The Kinesiology and Health Science Graduate Student Association Presents the 4th Annual

BROADEN HORIZONS

A CROSS-DISCIPLINARY RESEARCH CONFERENCE

Open to all Kinesiology and Health Science Students

CONFERENCE PROGRAM

Friday July 14th, 2023
Life Sciences Building (LSB)
8am-4pm

YORK
UNIVERSITÉ
UNIVERSITY

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We are excited to welcome you all to the 4th annual Broaden Horizons Conference hosted by the Kinesiology and Health Science Graduate Student Association (KAHS GSA)!

All guest speaker and student presentations will take place in LSB room 106. Food and beverages will be served in the LSB lobby. There will be seating in the LSB lobby and outdoor LSB courtyard.

We would like to thank Dr. Alison MacPherson and Dr. Chris Ardern for supporting this conference. We would like to thank all our guest speakers for taking the time to participate and attend the conference and to our judges for fairly evaluating all student presentations. We would like to further extend our thanks to Dr. Heather Edgell, GSA members and all conference attendees, as none of this would be possible without all of you!

Finally, we would like to thank the York University YU eats Chartwell service for catering the event.

We hope you enjoy the conference!

Sincerely,

Alita Gideon & Pierre Lemieux
KAHS GSA Conference Co-Chairs
https://www.yukahsgsa.com/

AGENDA

8-8:30AM
BREAKFAST & REGISTRATION

8:30-8:40AM
OPENING REMARKS WITH
DR. CHRIS ARDERN
(ASSOCIATE DEAN OF RESEARCH, FACULTY OF HEALTH)

8:40-9:10AM
SESSION 1:
STUDENT PRESENTATIONS

9:10-9:50AM
GUEST SPEAKER:
DR. EMMANUEL NWADOZI

9:50-10:00AM
COFFEE BREAK

10:00-10:40AM
GUEST SPEAKER:
DR. HEATHER JOHNSTON

10:40-11:20AM
GUEST SPEAKER:
DR. ARTHUR CHENG

11:20AM-12:35PM
SESSION 2:
STUDENT PRESENTATIONS

12:35-1:35PM
LUNCH

PROFESSIONAL HEADSHOTS OFFERED

NETWORKING WITH GUEST SPEAKERS, FACULTY/STAFF AND STUDENTS

1:35-2:50PM
SESSION 3:
STUDENT PRESENTATIONS

2:50-3:00PM
COFFEE BREAK

3:00-3:40PM
GUEST SPEAKER:
DR. DIANE SEPA-KISHI

3:40-4PM
AWARD CEREMONY &
CLOSING REMARKS WITH
DR. HEATHER EDGELL
(KAHS GSA Advisor)

Guest Speaker Information

All talks will take place in LSB room 106

Speaker 1: Dr. Emmanuel Nwadozi (9:10-9:50am)

Emmanuel graduated from York University's Kinesiology & Health Science program with a specialization in Integrative molecular physiology of exercise (2013). Subsequently, he completed his PhD under the supervision of Professor Tara Haas (2020), studying the molecular regulation of skeletal muscle angiogenesis in the context of diabetes. Currently, Emmanuel is a post-doctoral researcher at Uppsala University, Sweden, investigating the regulation of vascular hyperpermeability in non-small cell lung cancer.

Speaker 2: Dr. Heather Johnston (10-10:40am)

Dr. Heather Johnston works as the Ralph McGinn Post-Doctoral Fellow, funded through WorkSafeBC at the Institute for Work and Health, an independent, not-for-profit organization that conducts and shares actionable research to promote, protect and improve the health and safety of working people. Johnston's current research explores the association between work-related muscle skeletal disorders (MSD) and work-related psychological injuries to improve occupational health and safety (OHS) programs, policies, and practices.

Speaker 3: Dr. Arthur Cheng (10:40-11:20am)

Dr. Arthur Cheng is an assistant professor in the School of Kinesiology and Health Sciences. His primary research interests are investigating the cellular mechanisms of skeletal muscle weakness and fatigability utilizing a variety of methodological approaches from in-vivo human exercise studies to in-vitro single muscle fibre approaches. A specialization of his research is understanding the role of calcium in modulating muscle strength and power generation during exercise.

Speaker 4: Dr. Diane Sepa-Kishi (3-3:40pm)

Dr. Diane Sepa-Kishi earned her PhD in Kinesiology and Health Science from York University. During her time in graduate school, Diane found that she enjoyed her time in the classroom as a teaching assistant and decided to pursue careers with a focus on education and empowering others. Her first position after graduate school was as an Instructional Design Specialist at the Michener Institute of Education at the University Health Network in Toronto. She joined the Center for Graduate Career Success in 2020. In her position as Senior Product Manager, Diane oversees the on-boarding process for new institutions, provides customer support to subscribing partners, and assists in the creation of new learning materials.

Student Presentation Award Information

All presentations will be judged by three separate adjudicators. Please view the "Student Presentations Rubric" section (page 18) for a copy of the evaluation rubric. Winners will be announced during the award ceremony (3:40-4pm), on the day of the conference.
NOTE- All GSA member student presenters are NOT eligible to win any of the prizes.

$500 EARLY-BIRD PRIZE

Students who submitted an abstract before the early-bird deadline (June 12th, 2023), are automatically entered to win the $500 prize (view NOTE above for exception). Prize will be awarded based on early abstract submission, abstract and conference presentation quality, evaluated via rubric criteria.

We would like to thank **Dr. Alison MacPherson** for generously donating the prize money and supporting our conference!

$300 ($100 X 3) TOP 3 PRESENTATION PRIZES

All student presenters (view NOTE above for exception) are eligible to win. Prizes will be awarded based on conference presentations, evaluated via rubric criteria.

We would like to thank **Dr. Chris Ardern** for generously donating the prize money and supporting our conference!

Student Presentation Sessions Overview

All talks will take place in LSB room 106

Session 1 (8:40-9:10am)

8:40-8:55am: Bliss Wong

8:55-9:10am: George Nader

Session 2 (11:20am-12:35pm)

11:20-11:35am: Katerina Disimino

11:35-11:50am: Luke Flewwelling

11:50am-12:05pm: Shivam Ghandi

12:05-12:20pm: Brian Lam

12:20-12:35pm: Sahib Singh Madahar

Session 3 (1:35-2:50pm)

1:35-1:50pm: Tanaz Fouladirad

1:50-2:05pm: Noor Hamam

2:05-2:20pm: Natan Levi

2:20-2:35pm: Neushaw Moradi

2:35-2:50pm: Andrew Richards

A BIG THANK YOU TO OUR JUDGES!

SESSION 1	SESSION 2	SESSION 3
- Luca Delfinis	- Matthew Le	- Sebastian D'Amario
- Dr. Heather Johnston	- David Ondima	- Tania Pereira
- Deanna Vervaecke	- Victoria Sanfrancesco	- Dr. Christopher Perry

Student Presentation Abstracts

Presenter: Bliss Wong

Title: Transnational Adoptees' Identity, Sense of Belonging, and the Role of Sport

Abstract: Transnational adoption is the process where parents in one country adopt a child born in another" (Brocious, 2017, p.321). As a result, the development of identity and sense of belonging of transnational adoptees is particularly complex, dynamic, and contextual. Indeed, transnationally adopted children have been found to operate within a middle space between their associated racialized society and white society (Wills, 2012), whereby they may feel a lack of belonging to either group (Tuan, 1998 as cited by Goss, 2010; Park Nelson, 2010). This isolation could be reduced via participation in sport, which has been shown to increase a sense of belonging (Nakamura, 2019). The focus of the proposed study is to examine how sport participation could influence transnational adoptees' formation sense of identity and sense of belonging. This study is informed by Bourdieu (1986) understanding of social capital, because membership in a sport is strongly associated with social capital as well as inspiring feelings of belonging and solidarity (Claridge, 2020). This research will employ bibliographical narrative methodology. The stories that emerge may offer insights into how the context of sport influences and constructs transnational adoptees' experience of belonging and their sense of identity. The technique of snowball sampling will be utilized to contact potential research participants. Semi-structured interviews will be conducted, and data will be thematically analyzed (Braun & Clarke, 2006). The research will be beneficial in understanding how sport could shape the sense of belonging of transnational adoptees and provide insight into how they navigate the middle space of their identities (Twine, 2001 as cited in Goss, 2010).

Presenter: George Nader

Title: The effects of critical limb ischemia on skeletal muscle pericytes

Abstract: Skeletal muscle is supplied with a network of blood vessels to guarantee the optimal delivery of oxygen and nutrients. The smallest blood vessels, named capillaries, are composed of a single layer of endothelial cells and are covered partially on their outer surface by cells called pericytes. Pericyte/endothelial interaction plays a pivotal role in maintaining vessels' stability and functionality. Critical limb ischemia (CLI), the severe reduction of blood flow to the lower extremities as seen in peripheral artery disease, causes oxidative and nutrient-deprivation stress and ultimately death of skeletal myocytes. Muscle tissue damage will induce recovery processes such as myogenic regeneration and angiogenesis (the formation of new capillaries from already existing ones) leading to full recovery in the optimal scenario. However, a lot of patients with CLI show defective recovery with abnormal fibrosis and fat accumulation that compromise muscle strength and microvascular dysfunction where the newly formed capillaries are structurally and functionally abnormal. These abnormalities might be explained by pericyte dysfunction and/or phenotype change. In fact, some studies have shown that cultured pericytes can convert into other cell types. Thus, the purpose of my thesis is to assess the effects of ischemia on skeletal muscle

pericytes. We hypothesized that ischemia would induce pericyte proliferation and differentiation into adipocytes (fat cells), fibroblasts (collagen-producing cells), and/or myocytes (muscle cells). Two mice models are used: 1) NG2/DsRed mice (that express DsRed protein under the control of the pericyte NG2 promoter) for histological analysis; 2) Tamoxifen inducible NG2/Cre-Ribotag mice that produce a modified exon 4 (tagged with hemagglutinin (HA) epitope) on the RPl22 gene specifically in NG2+ cells. This enables pericyte mRNA to be purified and analyzed specifically by using magnetic beads attached to anti (HA) antibody. 8-week-old mice underwent unilateral femoral artery ligation surgery to induce muscle ischemia. Some mice were injected with EdU, which marks proliferating cells. Muscles were collected at 1-, 4-, 8- or 14-days post-ligation. The histological analysis of the EDL muscle of NG2/Dsred mice showed that pericyte proliferation was greatest from day 4 to 7 post-ligation and at less level from day 8 to 10; this corresponded with a significant increase in pericyte number. Moreover, distinct pericyte phenotypes such as peri-vascular, adipocyte-like, and myocyte-like pericytes were observed in the ischemic muscle. Gene expression measurements showed that ischemia disrupted factors that regulate pericyte/endothelial interaction. In the ischemic muscle, pericytes increased the expression of genes that are markers of adipocytes, differentiating myocytes and fibroblasts. Interestingly, culturing pericytes under hypoxic and nutrient deprivation conditions (components of the ischemic environment) was sufficient to induce their phenotype change towards myocytes while also decreasing their expression of type 1 collagen. Overall, these data suggest that ischemia disrupts pericyte/endothelial interactions to facilitate pericyte proliferation and differentiation into other cell types. This study will enhance our understanding of pericyte behavior in response to CLI, to allow for potential manipulation of their role and fate to support the improved recovery of the ischemic muscle. Funded by NSERC and CIHR.

Presenter: Katerina Disimino

Title: Do parents' intentions translate into behaviours? Examining parental support behaviours and device-measured physical activity among children and youth with disabilities

Abstract: Purpose: Many children and youth with disabilities (CYD) do not engage in sufficient physical activity (PA), warranting the investigation of strategies to promote enhanced PA engagement. Limited research has explored the relationship between parental support for PA and child PA among families of CYD. Moreover, intentions to engage in parental support for PA often fail to translate into behaviour. The multi-process action control framework (M-PAC) serves as a tool for understanding this intention-behaviour gap and more optimally fostering parental support for PA. Guided by the M-PAC framework, this study examined the relationship between intentions, regulatory behaviours, and support behaviours with respect to parental support for PA and how, in turn, parental support for PA behaviours are related to child PA behaviours. Methods: Data were collected cross-sectionally through the pan-Canadian National PA Measurement study. Parents (N=148; 89% mothers) of CYD aged 5 to 17 (71% boys; 51% developmental disabilities) completed an online questionnaire measuring variables related to parental support for PA on 5-point Likert scales (intentions, 1=strongly disagree to 5=strongly agree; regulatory behaviours, 1=never/rarely to 5=daily; support behaviours, 0=none to 4=daily). Child PA behaviours (i.e., step counts) were measured over a 28-day period via Fitbits. A regression (path) analysis was

conducted using the statistical software R. Mean scale scores (intentions, regulatory behaviours, and support behaviours) and median step counts were the observed variables in the model. Results: On average, parents had high intentions to support their children's PA (Med=4, IQR=1), engaged in regulatory behaviours once per month (Med=2, IQR=1.19), and provided support for their children's PA "sometimes" (Med=2, IQR=1.15), and children's step counts were 9654 steps per day (SD=3727). Aligning with the M-PAC framework, intentions (β=0.18, p=0.009) and regulatory behaviours (β=0.53, p<0.001) significantly predicted parental support for PA behaviours. In turn, parental support for PA behaviours significantly predicted child PA behaviours (β=0.18, p=0.031). Conclusions: This is one of few studies to examine parental support for PA in families of CYD. Findings identified theoretical predictors of parental support for PA and child PA, which is necessary for effectively informing intervention targets to bridge the intention-behaviour gap and enhance PA behaviours among CYD.

Presenter: Luke Flewwelling

Title: Effects of high-intensity interval training via electrical stimulation on the cellular mechanisms of fatigue in mouse skeletal muscle

Abstract: High-intensity interval training (HIIT) has gained popularity as a time-efficient alternative to traditional endurance training, offering similar or superior changes in physiological, performance, and health-related markers. Combining HIIT with electrical stimulation (ES) may benefit frail individuals or those with neuromuscular disorders, as ES can activate all muscle fibers regardless of volition. Previous studies on mice demonstrated improved fatigue resistance after 4 weeks of HIIT-ES, with increased peak torque and mitochondrial content. However, the relationship between this enhanced fatigue resistance and intracellular calcium ([Ca2+]i) transients remains unknown. This experiment aims to investigate whether heightened sarcoplasmic reticulum Ca2+ transients contribute to increased fatigue resistance in isolated mouse skeletal muscle fibers undergoing HIIT-ES. Torque frequency curves and fatigue tests will be conducted on each leg of the mice at the start of the experiment. The right leg will then undergo HIIT-ES training every second day for four weeks. HIIT will involve repeated maximal contractions (~3 min total exercise time) with 6 sets of 60 contractions and 5 min of rest between sets, mimicking human HIIT protocols. After four weeks, torque frequency curves and fatigue tests will be repeated on both legs to confirm increased fatigue resistance in the right leg and assess any cross-training effects on the left leg. The flexor digitorum brevis (FDB) muscles from each leg will be isolated and enzymatically dissociated to obtain intact single muscle fibers, and Fura-2 will be used to measure ([Ca2+]i transients. This study aims to enhance our understanding of endurance training, particularly HIIT, and investigate the mechanisms underlying fatigability and fatigue resistance following a training period. Furthermore, it may demonstrate the benefits of electrical stimulation as a training technique for individuals who are immobile or have injuries preventing conventional training methods.

Presenter: Shivam Ghandi

Title: Adiponectin-receptor agonism prevents right ventricular cardiac fibrosis, hypertrophy, and mitochondrial stress responses in the D2.mdx Duchenne muscular dystrophy mouse model

Abstract: Background: Duchenne muscular dystrophy (DMD) is an X-linked recessive neuromuscular disorder perpetuated by mutations to the DMD gene, which encodes for dystrophin protein. Cardiomyopathy is the leading cause of mortality in DMD patients. Considering that the heart is metabolically active, cardiac mitochondrial stress responses represent potential contributors to aberrant inflammatory and fibrotic outcomes in DMD. The degree to which fibrosis occurs across cardiac chambers is unknown through all stages of disease progression. Purpose: the relationship between cardiac fibrosis and mitochondrial metabolism warrants investigation in order to address clinical therapy development. The adiponectin-receptor agonist ALY688-SR (Allysta Pharmaceuticals) has previously demonstrated beneficial roles along both inflammatory and fibrotic pathways. Objective: determine the degree to which ALY688-SR administration in 4-week-old D2.B10-DMDmdx/2J (D2.mdx) mice influences chamber-specific fibrosis and corresponds to altered mitochondrial stress responses. Methods: D2.mdx mice were injected daily beginning at 7 days of age for 3 weeks at 15 mg/kg body weight (high dose drug; HD) or with saline (VEH-treated). Mice were compared to age-matched wildtypes (DBA/2J; WT). Results: histopathological assessments identified large elevations in left atrial and right ventricular (RV) collagen in VEH (+385%), which were both completely prevented by HD. Simultaneously, minimum Feret Diameter analysis revealed that D2.mdx mice (VEH and HD) had elevated cardiomyocyte size compared to WT in both ventricles, but this was only protected in RV by HD. In RV, pyruvate (NADH; Complex I)-supported mH2O2 emission assessed in the presence of a range of [ADP] was increased in VEH (+88%) vs WT but did not change with HD. ADP-stimulated respiration supported by pyruvate was lower in VEH (-44%) vs WT but was completely rescued by HD, which corresponds with prevention of fibrosis. Similar effects were observed in the RV when stimulating mitochondria with fatty acid oxidation substrates across a range of [ADP]. In LV, mH2O2 emissions supported by pyruvate were not different between groups. However, ADP-stimulated respiration supported by pyruvate was increased in VEH (36%) and HD (46%) vs WT whereas HD had no effect vs VEH. Inflammatory (IL-10) and fibrotic (TGF-β1, α-SMA) molecular signatures of the D2.mdx-induced chamber-specific fibrosis varied between intraventricular layers and were largely unaltered 24-hours post-drug administration. In summary: RV fibrosis in D2.mdx is related to lower mitochondrial pyruvate and fatty acid oxidation and increased complex I-stimulated mH2O2 emissions. Prevention of robust fibrosis and hypertrophy in the RV by ALY688-SR, which was demonstrated for the first time, may involve partial mitochondrial reprogramming.

Presenter: Brian Lam

Title: Muscle contractile activity modulates miRNA biogenesis and the angio-adaptive paracrine signaling between myocytes and endothelial cells

Abstract: Background: The capillary network is a key determinant of skeletal muscle function. It ensures optimal matching between muscle blood flow and the metabolic needs of contracting myofibers. Muscle capillaries display remarkable plasticity and can grow in response to prolonged endurance training through the process of exercise-induced muscle angiogenesis. MicroRNAs (miRNAs) are small functional RNA molecules that could influence muscle capillarization by regulating the expression of positive and negative angiogenic factors in cells. MiRNAs can function both endogenously or be secreted to facilitate the paracrine and endocrine signaling between cells. Although several studies have reported the expression of exercise-induced miRNAs in skeletal muscle, some gaps in knowledge remain. First, the impact of exercise on the regulation and function of the miRNA biogenesis machinery remains largely unknown. Secondly, the angiogenic role of exercise-induced miRNAs secreted from muscle cells on the neighbouring endothelial cells has never been investigated. Methods: Electrostimulation was used, as an exercise-like stimulus, to investigate the effect of exercise on the biogenesis of miRNAs in differentiated C2C12 myotubes and their angiogenic role on primary mouse skeletal muscle endothelial cells (mSMECs). The expression and function of the miRNA biogenesis machinery was assessed by measuring Drosha, Dicer1, DGCR8, XPO5 as well as selected primary and mature miRNA levels in C2C12 cells. nCounter miRNA expression panel measured the differential expression of 577 murine miRNAs. To assess the capacity of myotube-derived miRNAs to modulate microvascular plasticity, mSMECs were subsequently incubated with C2C12-derived exosomes for 24-hour and the resultant effect on endothelial cell proliferation and migration was evaluated. Results: Our results indicates that (1) electrostimulation increases the expression of DROSHA protein in C2C12 cells; (2) electrostimulation induces an increase (≥1.5-fold change) in 40 different intracellular miRNAs and 120 different secreted-miRNAs in C2C12 cells; (3) exosomes derived from these C2C12 stimulate mSMEC proliferation and migration. Conclusion: Our findings bring proof of concept that exercise drives changes C2C12-derived miRNAs. Further investigations are required to identify the key vesicular miRNAs that enhance myocyte-endothelial intercellular communication and could support exercise-induced muscle angiogenesis.

Presenter: Sahib Singh Madahar

Title: Single amino acid mutation in TRAF1 reduces inflammation and can protect mice from LPS-induced sepsis

Abstract: Rheumatoid arthritis (RA) is a chronic autoimmune disease characterized by persistent and abnormal inflammation leading to the destruction of cartilage and bone. This disease affects approximately 1.2% of Canadians aged 16 years and older, with a higher incidence and prevalence in females compared to males. Recent studies show that the tumour necrosis factor receptor associated factor 1 (TRAF1) has a dichotomous role in the immune system, making it an excellent candidate to target in the development of RA therapies. Our lab has recently identified a single amino acid mutation in TRAF1 in human monocyte cells which can reduce their inflammatory responses when stimulated with lipopolysaccharide (LPS). To this end, we have generated a knock-in mouse model to determine whether these results translate to a mouse model with the same mutation in TRAF1. This mutation selectively targets TRAF1 to limit lymphocyte activation while reducing the production of pro-inflammatory cytokines in macrophages. Protection from

LPS-induced sepsis is measured by subjecting mice to a lethal dose of LPS and performing survival curves. Mice are subjected to a sublethal dose of LPS to measure inflammatory cytokine production from the serum using the LEGENDplex immunoassay. Primary bone marrow derived macrophages are treated with LPS for in-vitro experiments. These experiments include techniques such as real-time quantitative polymerase chain reaction (RT-qPCR), western blot and flow cytometry to measure levels of TRAF1, NF-κB activity (IκBα, p-IκBα, p50, and p65) and pro-inflammatory genes (TNFα, IFN-β, IL-1β, and IL-6). Preliminary results indicate that the knock-in mouse model exhibits a reduced inflammatory response to LPS.

Presenter: Tanaz Fouladirad

Title: The lived experiences of Persian women medical doctor immigrants in Ontario: A case study

Abstract: Tanaz Fouladirad, York University Persian migrants immigrate to Canada often in search of an improved quality of life, despite already holding certifications of higher education from Iran. This improved quality of life includes having constitutionally protected rights such as freedom of speech, thought, and behavior, including dressing and acting in a manner that individuals deem appropriate (Ganji, 2022; Mojarad, 2016; Rahnema, 2011). Despite the relatively large population of Persian immigrants living in Canada, there is limited research about Persian immigrants' settlement. Of the few studies available for review, most of the research focuses on settlement and gender dynamics, such as couples negotiating new gender roles and expectations like balancing domestic labour responsibilities (Sadeghi, 2008). In contrast, there is limited research on Persian women immigrants' and work outside the home, and thus, their experiences in the workforce remain untold. For this particular study, I will focus on Persian women medical doctors (MDs) and their lived experiences of immigrating to and settling in Canada, paying attention to their labour, professional status, and their gendered and racialized identities. Drawing on post-colonial feminist theory, this study recognizes the intersections of gender and race, and the implications of settling in a white settler society, discourses of multiculturalism, and the 'good' immigrant narrative for navigating immigration, settlement, work, and identity formation. The proposed research entails a case study, where data will be collected through (1) semi-structured interviews with Persian women MDs and (2) textual analysis of Canada's Immigration and Citizenship website and documents pertaining to professional accreditation and credentialling from the College of Physicians and Surgeons of Ontario. Keywords: Persian women, medical doctors, lived experiences, immigration, settlement, gender, race

Presenter: Noor Hamam

Title: The Effect of Circular Vection on the Subjective Postural Horizontal in the Pitch Plane

Abstract: BACKGROUND AND AIM: Balance control is maintained through the integration of sensory information from the visual, vestibular, and somatosensory systems [1]. Previous assessments of postural orientation and balance, including the subjective postural horizontal (SPH)

test, have suggested that multisensory integration during a postural task is dependent on the direction of visual cues [2]. Dynamic visual stimuli, in the form of circular vection (CV) in the roll plane, were found to significantly affect the perception of platform horizontal and alter body position during upright stance [2]. However, CV in the pitch plane has been shown to provide a different form of visual stimuli and elicits distinctly different postural strategies compared to roll stimuli [3]. Therefore, by altering the support surface and visual information during upright stance, this study aims to understand how applying dynamic visual stimuli, in the form of circular vection in the pitch plane, influences balance behavior and perception of the support surface horizontal. METHODS: 20 healthy young adults were asked to stand on a platform while wearing a head mounted display. While standing upright for 30s, participants were exposed to A) a visual scene rotating in the pitch plane at 60°/s forward (FW; downwards) or backward (BW; upwards), B) the platform rotating ~3° at 15 seconds (SPH, FW or BW), C) a combination of both rotating congruently, or D) neither rotating. During SPH task, participants used a controller to adjust the pitch position of the platform until they perceived it to be level, or "horizontal". Body pitch angles were calculated from kinematic markers. RESULTS: Participants mean perceptions of platform horizontal deviated from true horizontal by 0.57° during SPH-only collapsed across FW and BW platform rotations, and were biased by CV in the combined conditions increasing to 1.00°. Body lean was larger for CV conditions compared to SPH, and greatest for combined congruent conditions compared to the CV or SPH. Body lean was greatest for FW compared to BW conditions during CV. However, during SPH and combined conditions, thigh angular displacement was largest for BW, while head and trunk angular displacements were largest for FW. CONCLUSIONS: Pitch CV significantly effects SPH of the support surface and body position during postural tasks. Body angular displacements were larger when perturbed forward compared to backward. This study demonstrates a direction specific effect of CV, and supports the hypothesis of weighted multisensory integration during a postural task being dependent on the direction of additional visual cues. This could be useful for future work when examining body orientation tests with older adults who have increased reliance on vision, for example, after vestibular loss. REFERENCES: [1] Luo et al. (2018) Front. Neurol.; [2] Cleworth et al., (2018) ISPGR; [3] Carpenter et al. (2001) Exp. Brain Res. ACKNOWLEDGEMENTS AND FUNDING: NSERC.

Presenter: Natan Levi

Title: Sport and Livelihoods: From Outcomes to Experiences

Abstract: This research aims to add to the limited but growing body of literature on the potential impacts of Sport for Development and livelihood programming. Previous research has predominantly focused on prescribed outcomes and reinforcing neoliberal capitalist ideologies (Zipp et al, 2019). More specifically, the purpose of this qualitative study is to explore the use of sport for livelihood programming in supporting the needs of youth facing barriers at one Sport for Development facility. This research is guided by two key objectives: (a) How do participants (current and past) describe and interpret their experiences within a Sport and Livelihood program? (b) How are contemporary constructions of class, race, gender, poverty, (dis)ability and culture shaped through this programming? Semi-structured interviews were conducted with 7 participants of the MLSE LaunchPad Fellowship Program. Participants' ages ranged from 19 to 25; 4 were

males and 3 females; 6 identified as BIPOC, while 1 individual identified as white. Thematic analysis was an accessible and flexible way to identify patterns within and across data in relation to participants' lived experience, perspectives, behaviours, and practices. Four aggregate themes emerged from the data: (a) program experience, (b) MLSE LaunchPad community, (c) workplace culture and infrastructure and (d) livelihoods, with a further subset of twelve themes also identified providing a deeper level of nuance for the aggregate themes. Analysis suggests that programming within the field of Sport for Development and Livelihoods may (re)produce the structural barriers participants face by providing precarious working conditions that do not meet the cost-of-living challenges faced by youth. Future research is a needed to explore programming from an interdisciplinary, if not transdisciplinary (Whitley et al, 2022), perspective. As such, there is a need to understand the variety of forces—economic, political, cultural, psychological—that (re)shape SfD and livelihoods.

Presenter: Neushaw Moradi

Title: The Forgotten Organelle: Recognizing the role of lysosomes in skeletal muscle

Abstract: Regulation of skeletal muscle health involves the coordinated activity of multiple important organelles. Of longstanding interest to exercise physiologists is the mitochondrion, known for its capacity to produce energy for muscle contraction. Mitochondria can be increased in muscle by the adoption of a regular exercise program, and in contrast can be lost by extended periods of muscle disuse, thereby altering cellular energy metabolism. In addition, mitochondria have a "lifetime", and when they lose their capacity for efficient energy production, they should be degraded via a process known as mitophagy. Efficient mitophagy relies on another organelle, the lysosome. The terminal step of mitophagy involves the fusion of defective mitochondria with the lysosome for degradation and recycling. This function is vital for the clearance of debris which could otherwise aggregate and have pathological consequences. Surprisingly, very little is known about the lysosome in muscle, other than the fact that muscle pathologies can ensue from impaired lysosomes arising due to age or with genetic mutations. However, our previous work has shown that chronic exercise can induce rapid increases in lysosomal proteins, and this coincides with improved mitochondria. This suggests that situations of reduced lysosomal function could potentially be rescued by exercise. However, the mechanisms leading to lysosome synthesis are unclear. The lysosome is known to respond to stimuli such as growth factors, nutrient deficiencies, and exercise, leading to the release of calcium as a second messenger. This signal propagation will ultimately reach the nucleus, wherein the transcription of multiple genes involving lysosomal biogenesis can occur. Our current work explores the use of a muscle cell culture model of "exercise", termed chronic contractile activity (CCA), in which we stimulate muscle myotubes to contract. We use this technique to examine whether CCA can rescue lysosomal function following the knockdown of genes that contribute to lysosomal or mitochondrial dysfunction in muscle. The calcium channel, Mucolipin 1 (MCOLN1), and the membrane protein LAMP2 represent these proteins, the absence of which leads to documented human diseases. Silencing MCOLN1 by 60-70% resulted in a compensatory increase in the expression of the mitochondrial transcriptional regulator PGC-1α and in lysosomal genes, including TFEB, LAMP2, and Cathepsins B and D. Superimposing CCA (3 hrs of stimulation and 21 hrs of recovery for 4 days) on the MCOLN1

knockdown did not further enhance these increases. Similar observations were made with LAMP2, as its 30-40% knockdown rendered increases in PGC-1α, Cathepsin B, and TFEB, which were not enhanced further with CCA. Our data suggest that contractile activity and the cellular signaling that arises from lysosomal defects operate similarly to initiate the biogenesis of lysosomes as a negative feedback mechanism to enhance lysosomal degradation capacity. The nature of these mechanisms, likely involving changes in intracellular calcium, represent an exciting avenue for upcoming research in muscle.

Presenter: Andrew Richards

Title: Effects of cold-water immersion on post-exercise skeletal muscle recovery following sprint-interval exercise

Abstract: High-intensity exercise often leads to muscle fatigue, typically exhibited as a rapid reduction in muscle strength or power. Notably, the recovery period of muscle strength and power following high-intensity exercise can be a slow process that can take several hours, and even days, in some instances. Furthermore, if not recovered sufficiently, muscle fatigue may still persist upon ensuing bouts of exercise, potentially impairing exercise performance and causing exacerbated fatigue. Thus, it has been of great interest to coaches and athletes to find interventions that can accelerate skeletal muscle recovery. The potential cause of muscle fatigue and slow recovery is not entirely known, but it is likely dependent on muscle metabolic rate. Intramuscular temperature is a critical regulator of muscle metabolic rate, with temperatures above or below normal physiological temperatures impairing metabolism. Counterintuitively, cold-water immersion for exercised muscles has emerged as a popular recovery intervention suggested to accelerate skeletal muscle recovery. However, little scientific evidence exists to support its use as an effective recovery method. Thus, this proposed study will investigate whether cold-water immersion following high-intensity exercise affects the recovery of skeletal muscle function. The high-intensity exercise will involve repeated all-out contractions of the ankle dorsiflexor muscles, consisting of 6 sets of 30-second working intervals. The prescribed cold-water immersion protocol will be 10°C for 10 minutes, the most widely used and accepted prescription in the literature. Muscle function and fatigue assessments, along with intramuscular temperature recordings, will be performed in the immediate hours following the exercise and recovery. In addition, 24 hours following the initial bout of high-intensity exercise, a second exercise bout will be performed to truly elucidate the overall effectiveness of cold-water immersion on ensuing high-intensity exercise performance.

Student Presentations Rubric

!FILL OUT THE "Interpretation of Results" SECTION ONLY IF THE STUDENT HAS RESULTS. IF THE STUDENT IS PRESENTING A PROPOSAL, LEAVE THIS SECTION BLANK AND FILL OUT THE "Proposal" SECTION INSTEAD

	0	1	2	3	TOTAL
Context	The work is not well situated within the context of their field, even general concepts have not been described.	The work has been situated within the field, but is missing several references or explains only broad concepts.	Almost all background information has been addressed but they could have used 1 or 2 more explanations.	All relevant background information is presented, the current work is well situated within the field, and they provide specific examples that are directly relevant to their work.	**/3**
Purpose and Hypothesis	The purpose or significance has not been addressed	The purpose or significance is stated but is missing some detail and needs more elaboration	The purpose or significance of their work is clearly stated and has been described in detail		**/2**
	The hypothesis is not clearly stated or is missing a significant amount of detail	The hypothesis is stated but is missing some detail and/or does not seem easily testable	The hypothesis is clearly stated, fully described and is testable		**/2**
Interpretation of Results	Not all results mentioned and interpreted. Reference to hypothesis is absent.	Some results mentioned and interpreted. Reference to hypothesis is absent or may	Results are mentioned and interpreted with greater depth.	Thorough interpretation of results. References back to hypothesis.	**/3**

		be present but not in enough detail.	Reference to hypothesis is present.		
Proposal	The proposed research question was missing or was not supported with background information.	The research question was not clearly stated or was not directly related to the provided background information.	The research question was clearly stated, but was not directly related to the provided background information.	The research question was clearly stated. It was directly related to the provided background information and connections to previous literature and boarder issues were clear.	**/3**
Overall Presentation	too long/ too short, poor quality of slides, poor quality of presenter, surface level understanding of material, unable to answer questions, keeps audience disengaged	within time limit, too many figures or tables are presented that are not relevant, avoids eye contact, mumbles on words	Within time limit, appropriate figures and tables are presented but some are not relevant, one of the tables and figures is difficult to understand, some important data and patterns are missing, able to answer most questions well	Within time limit, appropriate and relevant figures and tables are presented, all tables and figures are easy to understand, important data and patterns are well emphasized and present, excellent ability to answer questions, shows great understanding of material, good pace, eye contact, clear speech	**/3**