UNIVERSITY OF TORONTO
FACULTY OF KINESIOLOGY & PHYSICAL EDUCATION

BODIES OF KNOWLEDGE CONFERENCE

Equity, Diversity, and Inclusion
Reflexive Considerations for Research Practice and Design

Virtual Conference • May 17, 2022 • uoft.me/bok22

ABOUT THE CONFERENCE

BOK is a conference run by graduate students, for graduate students, covering a broad spectrum of inter and multi-disciplinary issues related to health, sport, and physical activity. BoK's purpose is to provide early career researchers an opportunity to share research and engage in important conversations relevant to the field of kinesiology, sport, and physical education.

This conference theme for 2022 is **"Equity, Diversity, and Inclusion - Reflexive Considerations for Research Practice and Design"**. The objective of centering BoK around this theme is to foster the continued growth of our field towards innovative, impactful research that strives for excellence and challenges systemic inequities and exclusion within and beyond the field of kinesiology, sport, and physical education. This year's conference will feature discussions on decolonization and equity, diversity, and inclusion in research practice and design. This includes consideration of factors including, but not limited to race, disability, ethnicity, gender identity, age, sexuality, and culture.

To accomplish this objective and foster reflexive awareness, we are pleased to feature keynote speakers and student panelists specializing in decolonization, equity, diversity, and inclusion in research and innovation.

TABLE OF CONTENTS

GENERAL INFORMATION

Time Zone

The start and end times for all sessions are in the Eastern Time Zone (ET).

Platform

The Conference will be hosted on Zoom.

Participants will receive access to all sessions prior to the conference with Meeting ID's and Passcodes. Feel free to enter and exit sessions as often as you need.

Each session will be facilitated by a moderator who will welcome all the attendees, provide session housekeeping details, introduce the speakers, and facilitate questions.

Attendees can ask questions using the chat function or by virtually raising their hands if they wish to use the audio. Moderators will monitor the questions and hold all questions until the appropriate time in the session.

Please refer to the Guidelines for Presenters and Attendees for further instructions and information on using Zoom.

If you have any further questions regarding the conference, please contact conference coordinators via email (magg.chen@mail.utoronto.ca; melissa.dejonge@utoronto.ca).

ACKNOWLEDGEMENTS

This conference reflects not only the mission and vision of the University of Toronto Faculty of Kinesiology and Physical Education, but the dedicated efforts of students and professionals within the field of kinesiology, sport, and physical education towards challenging systemic inequities and exclusion.

Thank you to the Faculty of Kinesiology and Physical Education, the Kinesiology and Physical Education Graduate Society, and Dr. Jo Ann Wilton for your support of the annual Bodies of Knowledge Conference. We also extend our warmest thanks to our keynote speakers, Dr. Nicole Kaniki and Dr. Janelle Joseph, our student panelists, and student presenters for your enthusiastic involvement.

This conference would not exist without the collective efforts put forth by the Bodies of Knowledge Conference Committee. Thank you for each of your roles in making this conference possible.

- *Registration and Abstract Committee:* Téa Christopoulos, Beata Friesen, Maryam Marashi, and Daniel Sibley
- *Logistics Committee:* Celine Baileul, Rozhan Momen, & Julia Rickard
- *Volunteer Committee:* Anthonia Aina, Delaney Thibodeau, and Lauren Voss
- *Budget and Finance Committee:* Alexa Govette and Doris Yam

We extend a special thank you to Anika Taylor, our Equity Diversity and Inclusion Advisor for her exceptional support, counsel, and guidance with delivering this conference.

With thanks,

Melissa deJonge & Maggie Chen

CONFERENCE AT A GLANCE

MORNING SESSIONS

TIME	ITEM	DETAILS	
8:30-8:45 AM	Welcome Remarks	**Dean Gretchen Kerr, Faculty of Kinesiology and Physical Education, University of Toronto** Access: https://utoronto.zoom.us/j/87049486660 Passcode: 570152	
8:45-10:00 AM	Presentations Session #1	**Session 1.1 Physical Cultural Studies A** Access: https://utoronto.zoom.us/j/82388138756 Passcode: 308329	
10:00-11:00 AM	Keynote #1 Dr. Nicole Kaniki,	**Equity, Diversity, and Inclusion (EDI) in Research and Innovation: Methodologies and Best Practices** Access: https://utoronto.zoom.us/j/87049486660 Passcode: 570152	
11:00-11:15 AM	Break		
11:15 AM - 12:30 PM	Presentations Session #2	**Session 2.1 – Physical Cultural Studies B** Access: https://utoronto.zoom.us/j/82863764496 Passcode: 943957	**Session 2.2 – Biophysical & Behavioural Studies A** Access: https://utoronto.zoom.us/j/88069487221 Passcode: 408375
12:30-1:00 PM	Lunch Break		

AFTERNOON SESSIONS

TIME	ITEM	DETAILS	
1:00-2:00 PM	Keynote #2 Dr. Janelle Joseph	**Decoloniality and Anti-racism in Kinesiology, Sport, and Recreation** Access: https://utoronto.zoom.us/j/87049486660 Passcode: 570152	
2:00-3:00 PM	Student Panelist Question and Answer	**Strategies for inclusive and equitable research in kinesiology, sport and physical education from graduate student perspectives** Access: https://utoronto.zoom.us/j/87049486660 Passcode: 570152	
3:00-3:15 PM	Break		
3:15-4:30 PM	Presentations Session #3	**Session 3.1 Biophysical & Behavioural Studies B** Access: https://utoronto.zoom.us/j/84757129326 Passcode: 610657	**Session 3.2 Biophysical & Behavioural studies C** Access: https://utoronto.zoom.us/j/87836418338 Passcode: 875275
4:30-5:00 PM	Closing Remarks		
7:00-10:00 PM	Student Social	Join us in-person at Madison Avenue Pub 14 Madison Ave, Toronto, ON M5R 2S1	

DETAILED CONFERENCE SCHEDULE

WELCOME REMARKS

TIME	ITEM
8:30-8:45AM	Welcome Remarks from Dean Gretchen Kerr, Faculty of Kinesiology and Physical Education, University of Toronto

PRESENTATIONS SESSION #1

1.1 – PHYSICAL CULTURAL STUDIES A

TIME	PRESENTATION	PRESENTER
8:45 AM	Social justice in the clinic: Caring for larger patients	Deana Kanagasingam, *University of British Columbia*
9:00 AM	"Help protect the future of hockey in Canada": Exploration of whiteness, rurality and philanthrocapitalism through Kraft Hockeyville	Madison Danford, *Queen's University*
9:15 AM	Buff Barbies Breaking Barriers: Thematic and Intersectional Analyses of Canadian Female Competitive Bodybuilders	Janelle Jordan, *Concordia University*
9:30 AM	Score! You are now more Canadian': A case study approach to understanding citizenship and national belonging in sport	Hadeth Rassol, *York University*
9:45 AM	Redefining Health on Instagram	Olivia Scully, *Queen's University*

KEYNOTE #1

TIME	KEYNOTE	PRESENTER
10:00-11:00 AM	Equity, Diversity and Inclusion (EDI) in Research and Innovation: Methodologies and Best Practices *45 min talk, 15 min question period*	Dr. Nicole Kaniki Director of Equity, Diversity and Inclusion in Research and Innovation University of Toronto
11:00-11:15 AM	BREAK	

PRESENTATIONS SESSION #2

2.1 – PHYSICAL CULTURAL STUDIES B

TIME	PRESENTATION	PRESENTER
11:15 AM	*Queer Soccer Players: A Cross-Cultural Study of Exclusive Attitudes, Experiences, and Policies*	Francesco Collura *Ryerson University, York University*
11:30 AM	#MeToo: A Critical Intersectional Analysis of Digital Feminist Activism	Jamie Le *University of Toronto*
11:45 AM	Institutional Diversity in Sports	Brianna Nicolas Western University

12:00 PM	Masjid Ball: The Influence of Mosque-based Physical Activity Programs on the Physical Cultural Practices of Young Muslim Women	Zeana Hamdonah *University of Toronto*
12:15 PM	Ensuring Conformity to Whiteness: Experiences of a Racialized Undergraduate Kinesiology Student	Gagandeep Minhas *Queen's University*

2.2 – BIOPHYSICAL & BEHAVIOURAL A

TIME	PRESENTATION	PRESENTER
11:15 AM	Exercise and rehabilitation in people with Ehlers-Danlos Syndromes: A systematic review	Stephanie Buryk-Iggers *University of Toronto*
11:30 AM	Validation of a musculoskeletal model to investigate hip joint mechanics during a variety of functional tasks	Margaret Harrington *University of Toronto*
11:45AM	Physical activity, cardiorespiratory fitness, and sedentary time as predictors of cardiovascular risk in breast cancer survivors	Alexandra Dojutrek *University of Toronto*
12:00AM	Rationale and Design of a Multimodal Biobehavioral Intervention to Enhance Recovery Post-Acute Myocardial Infarction	Stephanie Small *University of Toronto*
12:15 PM	Non-Invasive 'Breath Test' to Determine Anabolic Sensitivity in Females	Nicki Pourhashemi *University of Toronto*
12:30 PM	LUNCH BREAK	

KEYNOTE #2

TIME	KEYNOTE	PRESENTER
1:00-2:00 PM	Decoloniality and Anti-racism in Kinesiology, Sport, and Recreation *45 min talk, 15 min question period*	Dr. Janelle Joseph Critical Race Scholar Faculty of Kinesiology and Physical Education, University of Toronto

STUDENT PANELIST QUESTION AND ANSWER

TIME	PRESENTERS	PANELISTS
2:00-3:00 PM	*Strategies for inclusive and equitable research in kinesiology, sport and physical education from graduate student perspectives*	Sabrina Razack *University of Toronto* Robyn Smith *Brunel University* Delaney Thibodeau *University of Toronto* Alexandra Walters *Queen's University*
3:00-3:15 PM	BREAK	

PRESENTATIONS SESSION #3

3.1 – BIOPHYSICAL & BEHAVIOURAL B

TIME	PRESENTATION	PRESENTER
3:15 PM	Evaluation of Frailty and Skeletal Muscle Function in Patients with Pulmonary Hypertension	Rozhan Momen *University of Toronto*
3:30 PM	Post-exercise protein requirements are similar between endurance-trained females and males during recovery	Eric Williamson *University of Toronto*
3:45 PM	Development of a virtual method to quantify hip and knee joint motion in healthy adults	Margaret Harrington *University of Toronto*
4:00 PM	Examining the effects of local ischemic preconditioning on anaerobic upper body exercise performance in athletes	Liam O'Brien *University of Toronto*
4:15 PM	Evaluation of the GoodHope EDS Exercise and Rehabilitation (GEAR) Program: A retrospective cohort study	Stephanie Buryk-Iggers *University of Toronto*

3.2 – BIOPHYSICAL & BEHAVIOURAL STUDIES C

TIME	PRESENTATION	PRESENTER
3:15 PM	Effect of Ovariectomy on the Repeated Bout Effect	Beata Friesen *University of Toronto*
3:30 PM	Physical activity during the COVID-19 pandemic: Does following fitness influencers on social media differentially link to exercise motives?	Sabrina Malouka *University of Toronto*
3:45 PM	Validation of Lower Extremity Fatigue Protocols	Joshua Taylor *University of Toronto*
4:00 PM	Determining the Effect of Dynamic Multi-Planar Tasks on Lower Extremity Kinematics	Pratham Singh *University of Toronto*
4:15 PM	The Effect of a Semi-Upright Body Position on Central Hemodynamics, Peripheral Oxygen Saturation and Oxygen Consumption During Submaximal Cycling	Adam Di Salvo *University of Toronto*

CLOSING CEROMONIES

TIME	ITEM
4:30-5:00 PM	Closing Remarks from the Bodies of Knowledge Committee
7:00-10:00 PM	**Evening Student Social** **Madison Avenue Pub** **14 Madison Ave, Toronto, ON M5R 2S1** *First round of drinks will be covered!*

KEYNOTE SESSION 1 DETAILS

Dr. Nicole Kaniki is the inaugural Director of Equity, Diversity and Inclusion in Research and Innovation at the Office of Vice-President Research and Innovation at the University of Toronto. In her role, she examines, advocates and advances EDI in all aspects of U of T research, innovation and entrepreneurship. That includes serving as an advisor and resource to researchers at all levels, leading workshops, developing training programs and contributing to U of T's EDI goals more broadly.

Dr. Kaniki is the former Special Advisor on Anti-racism to the President of Western University and has over six years of experience in research administration and EDI roles in academia. She holds a MSc Kinesiology, and a PhD Health and Rehabilitation Sciences from Western University. More recently, she completed a MA Gender, Sexuality and Women's Studies at Western doing research in Black Feminist Narratives in the Academy. Dr. Kaniki has a passion for social justice and uses an anti-racism and decolonization framework in her EDI work.

Keynote: Equity, Diversity and Inclusion (EDI) in Research and Innovation: Methodologies and Best Practices

Objectives

1. To be able to define and understand the foundational concept of EDI and how it relates to the research environment
2. To understand how to embed EDI considerations and best practices in research methods and methodologies
3. To discuss current case studies of how EDI has been excluded from research in sports and movement sciences

This session will provide a foundational understanding of what equity, diversity, and inclusion (EDI) is as it relates to the research environment and research practices. We will discuss how you can embed EDI in your research process from inception, development, implementation, and knowledge mobilization, and look at examples of EDI in sports and movement science research.

KEYNOTE SESSION 2 DETAILS

Dr. Janelle Joseph is the inaugural Critical Race Scholar in the Faculty of Kinesiology and Physical Education at the University of Toronto. Dr. Joseph is an award-winning scholar and the Founder and Director of the Indigeneity, Diaspora, Equity, and Anti-Racism in Sport (IDEAS) Research Lab.

She is a current holder of a Social Sciences and Humanities Research Council Insight Development Grant, an editorial board member for the Sociology of Sport Journal and a Director at Large for the Academy of Leisure Sciences. She is the Director of Research for several organizations including Race Equity Consulting and Training also known as REACT, and the Black Canadian Coaches Association, also known as the BCCA.

She has authored and co-edited three books. Her most recent text is Sport in the Black Atlantic: Cricket Canada and the Caribbean Diaspora. Dr. Joseph's research focuses on decolonizing sport studies, anti-racism movements among athletes and educators, intersectionality within African diaspora physical cultures, and imposter phenomenon.

Keynote: Decoloniality and Anti-racism in Kinesiology, Sport, and Recreation

This session will provide a foundational understanding of (de)coloniality as it relates to post-secondary education, the study of Kinesiology, and the practices and administration of sport and recreation. The session will explore how to challenge racism and expose the dominant epistemology as only one way of understanding human movement across the many sub-disciplines of kinesiology.

Objectives

1. To define and contrast coloniality and decoloniality
2. To recognize and challenge colonial patterns and practices in sport and recreation and their research
3. To celebrate the ways racism is resisted through the movement cultures of many racialized communities

ABSTRACTS

Physical Cultural A

Deana Kanagasingam

Social justice in the clinic: Caring for larger patients

University of British Columbia

Many larger patients experience weight-based discrimination in healthcare settings, and are judged by practitioners as being irresponsible and non-compliant (Phelan et al., 2014). Though there has been increased attention on how weight-based discrimination jeopardizes patient health outcomes (Sutin et al., 2015), empirical research is lacking on 1) practitioners who adopt a social justice approach to caring for larger patients or 2) larger patients' experiences of receiving social justice-informed care. Social justice in practice refers to addressing intersecting macro-level inequities such as racism, sexism, and sizeism through micro-level practitioner-patient interactions (Mishler, 2005). This study fills a research gap by examining how social justice is understood, enacted, and experienced in weight-related clinical interventions. Drawing on one-on-one interviews with 22 diverse healthcare practitioners who identify as social justice advocates and 20 larger patients served by such practitioners, four main questions were addressed: 1) How do participants understand social justice? 2) How do practitioners translate social justice principles into practice? 3) What challenges do practitioners encounter when practicing social justice? 4) How does social justice-informed care shape larger patients' healthcare experience? The findings reveal that participants viewed weight and health not as an individual responsibility but as situated within the broader social context. Nonetheless, participants' approaches to care differed depending on whether they regarded obesity as either primarily a social construct or a biomedical fact. Furthermore, despite the prevailing paradigm of obesity as a disease, patients conveyed that non weight-related factors such as financial strain and racism had a more profound impact on their health, which casts doubt on whether medicalizing obesity truly benefits larger patients. A social justice informed-approach to care was found to positively impact patients' experience, with patients expressing appreciation for having their histories of trauma and social challenges handled with compassion and curiosity. The study sheds light on the need to integrate micro-level strategies for individual healing with a macro-level framework of systemic change, as well as cultivate in patients, clinicians, and the public at large a more nuanced understanding of weight and health. The findings provide practice-oriented insights for care informed by frameworks of weight-inclusivity, structural competency, and person-centredness.

Madison Danford

"Help protect the future of hockey in Canada": Exploration of whiteness, rurality and philanthrocapitalism through Kraft Hockeyville

Queen's University

I grew up in rural Ontario, with the arena being the epicentre during the winter months. My hometown, like many small, rural towns across Canada might as well be named 'Hockeyville.' The mythological 'Hockeyville' holds an iconic place in Canadian national identity, often constructing the 'ordinary Canadian' (Mackey, 2002), articulated through white, working class, blue collar, small-town folk (Allain, 2015). As such, I am intimately familiar with how these narratives entangle the white nationalism that underlie the Canadian hockey culture. However, these narratives are only becoming apparent to the broader culture as Black, Indigenous and other People of Colour (BIPOC) speak up about their discriminatory experiences in hockey. The dream that hockey represents the entirety of Canada is a popular Canadian mythology that does not accurately represent Canada's contemporary dynamics and has harmful political effects on the marginalized 'Other.' My dissertation proposes that who becomes an 'ordinary Canadian' is largely made possible through the interconnection between hockey and whiteness. I contend that the annual Kraft Hockeyville competition "designed to find which Canadian hockey community stands above all the others" (Kraft Hockeyville Official Rules, 2021), is an exercise in white Canadian nationalism, reproducing the 'ordinary Canadian.' This paper will present key ideas and research questions from my proposed project, which examines 'Hockeyville' as an imagined essence of Canadian nationalism and the

Kraft Hockeyville competition serves as my entry point. Kraft Hockeyville's mission is "to rally people together and help protect the future of hockey in Canada, because communities build hockey and hockey builds communities" (Kraft Hockeyville Official Rules, 2021). With this mission in mind, three overarching questions guide my research project: 1. What communities are Kraft Hockeyville claiming to build (geographically, demographically, socioeconomically, etc.)? 2. What explicitly is Kraft Hockeyville hoping to protect? And 3. What role does Hockeyville play in an increasingly diverse and globalizing Canada?

Janelle Jordan

Buff Barbies Breaking Barriers: Thematic and Intersectional Analyses of Canadian Female Competitive Bodybuilders

Concordia University

Academic discourse in bodybuilding disproportionately focuses on drug use, muscle dysmorphia, and male subcultures. Women bodybuilders' experiences are a distant second to their male counterparts; whereas, women of colour bodybuilders' stories are largely excluded. Therefore, the thesis Buff Barbies Breaking Barriers: A Thematic Analysis of Canadian Female Bodybuilders exists to add diversity within the literature. An exploration of how and why Canadian women of colour bodybuilders challenge or conform to societal norms (within a Caucasian male-dominated sport, and against their non-women of colour competitors) was studied through an intersectional analyses of gender, race, ethnicity, and sexuality. The female bodybuilders sample includes four African-Canadians, four Caucasians, and one half-Black/half-Caucasian who participate in provincial, national or international competitions. Using thematic analysis, participants' responses revealed themes and subthemes of their bodybuilding experiences. Via intersectional analysis, motives of why women of colour bodybuilders participate in bodybuilding were viewed under the lens of gender, race, ethnicity and sexuality; along with how and why they negotiate conflicting images of conventional femininity, plus contemporary racial and social identity, as women of colour. Thematic analyses included "motivations to compete" and "contradictions in bodybuilding." From the motivations of 'physical', 'mental', and 'life rewards', mental and life rewards weighed heavily in one's involvement in bodybuilding. Prevalent contradictions included "role conflict" and "subjective judging criteria due to race." The balance between accepting their gender role conflicted with their simultaneous rejection of it, evidenced by their unrelenting muscularity. All participants' testimonies indicate they experienced varying encounters within and across races, particularly in the thematic and intersectional analyses of race, ethnicity, gender, and sexuality.Future recommendations suggest using an intersectional approach for judging criteria to create inclusiveness for all female bodybuilding competitors. More research is needed to explore how intersectional strategies may enhance the paucity of literature in women of colour bodybuilders' experiences.

Hadeth Rassol

Score! You are now more Canadian': A case study approach to understanding citizenship and national belonging in sport

York University

This thesis explores the concept of sport as a vehicle of belonging and negotiating identity via case study of the Umoja Games, an annual faith and community-based sport tournament held in the United States and Canada. This study explores the narratives of the players and the co-founder combined with data collected through the Umoja Games social media to understand the ways in which identities, ideas of citizenship and the sense of belonging to the nation are negotiated, constructed, and understood by participants. The Umoja Games becomes a unique setting in which transnational movement, political/social climates, and multiple identities are highlighted and pushed to the foreground allowing for an in-depth analysis of the undergoing negotiation processes of identity building and belonging. This study utilizes the foundational assumptions of post-colonial theory and social constructivism lens to conceptualize, examine, and analyse identity and the notions of belonging.
This study reveals multiple interconnected themes that allow for a better understanding of second-generation bicultural identities and the ways in which the sense of belonging is negotiated given such identities. Utilizing Antonsich's (2010) analytical framework avoids the conflation of belonging to identity and citizenship, revealing the nuances behind the participants feelings of belonging as multi-scalar, interwoven with their own experiences, relational, cultural, economic, and legal factors. Participants' understanding of their own identities proves to be complex, supporting existing research that emphasizes the negotiation process between two identities. However,

this negotiation surpasses the binary of finding the balance between two cultures instead participants narratives indicate that identity negotiation exists in the Third Space (Bhabha, 1994). The socio-political, environmental, and cultural conditions that participants describe as Muslim Canadian citizens significantly impacted the ways in which participants experience sport (both mainstream and community) as well as the ways they come to understand their identities and sense of belonging to the nation.

Olivia Scully

Redefining Health on Instagram

Queen's University

In Canada, roughly one-third of boys and girls aged 10-14 diet to lose weight. This statistic is alarming, considering that eating disorders have the highest overall mortality rate of mental illnesses, accounting for 10-15% of deaths from mental illness. Dominant healthist discourses contribute to the negative impacts of diet culture, including how young people, and especially girls, conceptualize health. With the growing popularity of Instagram over the past decade, users have been utilizing digital resistance to refute diet culture and redefine health. While there is current literature on the impacts of social media on body image as well as analyses of body positive content on Instagram, there is a gap in the literature exploring women's lived experiences. With this in mind, my proposed project will investigate women's constructions of health in relation to fat activism content on Instagram using intersectional feminism to understand how identities including gender, race, class, and sexuality are tied to unique lived experiences. Qualitative methods will be used in the form of a content analysis of Instagram posts as well as semi-structured one-on-one interviews with women in Kingston, Ontario. I will use intersectional feminism as a framework throughout the project, as it encourages critical understandings of how power and privilege are tied to identity. Using this lens will centre women's unique lived experiences based on identities, including gender, race, class, and sexuality. Body positivity is a white-dominated space despite diet culture affecting individuals of all races; using intersectionality will inform what role whiteness plays in the narrative. An outcome of this project will include a workshop curriculum to be used with girls aged 12-18 as a form of knowledge translation in attempt to shift harmful healthist discourses.

Physical Cultural B

Francesco Collura

Queer Soccer Players: A Cross-Cultural Study of Exclusive Attitudes, Experiences, and Policies

Ryerson University and York University

Soccer, the world's most widely played sport, struggles to foster Lesbian, Gay, Bisexual, Trans, and Queer (LGBTQ+) inclusion (Travers & Shearman, 2017). This is problematic because soccer promotes itself as inclusive to everyone regardless of gender, race, culture or class (Travers & Shearman, 2017). My dissertation will examine the regional differences and experiences of LGBTQ+ identifying soccer athletes in North America and Europe. Specifically, my study will compare and contrast the experiences of LGBTQ+ soccer players in Italy, England, Canada, and the United States. Through an in-depth analysis of literature on queer athleticism, I will explore this topic with a gendered analysis by looking at three areas of research: queer male athletes in sport, queer female athletes in sport, and trans/gender non-conforming athletes in sport to showcase how each of these queer experiences differ in terms of acceptance and/or rejection from one another. I engage with the theories of queer theory, intersectionality, Gramsci's theory of ideology and cultural hegemony, and Butler's concept of gender performativity to examine queer athletes in different soccer cultures. In order to contribute new and original knowledge, I will apply a mixed methods explanatory sequential design where I conduct 80-120 surveys via questionnaires that are evenly distributed to amateur and semi-professional soccer players, teams and leagues in Italy, England, Canada and the United States. I will then conduct 15-20 semi-structured interviews with survey participants that will be evenly distributed. Each set of data will be analyzed using an ethnographic content analysis. Specifically, I will investigate if and/or how exclusionary attitudes/soccer policies in the four countries selected for this study contribute to unwelcome outcomes such as low-income prospects, experiences of stigma and ambivalent levels of acceptance in soccer. This is beneficial to soccer culture because it will provide critically

needed scholarly research that can inform how soccer organizations, athletes, and leaders in the sport can address and remedy practices that hinder LGBTQ+ participation in soccer.

Jamie Le

#MeToo: A Critical Intersectional Analysis of Digital Feminist Activism

University of Toronto

In 2006, Tarana Burke initiated the Me Too movement as a means to support survivors of sexual assault and harassment. However, it was not until 2017 when actress Alyssa Milano transpired #MeToo on Twitter, cultivating more than 12 million uses of the hashtag within 24 hours worldwide. Although Burke pioneered the movement a decade earlier, her goal to raise awareness was escalated. This led Me Too to flourish as a form of verbal and digital feminist activism to establish social change #BeyondTheHashtag. At a time when other community-based movements (e.g. SlutWalk in Toronto) were organized, online spaces of feminist political intervention remain understudied. This paper argues that the digital realm is worthy of investigation as it is not yet equitably inclusive of all survivors' voices, particularly at a time when there is mounting evidence of domestic violence cases during the COVID-19 lockdown. A feminist critical discourse analysis of the Act Too website is analysed to uncover how internet survivors' are positioned by the discursive power relations online. Findings reveal Act Too 'empowers' readers–whether survivor, activist, or ally–with helpful resources but ultimately positions them as neoliberal social agents of change. Online platforms allow survivors to remain anonymous; however, the severe backlash received by some participants does little to foster a 'safe' space for everyone. Furthermore, the ability to express sexual abuse experiences online is not equally shared among all survivors; in particular, women: of colour, from the Global South, with disabilities, with lower SES, and that identify as LGBTQIA+ are marginalized. The critical feminist intersectional lens deployed in this study challenges the sense of 'safety' and 'inclusivity' of feminist activism assumed online and offline. Recommendations to move the Me Too conversation beyond the hashtag to further eliminate gender violence on a global scale will be offered in this presentation.

Brianna Nicolas

Institutional Diversity in Sports

Western University

My experiences with creating the Black athlete association at Ontario tech and current position on Western athletics EDI committee has driven me to question why athletes of colour are put in positions of doing "diversity work" for these white institutions yet place the responsibility of addressing whiteness, racism and improving diversity within these institutions on these groups (which are made of minoritized athletes). This paper looks to address the performativity of institutions and their diversity groups within sports especially when supporting marginalized athletes. Over the recent years we have seen many professional sports organizations create tenuous initiatives in hopes to remove the racism that is present in sports. This paper will explore the acts of institutionalized diversity that has taken place within the professional sports world. I hope to argue that these current implementations are not enough as they delegate the work to workers of colour rather than work with them and their support is not enough. The research question I will be answering is: how are these institutions actively engaging with athletes of colour to ensure their voices are heard when doing diversity work. Sara Ahmed (2012) in "On being Included: Racism and Diversity in Institutional Life" will be used to provide theories and a deeper understanding of the complexities of performativity of diversity groups in these institutions.

Zeana Hamdonah

Masjid Ball: The Influence of Mosque-based Physical Activity Programs on the Physical Cultural Practices of Young

University of Toronto

The values mediating exclusionary practices in Western sporting environments posit religiosity and physical activity as opposite principles, forcing many Muslim women to choose between faith or play (Knez et al., 2012). Religious institutions like mosques are essential structures that link Muslims to their communities, making them valuable when designing healthy lifestyle interventions (Banerjee et al., 2017). The study used a space-based

racial analysis to explore how six young Muslim women experienced mosque-based women's-only sports programs, the relationships that form in such settings, and the range of physical cultures that are practiced. The results demonstrate the significance of studying faith as a racializing identity within sport science, and the role of gendered Islamophobia in influencing Muslim women's sporting participation. The findings also highlight how sporting exclusion is mediated through agentic processes of creating and negotiating safe sporting spaces by transforming faith spaces, and the relationships Muslim women develop with themselves, and their communities through faith-focused physical activity.

Gagandeep Minhas

Ensuring Conformity to Whiteness: Experiences of a Racialized Undergraduate Kinesiology Student

Queen's University

What do my experiences as a racialized woman interested in pursuing race-based health research reveal about the intersections of sexism and racism in academia? In this autoethnographic project, I turn a critical lens to my own undergraduate experiences in a Kinesiology faculty to answer that question. The project began from my interest in breast cancer research and what I quickly identified as the paucity of literature about the experiences of racialized women with breast cancer; there remains a lack of research that serves to promote equitable health care for racialized individuals with breast cancer. Research that has been done reveals women's experiences of overt racism and racial microaggressions in many aspects of the health care system in Canada. In engaging with the small body of literature, it struck me that not all that much had changed since Audre Lorde published The Cancer Journals in 1980. I began to think about this lack of research and barriers experienced by racialized women in academia, barriers experienced by me in academia. Adopting an intersectional lens, I sought to elucidate and interpret multiple and intersecting systems of oppression and privilege I experienced in the classroom, in research, and in daily interactions in the university more generally. Critical analysis of my experiences, recorded through a series of written vignettes produced in 2020 and 2021, led to the creation of four main and often overlapping themes: invisibility, denial of whiteness in academia, identity taxation, and the "ideal woman". I contrast the micro-situational occurrences of racism and sexism experienced by racialized undergraduate students and racialized women with breast cancer, and see that the four themes described above were present in both. Concluding that although the "battle" is different, both micro-contextual events are outcomes of the same foundation of white supremacy embedded in all facets of Canadian society.

Biophysical/Behavioural A

Stephanie Buryk-Iggers

Exercise and rehabilitation in people with Ehlers-Danlos Syndromes: A systematic review

University of Toronto

Uncontrolled symptoms of Ehlers Danlos Syndrome (EDS) – a heterogeneous group of hereditary connective tissue disorders – reduce quality of life in multiple domains; chief among these, in prevalence and degree of effect, is pain. Widespread and chronic pain experienced in EDS have been shown, in part, to be amplified with behavioural responses, such low physical activity and kinesiophobia. Thus, exercise and rehabilitation therapy (ERT) has emerged as an important component of disease management. This literature review examines the evidence related to ERT for people with EDS, as well as an evaluation of the methodologic and reporting quality of ERT studies. Medline, Medline In-Process/ePubs, Embase, Cochrane Central Register of Controlled Trials, PsycINFO, and Cumulative Index to Nursing and Allied Health were searched. Eligible study designs included case-control, case-series, prospective cohort, retrospective cohort, and intervention studies of structured ERT interventions. Eligible populations included adults (≥18 years of age) with EDS and Hypermobility Spectrum Disorders. The search yielded ten eligible studies including 330 participants. The study designs included five RCTs, one cohort, two single-arm interventions, one retrospective, and one feasibility study. All studies showed some improvement in a physical and/or psychological outcomes following the intervention period – including pain

intensity, muscle strength, proprioception acuity, balance, functional exercise capacity, activities of daily living, fear of movement, and quality of life. Of the five RCTs, two were rated as high quality with low risk of bias, and the majority of non-RCTs were rated as critical risk of bias.The results suggest that ERT appears to be feasible, safe and may be beneficial for various physical and psychological outcomes in EDS. Adequately powered and rigorous RCTs of exercise and rehabilitation interventions for people with EDS are needed, with a consideration for multidisciplinary intervention design. Such studies would guide a more informed approached to future treatment modalities for EDS.

Margaret Harrington

Validation of a musculoskeletal model to investigate hip joint mechanics during a variety of functional tasks

University of Toronto

Background. Musculoskeletal (MSK) modeling allows for the quantification of biomechanical characteristics that are not feasible to measure in vivo. However, current hip model accuracy is unclear because validation has been conducted by comparing model outputs (i.e., hip contact forces (HCFs) and muscle activations) to HCFs measured using instrumented hip prostheses in older adults or experimentally-measured superficial muscle activations in older males. Furthermore, the tasks investigated (i.e., gait and sit-to-stand) only require limited hip motion. Therefore, this study aims to apply a range of criteria to validate an MSK model designed to investigate a variety of functional tasks in young adults. Methods. Four healthy adults (two male, two female; ages 16-40) will visit the biomechanics laboratory. Joint kinematics, kinetics, and muscle activations will be measured during gait, sit-to-stand, deep-squat, lunge, hurdle-step, and lateral-squat tasks. A generic MSK model (OpenSim4.3) will be modified to increase hip motion while maintaining physiological muscle moment arms (MMAs). Then, models will be scaled to each participants' anthropometrics, and the motion data from the tasks will serve as model inputs to calculate HCFs and muscle activations. The model outputs will be validated using: i) previously-reported cadaveric MMAs; ii) participants' measured muscle activations; and iii) a multiple regression to assess how much of the measured ground reaction forces (GRFs) and external hip moments predict model HCFs. Expected Results. I predict that the model MMAs will be within two standard deviations of previously-reported data, the on-off timings of model muscle activations will be within 100 ms of those measured experimentally, and GRFs and external hip moments will predict at least 75% of the variance in HCFs. Significance. This study will demonstrate the accuracy of an MSK model to calculate HCFs and muscle activations in young adults, allowing researchers to better understand how pathologies or interventions influence hip joint mechanics.

Alexandra Dojutrek

Physical activity, cardiorespiratory fitness, and sedentary time as predictors of cardiovascular risk in breast cancer survivors

University of Toronto

Breast cancer survivors are at 3-fold elevated risk for cardiovascular disease (CVD) compared to women without a history of cancer. The etiology of CVD risk is related to pre-existing CVD risk factors (which overlap with breast cancer risk factors), cardiotoxic effects of cancer treatment, and lifestyle toxicity including physical inactivity. Cardiorespiratory fitness (CRF) measured by VO_2peak is also impaired after breast cancer treatment and is a strong independent predictor of CVD-related mortality. Purpose: To compare the strength of the relationships between CRF, sedentary time, and moderate-to-vigorous physical activity (MVPA) with CVD risk, measured by Framingham 10-year Risk (FR) (%) in breast cancer survivors. This cross-sectional secondary analysis used prospectively collected data from two studies on female early-stage (I-III) breast cancer survivors (n=72) who were 1-6 years post-chemotherapy treatment. VO_2peak was measured via incremental-to-maximal cardiopulmonary exercise tests on a cycle ergometer. MVPA and sedentary time were measured with accelerometers worn for one week. In separate linear regression models, VO_2peak (normalized to body weight), MVPA, and sedentary time were used as independent variables with FR as the dependent variable. Results: VO_2peak (mL/kg/min) explained 33.9% of variance in FR (β=-1.217, 95% CI [-1.62, -0.812], p=0.001). MVPA (hours/week) explained 8.5% of variance in FR (β=-0.492, 95% CI [-0.881, -0.104], p=0.014). Sedentary time (hours/day) explained 6.4% of variance in FR (β=-0.327, 95% CI [-0.628, -0.026], p=0.033). VO_2peak is a stronger

predictor of CVD risk than MVPA and sedentary time in breast cancer survivors. Every 1 mL/kg/min increase in VO_2peak was associated with a 1.2% lower risk of a CVD event in the next 10 years. While MVPA is important for cardiovascular health, strategies that optimize the impact on relative VO_2peak such as high-intensity interval training and body weight loss may be needed to reduce CVD risk in early-stage breast cancer survivors.

Stephanie Small

Rationale and Design of a Multimodal Biobehavioral Intervention to Enhance Recovery Post-Acute Myocardial Infarction

University of Toronto

Introduction: Within the first year following an acute myocardial infarction (AMI), 20% of patients will experience a second coronary event, the majority of which are within the first 30 days after discharge. While cardiac rehabilitation is an essential component of comprehensive care after an AMI, patient referrals and program enrollment do not typically occur until 1-4 months after the event. Preclinical data suggest that dietary strategies of time-restricted feeding (TRE), light physical activity, and circadian rhythm re-alignment can enhance recovery post-AMI. This study aims to test the feasibility, safety, and preliminary efficacy of a multimodal biobehavioural intervention, including time-restricted eating, physical activity, light exposure, and sleep hygiene recommendations for 6 weeks post-hospital discharge compared to usual care. Methods: Sixty patients recently hospitalized for an AMI will be randomly assigned within 3 days of discharge to usual care or the multimodal intervention for 6 weeks. A Registered Dietitian will guide participants in the intervention group by telephone, providing instructions to perform TRE (8-hour daily eating window and 16-hour fast), sleep hygiene practices, physical activity, and optimize light exposure, all toward the goal of promotion of circadian rhythm alignment. Feasibility will be assessed by adherence to each intervention component. Safety will be assessed by reviewing patient records for adverse events (rehospitalization, death) and online questionnaires about chest pain and nutritional impact symptoms. Preliminary efficacy measures will include changes in cardiovascular function determined by left ventricular ejection fraction, resting heart rate, blood pressure, and pulse wave velocity. Also, subjective and objective measures of functional recovery and sleep and biomarkers of the circadian rhythm. Discussion: This study will evaluate an inexpensive, remote-delivered biobehavioral intervention that could be used as a novel treatment to improve recovery post-discharge for AMI. Equal sample sizes of both sexes will be enrolled to enable sex-based analysis.

Nicki Pourhashemi

Non-Invasive 'Breath Test' to Determine Anabolic Sensitivity in Females

University of Toronto

Dietary amino acids (AA) used for muscle protein synthesis (MPS), compared to oxidation, support the synthesis of new body proteins. Our laboratory has recently demonstrated the efficacy of a non-invasive stable isotope 'breath test' in males based on leucine retention, an essential AA that must be obtained from our diet, to detect increased anabolic sensitivity (i.e. greater leucine retention for protein synthesis) after resistance exercise (RE) compared to rest. The objective of the present study is to validate the use of this oral tracer, [13C]leucine, in females by measuring MPS and anabolic sensitivity across feeding at rest (FED) and feeding after RE (EXFED). Using a counterbalanced, crossover design, ten healthy females will take part in two metabolic trials: FED or EXFED. Participants will consume a mixed carbohydrate (0.75 g/kg body weight) complete AA (0.25 g/kg) beverage modelled on the composition of egg protein, with a leucine content enriched to ~5% with [13C]leucine, primarily metabolized within skeletal muscle. CO2 production will be assessed hourly through indirect calorimetry, and breath samples will be collected every 20-30 min during the 6 h postprandial period to determine 13CO2 enrichment via isotope-ratio mass spectrometry. The measurement of VCO2 and stable isotope tracer enrichment in the breath assess the rate at which AA, especially leucine, are used for energy, rather than for MPS. It is hypothesized that since RE enhances MPS rates, anabolic sensitivity (i.e. leucine retention) would be greater in EXFED compared to FED. The validation of this 'breath test' to assess anabolic sensitivity in females, an under-represented population, is vital to address the dearth of knowledge in protein metabolism research. Ultimately, RE may be used as a tool to assess the efficacy of the 'breath test' as a surrogate measure for leucine retention in various populations, including children and the elderly.

Biophysical/Behavioural B

Beata Friesen

Effect of Ovariectomy on the Repeated Bout Effect

University of Toronto

Introduction: In response to physiological stress, a cellular stress response is mounted. Characteristic of the cellular stress response is an increase in heat shock proteins (HSPs). HSPs are molecular chaperones that are capable of binding to skeletal muscle proteins to reduce denaturation and aggregation, resulting in reduced damage. It has been well established that lengthening contractions (LC) induce significant skeletal muscle damage, and are an effective means of increasing HSP content. Given that HSPs are stress inducible proteins, they are capable of conferring protection from future damage in a phenomenon termed the repeated bout effect (RBE). The RBE occurs when a primary, non-damaging bout of contractions reduces the extent of damage induced by a secondary, otherwise damaging bout of contractions. It has further been evidenced that estrogen acts to suppress basal HSP content and reduces the extent to which HSPs are increased in the skeletal muscle following stress. However, the effect of estrogen on the ability to mount an RBE has not yet been investigated. Thus, the purpose of the present study is to investigate the effect of ovariectomy on the RBE. Methods: Ovary intact (OVI) and ovariectomized (OVX) Sprague Dawley rats (n=15/group) will undergo a lengthening contraction protocol of either 20LC (n=5/group), 60LC (n=5/group), or 20LC followed 24hrs later by 60LC (n=5/group). Tibialis anterior muscles will be collected 24hrs following the last bout of LCs and analysed for HSP72 content and morphology to detect discernable and microscopic damage to the skeletal muscle. Force production will be analysed during each contraction protocol. Anticipated Results: We hypothesize that OVI will see greater sustained force production throughout the LC protocol, greater HSP72 content following LCs, and reduced discernable and microscopic damage compared to OVX, who will see a blunted HSP response, increased damage, and an impaired ability to maintain force production.

Sabrina Malouka

Physical activity during the COVID-19 pandemic: Does following fitness influencers on social media differentially link to exercise motives?

University of Toronto

The ongoing COVID-19 pandemic and lockdown restrictions have contributed to the increasing popularity of fitness influencers, with many turning to social media for fitness-related information and at-home workouts (Kim, 2022; Mutz et al., 2021). However, there is little understanding of the associations between following fitness influencers and exercise motivation and behaviour. Drawing on self-determination theory (Ryan et al., 2021), this study examined differences in exercise motivation between those who follow fitness influencers on social media compared to those who do not. Participants (N = 300; 65% women, Mage ± SD = 23.60 ± 3.57) completed self-report questionnaires to assess social media behaviours and exercise motivations. Data were analysed using frequency analyses and univariate and multivariate analysis of variance. One-third of participants (33%) reported following fitness influencers on their personal social media. Of those who follow fitness influencers, 80% perceive following these influencers increased their motivation to exercise. Individuals following fitness influencers reported higher appearance ($p < .001$), fitness ($p = .005$) and stress-related ($p = .044$) motivations for engaging in online workouts [$F(4, 179) = 4.33$, $p = .002$] compared to individuals who do not follow fitness influencers. Individuals who follow fitness influencers report using social media to guide their workouts more often than individuals who do not [$F(1, 298) = 15.10$, $p < .001$], as well as more weekly minutes of moderate intensity exercise [$F(1, 297) = 4.69$, $p = .031$]. These results highlight the link between following fitness influencers and increased motivation, specifically appearance-related motivation to exercise. Implications for exercise maintenance and body image will be discussed.

Joshua Taylor

Validation of Lower Extremity Fatigue Protocols

University of Toronto

The ACL is a commonly injured ligament with approximately 250,000 injuries per year in North America. Understanding risk factors related to ACL injury is important for researchers, coaches, athletes, and clinicians to reduce the incidence of injury. One potential risk factor is neuromuscular fatigue: a transient decrease in strength characterized by altered neuromuscular activity. Fatigue results in altered lower extremity (LE) kinematics, which can increase the risk of injury. However, the research is limited by highly variable methods of inducing and quantifying fatigue. Current approaches to inducing fatigue fall into three categories: aerobic methods (A), aerobic-anaerobic (AA) methods, and/or isometric (IM) methods. To improve the quality of evidence in this field, consistency in the way fatigue is induced and quantified is required. Therefore, the purpose of this study is to determine the optimal method of inducing and quantifying LE neuromuscular fatigue. Twenty-six participants will perform three different protocols (A—cycle ergometer, AA—squat jumping, IM—leg press) over two days. Subjective ratings of fatigue (such as rate of perceived exertion and decreases in force/power output) will be compared to real-time changes in the muscles' mean power frequency—an objective metric derived from the frequency spectrum of a muscle's electrical signal that signifies the onset of localized fatigue. To determine the neuromuscular effect of each protocol and to identify an optimal method of fatigue, statistical comparisons of the time to subjective and objective fatigue will be made between fatigue. It is expected that AA will be the optimal fatigue method because of its reliance on localized force production and strength, which require optimal neuromuscular junction conditions and will therefore be most affected by decreases in mean power frequency. This will inform future work aiming to induce LE fatigue, ultimately strengthening the evidence supporting fatigue as a risk factor for ACL injury.

Pratham Singh

Determining the Effect of Dynamic Multi-Planar Tasks on Lower Extremity Kinematics

University of Toronto

Approximately 250,000 anterior cruciate ligament (ACL) injuries occur every year in North America. One injury mechanism includes increased knee valgus and anterior translation of the knee. There are various clinical, kinematics based, screening tools that are used to identify individuals at risk of ACL injuries. However, most of the screening tasks use movements independent of an athlete's level of participation or sport. In addition, the synchronous motion of the lower extremity segments requires a functional-mechanical propagation within the kinetic chain; it is unknown if this is accounted for in injury screening tasks. Therefore, the purpose of this project is to quantify lower extremity kinematics and compare them between environments, sports, and activity level. Two groups (N=220) of participants (evenly distributed between males and females) will be recruited: i) varsity athletes from lacrosse, soccer, volleyball, and basketball; and ii) participants from the general student population. For varsity athletes, data will be collected for sport specific tasks, in the environment of their respective sport (e.g. a soccer athlete will visit the soccer field). A second set of data will be collected from both groups in the biomechanics laboratory where participants will perform standardized tasks commonly used to identify individuals at risk of an ACL injury. In addition, participants will be followed longitudinally to determine if they sustain an ACL injury. The primary outcome is to validate the tasks that are commonly used to screen individuals who are at risk of an ACL injury and their ability to identify multi-joint movement patterns. The longitudinal data will be used to determine if sport specific tasks are better indicators of ACL injury risk. It is expected that the sport specific tasks will better identify those who are at risk of an ACL injury. The findings will have implications for development of injury risk identification.

Adam Di Salvo

The Effect of a Semi-Upright Body Position on Central Hemodynamics, Peripheral Oxygen Saturation and Oxygen Consumption During Submaximal Cycling

University of Toronto

Semi-upright cycling is a common exercise modality during assessments of cardiac function. Despite its use, the effect of hemodynamic conditions induced by this body position on the cardiovascular response to exercise is poorly understood. Purpose: To explore the effect of a semi-upright body position during submaximal cycling on cardiac output ($\dot{Q}$), skeletal muscle oxygen saturation (SmO2), oxygen consumption ($\dot{V}O2$), and perceived exertion. Ten healthy individuals (23±4 years, 50% male) completed alternating five-minute bouts of submaximal upright and semi-upright (40˚ incline) cycling at 50W and 100W. Starting body position was randomly assigned and counterbalanced. $\dot{Q}$ (beat-by-beat; finger photoplethysmography), SmO2 (near-infrared spectroscopy, vastus lateralis) and $\dot{V}O2$ (breath-by-breath; pulmonary gas exchange) were measured continuously at rest and during exercise. Perceived exertion was measured with the Borg (RPE) scale. Data were averaged during the final minute of rest and each exercise bout. Data are change from seated rest and reported as mean±SD. There was a main effect of intensity on $\dot{Q}$, SmO2, $\dot{V}O2$ and RPE (data not shown, all $p<0.05$). During exercise in a semi-upright position, the increase in $\dot{Q}$ (7.3±2.5 vs 5.4±2.1 L/min, p=0.001), the decrease in SmO2 (-30±24 vs -20±19 %, p=0.010) and perceived exertion (median, Q1-Q3: 12, 8-12 vs 9, 8-11, p=0.045) were greater than upright. Interestingly, the increase in $\dot{V}O2$ was attenuated during semi-upright cycling (1.01±0.35 vs 1.17±0.34 L/min, p=0.003). SmO2 was not predicted by $\dot{Q}$ (all $p>0.35$) and RPE was not predicted by SmO2 or $\dot{Q}$ except in the semi-upright position at 50W ($\dot{Q}$, r=0.66, p=0.037). The elevated $\dot{Q}$ during semi-upright cycling does not seem to perfuse active skeletal muscle as SmO2 is reduced and RPE is increased. This suggests a peripheral perfusion impairment despite an elevation in $\dot{Q}$. Additional work should examine leg blood flow to further explore $\dot{Q}$ distribution in the semi-upright position.

Biophysical/Behavioural C

Rozhan Momen

Evaluation of Frailty and Skeletal Muscle Function in Patients with Pulmonary Hypertension

University of Toronto

Pulmonary Arterial Hypertension (PAH) is a progressive medical condition characterized by right sided heart failure. PAH has a prevalence of up to 100 cases per million adults globally with a high 1-year mortality rate of about 23%. Recent PAH registries indicate that majority of patients are over 65 years old, physically inactive, and suffer from concomitant comorbidities, which may also exacerbate PAH disease severity and worsen functional outcomes. Thus, identification and management of modifiable risk factors in this population is of critical importance. One potentially modifiable risk factor is frailty, which is characterized by decreased vulnerability to withstand physiological stressors. A significant contributor to physical frailty is skeletal muscle dysfunction, which is characterized by low muscle mass, strength, and physical performance. Both frailty and skeletal muscle dysfunction have not been evaluated in PAH and may have important prognostic implications.
Objectives: 1) To compare PAH disease severity measures, health related quality of life (HRQoL), and six-minute walk distance (6MWD) between frail and non-frail patients. 2) To assess the difference in skeletal muscle function (lower extremity muscle size, strength, and physical function) between frail and non-frail patients.
Methods: Observational cross-sectional study of 90 adult (≥ 18 years) PAH patients with a clinical diagnosis will be recruited from outpatient clinics at a center of excellence. Frailty will be defined in accordance to Fried Frailty Index as a score ≥ 3 on pre-defined frailty parameters that include shrinking, weakness, exhaustion, low activity, and slowness. Following patient reported outcomes will be utilized: (1) Short Form 36, (2) Duke Activity Status Index, (3) emPHasis-10; (4) New York Heart Association (NYHA) functional class ,and (5) skeletal muscle function questionnaire (SARC-CaIF) Participants will also undergo skeletal muscle assessments including: 1) Fat-free and body-fat mass index using bioelectrical impedance; 2) Quadriceps muscle size and quality with ultrasound 3) Quadriceps strength with strain gauge and 4) Short Physical Performance Battery.
Clinical significance: The ability to understand modifiable risk factors such as frailty and skeletal muscle function in PAH is of critical importance as it may help with prognosis, pharmacological management and provide insights into improving outcomes in this population.

Eric Williamson

Post-exercise protein requirements are similar between endurance-trained females and males during recovery

University of Toronto

To date, females have been under-represented in sports science research and current daily protein recommendations for endurance athletes are primarily based on research on males. This is despite a potential estrogen-mediated sexual dimorphism in amino acid (AA) oxidation during exercise, which may impact protein requirements.
Purpose: A 3-point indicator amino acid oxidation (IAAO) method was utilized to elucidate sex-based differences in daily protein requirements of male and female endurance athletes.
Methods: Eight males (30±3y; 78.6±10.5kg; 75.6±7.5ml/kgFFM/min; means±SD) and seven females (30±4y; 57.7±5.0kg; 77.5±7.1ml/kgFFM/min) during the mid-luteal phase were studied. After 2-d of controlled diet (1.4g protein/kg/d) and training (10 and 5km run/d, respectively), participants completed a 20km run prior to an at-home IAAO trial testing two suboptimal (0.2 and 1.2g/kg/d) and one excess (2.0g/kg/d) protein intakes. Protein was consumed as a crystalline AA mixture based on the composition of egg protein containing [1-13C]phenylalanine to examine whole-body phenylalanine flux (PheRa) and phenylalanine oxidation (PheOx; the reciprocal of whole-body protein synthesis) through breath and urine sample collection. A modified biphasic linear regression determined the breakpoint in PheOx for each participant to generate an estimated average requirement (EAR) for each sex. A 2-way ANOVA was used to compare net balance within the three tested intakes.
Results: PheOx demonstrated an EAR of 1.60g/kg/d for males and 1.61g/kg/d for females, which were not significantly different (P=0.94). The safe intake (i.e. upper 95%CI) was estimated to be ~1.85g/kg/d, which is consistent with the results from our previous in-lab IAAO-based study. Significant differences in net balance at each tested protein intake were observed (0.2<1.2<2.0g/kg/d).
Conclusion: Our findings suggest endurance athletes consume a daily protein intake that is toward the upper end of current American College of Sports Medicine guidelines (~1.85g/kg/d) regardless of sex.

Margaret Harrington

Development of a virtual method to quantify hip and knee joint motion in healthy adults

University of Toronto

Background. Two-dimensional (2D) motion analysis is an effective alternative to expensive 3D motion analysis or subjective observational motion analysis. However, previous 2D motion analysis research conducted data collection in laboratory or clinical spaces, which creates barriers to participation, such as cost, time and transportation. Therefore, the aim of this study was to develop and assess a virtual motion analysis method to quantify hip and knee angles during two functional movement tasks. Methods. Fourteen healthy adults (age = 25.14 [5.56] years) filmed themselves performing body weight squats (sagittal plane) and lateral lunges (frontal plane). Kinovea (V.0.9.5) was used to analyze joint angles statically at maximum depth and over the motion-time cycles (initiation of decent to completion of ascent). Two kinesiology students each performed the video analysis procedure twice, two weeks apart. Intraclass correlation coefficients (ICCs) were used to calculate the intra- and inter-rater reliability for angles at maximum depth. The intra- and inter-rater agreement over the entire joint angle-time signals were quantified using a validation metric, with the acceptable agreement threshold set at a validation metric of 0.803 or higher. Results. Reliability was good to excellent (Squat: ICC = 0.93 – 0.98; Lateral lunge: ICC = 0.80 – 0.97) for all joint angle measurements at maximum depth. The intra- and inter-rater agreement over the entire joint angle-time signal were acceptable for all squat variables except for the inter-rater hip angle comparison (validation metric = 0.797). None of the lateral lunge variables met the threshold of acceptable agreement. Conclusions. The reliability and agreement quantified in this study support the integration of virtual methods to quantify lower extremity kinematics into research and clinical practice. Virtual motion analysis provides an opportunity to increase representation in research and address challenges in accessing health care.

Liam O'Brien

Examining the effects of local ischemic preconditioning on anaerobic upper body exercise performance in athletes

University of Toronto

Background: Ischemic preconditioning (IPC) is a vascular manipulation technique that involves brief repeated episodes of limb ischemia and reperfusion before exercise. This technique has been reported to improve exercise performance, however, the effects on arm exercise are equivocal. The purpose of this study was to investigate the effect of IPC on supramaximal intensity arm cycling in a mixed-sex sample of upper body trained athletes. Methods: Nine (n = 5 males, n = 4 females; 22.4 ± 3.4 years, 171.7 ± 10.6 cm, 76.7 ± 5.7 kg, 43.7 ± 7.7 mL/kg/min V ̇O2peak) healthy, competitive watersport athletes underwent a familiarization trial followed by three experimental conditions: (i) no IPC (CON), (ii) IPC, and (iii) placebo (PLA). IPC involved confirmed bilateral arm occlusion of blood flow using inflatable tourniquets for 5 min, repeated four times, separated by 5 min of reperfusion. Participants completed a 45 s modified Wingate test involving all-out maximal exercise on a mechanically braked arm cycle ergometer. Muscle oxygenation, respiratory, cardiovascular, and blood lactate responses were measured to assess the physiological influence of treatments on performance. Results: IPC increased mean power compared to CON and PLA. Peak HR during the sprints was higher in IPC compared to CON but not PLA. In both IPC and PLA, ΔTSImean were significantly greater than CON in the dominant arm but not the non-dominant arm. No differences were found in resting lactate, blood volume, or post-exercise lactate concentrations between trials. CONCLUSION: This study found that performance was improved in the IPC condition compared to PLA and CON. Physiological measurements in this study provide little support for the observed ergogenic effect and therefore the mechanisms remain equivocal.

Stephanie Buryk-Iggers

Evaluation of the GoodHope EDS Exercise and Rehabilitation (GEAR) Program: A retrospective cohort study

University of Toronto

Ehlers Danlos Syndromes (EDS), a group of heritable connective tissue disorders, is associated with numerous physical and functional challenges. Emerging literature highlights the potential benefit of exercise and rehabilitation therapy (ERT) for people with EDS, however, few studies have evaluated the impact of clinically integrated ERT programming. We present a retrospective evaluation of the GoodHope Exercise and Rehabilitation (GEAR) program. GEAR is an outpatient exercise and rehabilitation program offered by the GoodHope EDS Clinic in Toronto General Hospital (Canada) to patients with Ehlers-Danlos Syndromes. Patients complete a battery of objective and self-reported measures at their GEAR program assessments that occur at baseline, 4-, 8-, and 20-weeks (T0, T1, T2, and T3, respectively). This study was approved by the institutional research ethics board. A total of 83 participants were referred with a mean age of 36.46±11.79 years and 95% were female. From this group, 69 initiated GEAR programming, with a total of 42 patients (60.1%) completing T3. From T0 to T3, 6-minute walk test distances increased by 38.87 ± 12.91 m (95%CI=13.63, 63.95), the Timed-Up-and-Go Test duration was reduced by 3.98 ± 1.62 sec (95%CI=-7.15, -0.81), one-legged stance balance test times on the dominant leg only improved by 2.43±0.96 sec (95%CI= 0.54, 4.31); and the Godin Leisure-Time Exercise questionnaire improved, with a score increase of 9.66± 4.85 (95%CI= 0.22, 19.14). From T0 to T2, grip test strength improved in the dominant hand by 1.81±0.68 kg-force (95%CI= 0.48, 3.14) and non-dominant hand by 1.98±0.68 kg-force (95%CI= 0.65, 3.31); and tandem stance balance test time increased for the non-dominant leg only by 1.94±0.75 sec (95%CI= 0.47, 3.40). This retrospective study shows encouraging results for clinically integrated ERT programming for people in this population. Additional randomized controlled trials and implementation studies are recommended to advance our understanding of efficacy and effectiveness, respectively.