclusions drawn from this study, results suggest older adults' self-esteem is resistant to age stereotypes.

Sex Differences in the Influence of Aspects of Physical Health on Neurocognitive Aging

Christina J. van den Brink¹, Udi M. Alter, and Gary R. Turner¹

¹Department of Psychology, York University, Toronto, ON

A growing body of literature suggests that physical health influences cognitive ability in later life. Executive functions (EF) help us interact with the environment in a goal-directed manner- encompassing abilities such as planning, problem-solving and attention and are particularly susceptible to age-related declines. Though research has found associations between executive functioning and physical health, the measure of physical health used is often variable, resulting in inconsistent findings. Moreover, whether the effects of these metrics are uniform across males and females is yet to be established. We addressed these questions by evaluating the impact of cardiorespiratory fitness and physical activity levels on EF. In a sample of 61 older adults, cardiorespiratory fitness was found to be associated with EF in older females, but not males. In contrast, we found that physical activity levels were predictive of executive functioning in males. Engagement in vigorous activity, like running, was most highly associated with cognition in females. For males, this effect was driven by engagement in moderate physical activity, such as lifting and carrying objects. This suggests that the type of exercise engagement may have a critical role in the preservation of EF in aging in a sex-dependent manner. Together, this shows that there are differences between the predictive utility of various physical health metrics between males and females- a consideration of vital importance when designing interventions to optimize aging brain health and cognition.

Aging Skeletal Muscle, PGC-1 α and Exercise

Heather N. Carter, Michael Shuen, Karli Gavendo and David A. Hood

Muscle Health Research Centre, York University, Toronto, Ontario

PGC-1 α is a regulator of mitochondrial content in skeletal muscle. With advancing age it is known that expression of this transcriptional coactivator is lower than in young muscle, however, the molecular mechanisms influencing this decline have not been examined. Furthermore, it has not been investigated whether the transcription of the PGC-1 α gene is altered in aging muscle. Thus, we electroporated a 1.5kb PGC-1 α -luciferase construct into the tibialis anterior muscles of young (5 mo) and aged (35 mo) FBN344 rats. Aged muscle exhibited an ~61% decrease in transcriptional activity of the PGC-1 α promoter. To determine whether exercise may reverse the observed transcriptional deficiency, a single 40 min bout of contractile activity was performed. In young muscle, contractile activity-induced PGC-1 α transcription increased by ~1.5-fold and returned to baseline with recovery. This was accompanied by a 1.2-fold increase in PGC-1 α mRNA during the recovery period. In aged muscle, transcription increased ~1.7-fold with contractile activity and remained elevated with the recovery period. PGC-1 α mRNA responded with a 1.6-fold increase during recovery in the aged group. To gain insight into epigenetic regulation of the PGC-1 α promoter with aging, we are presently performing bisulfite sequencing and examining multiple CpG sites adjacent to the transcription start site. Our data suggest that aged muscle exhibits numerous impairments which likely contribute to the attenuation of PGC-1 α transcription in resting muscle. Despite these basal differences, contractile activity is sufficient to elicit increases in PGC-1 α gene expression, underscoring the importance of exercise to potentially correct age-related deficits in mitochondrial homeostasis.

Physical Activity, Cognitive Stimulation & Cognitive Function in Younger, Middle-Aged & Older Adults: Analysis of the Midlife in the US Survey (MIDUS)

Alina Cohen

Department of Kinesiology and Health Science, York University

The prevalence of cognitive decline and dementia is on the rise and effective curative treatment options remain elusive. Therefore, finding lifestyle variables that may preserve cognitive function and delay cognitive decline are of the utmost importance. Therefore, the aim of this study was to explore the inter-relationships between physical activity, cognitive stimulation, obesity, age, and cognitive function (measured as episodic memory and executive function). This study used data from the Midlife in the United States (MIDUS) national longitudinal survey conducted in 1995/1996 and 2004/2005. The inter-relationships between physical activity, obesity, cognitive stimulation, and cognitive functioning were explored using general linear models and ANCOVAs. Results indicate that executive function and episodic memory scores declined with age. However, at all ages, individuals who engaged in moderate to vigorous physical activity often or sometimes and regularly engaged in cognitively stimulating activities reported less cognitive decline. Thus, the cumulative effects of physical activity and cognitive stimulation appear to be effective means for maintaining cognitive functioning at every age group, as well as reducing the risk for cognitive decline and dementia.

Influence of Hearing Loss on Neuropsychologists' Assessment and Treatment Best Practices

Dupuis, K., Yusupov, I., Vandermorris, S., Murphy, K., Rewilak, D., Stokes, K., & Reed, M.

Impairments of hearing and cognition increase in prevalence in the older adult population. In fact, a disproportionate number of people with significant cognitive decline (i.e., dementia) have been shown to experience hearing loss. This poses a challenge for neuropsychologists who offer assessment and treatment of cognitive disorders. This project examined whether information gained from hearing screening tests were used to modify neuropsychological practice and improve outcomes for patients with hearing impairment. A sample of 24 clients (*Mage* = 71 years) from a geriatric hospital-based Neuropsychology clinic participated. A research assistant administered a hearing-screening test; the majority of the participants had mild or moderate hearing loss. The five neuropsychologists were asked to comment on their patient's hearing status both before and after they were shown their client's results on the hearing screening test. The neuropsychologists were relatively accurate (74%) at estimating normal hearing or mild hearing loss in their clients, largely based on interactions during the initial interview. The majority of errors were underestimates of hearing loss (e.g., normal for mild, mild for moderate). The most common modifications to routine practice were speech strategies and paying attention to preserving a quiet testing space. Following disclosure of objective hearing screen results, the neuropsychologists were able to optimize treatment recommendations (e.g., recommend hearing assessment) for older adults based on their enhanced knowledge about their patient's hearing status.

Development and Validation of the Memory Impact Questionnaire

Komal T. Shaikh¹, Preeyam K. Parikh², Angela K. Troyer², and Jill B. Rich^{1,2}

¹Department of Psychology, York University, Toronto, Ontario, Canada. ²Neuropsychology and Cognitive Health Program, Baycrest Health Sciences, Toronto, Ontario, Canada.

Many older adults experience age-normal memory changes that can impact complex activities of everyday living. Whereas qualitative interviews have been useful in gaining insight into the experience of older adults who are facing memory difficulties, there is a need for reliable and valid measures that quantify the impact of memory changes in daily living. The primary objective of this study is to develop and validate a new instrument, the Memory Impact Questionnaire (MIQ). We will assess the psychometric properties of this measure, including analyses of factor structure, convergent and discriminant validity, internal and test-retest reliability. This project will also provide normative data for this questionnaire on 200 community dwelling older adults, who are 55-90 years of age. We intend for the finalized questionnaire to provide subscale scores for responses across four domains which have previously been identified as being impacted by age-related memory changes. These domains include changes in feelings and views of the self, changes in relationships and social interactions, changes in work and leisure activities, and deliberate increase in compensatory behaviours. Here, we present pilot data on 40 older adults who have completed the Memory Impact Questionnaire. With an aging population, it is increasingly important to develop tools that can help capture the experience of older adults to evaluate and eventually improve support programs for this population.

Investigating whether the Mnemonic Benefits of the Self-Reference Effect are Sustained Over an Extended Period of Time in Healthy Aging

Nicole Carson¹, R. Shayna Rosenbaum^{1,2}, Victoria M. Smith¹, Morris Moscovitch^{2,3,4}, & Kelly J. Murphy^{3,4}

¹Department of Psychology, York University, Toronto, Canada, ²Rotman Research Institute, Baycrest Health Sciences, Toronto, Canada, ³Department of Psychology, Baycrest Health Sciences, Toronto, Canada,

⁴Department of Psychology, University of Toronto, Toronto, Canada

The Self-Reference Effect (SRE), enhanced memory for information encoded through self-related processing, has been established in healthy older adults for stimuli such as trait adjective words and, more recently, for more ecologically valid material such as narrative information. It is unknown, however, whether the mnemonic benefits of the SRE are retained following the initial testing session and thus whether this technique may sustain remembering over longer periods of time. The present study investigated the SRE in healthy older adults over two testing sessions. During the first session, participants studied trait adjective words and narratives under three encoding conditions: self-reference, semantic, and structural. The study portion was followed by tests of recall and recognition. Participants then returned for a second test session at least one week later and were retested on the material they had studied during the initial study session. Results indicate that although there is a decrease in overall recognition for trait adjectives, the SRE is retained after at least one week. An SRE for narrative information is also suggested at one-week follow-up on a recognition test. These results highlight the potential of the SRE as a valuable intervention strategy that insulates memory for self-related material over an extended period of time.

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Keynote Speakers:

- Dr. Nathan Spreng, Cornell University
- Dr. Mary Fox, York University