

# FACULTY OF KINESIOLOGY AND PHYSICAL EDUCATION



## ANNUAL RESEARCH REPORT 2017-2018



UNIVERSITY OF  
TORONTO

# ANNUAL RESEARCH REPORT 2017-2018

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2017-18 SUMMARY	Count
Awards and Grants	47
Books	9
Book Chapters	8
Peer-Review Articles	162

## WELCOME

Welcome to the 2017-18 Research Report of the Faculty of Kinesiology and Physical Education.

The following pages offer an overview of the creative, impactful and tremendously interesting research led by our faculty members and their students across a wide variety of fields that comprise the academic discipline of kinesiology.

Their research affected communities near and far – from the International Olympic Committee’s Gender Equality Review Project to exploring the effects of water security inequities on human physical activity and movement. KPE research teams studied optimal protein intake for physically active females, assessed the potential for an early prescription of aerobic exercise to beneficially affect recovery from concussion, and delivered kinesiology-based programming to children with developmental needs. And, that’s just scratching the surface.

Earlier this year, our researchers shared their knowledge through another well attended annual public symposium, addressing issues of accessibility and physical activity across the spectrum of ages and ability.

Collectively, our faculty published 162 peer-reviewed articles, 9 books and 8 book chapters this year. They secured 47 research grants and contracts, and 2 renewed grants which provided a financial base of more than 2 million dollars to support their research. These are exceptional funding totals for a Faculty of our size.

Our record was reflected in this year’s QS World University Rankings, which placed the University of Toronto programs in kinesiology, physical education, and sport and exercise sciences sixth in the world for the second year in a row. This important recognition is indicative of the growing global relevance of the discipline of kinesiology, and serves as further incentive for our Faculty to continue the steady progress we are making towards augmenting the research capacity and research excellence priorities set out in our Strategic Academic Plan.

We are proud of our research progress, and I hope that you enjoy perusing this annual summary.



Ira Jacobs, Dean  
 Faculty of Kinesiology and Physical Education



# MEET THE RESEARCH FACULTY



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# KPE researcher confirms Olympic sports favour white, wealthy athletes



**According to the Olympic Charter, everyone should be able to compete in the Olympics without facing discrimination. But a recent study from the University of Toronto’s Faculty of Kinesiology and Physical Education confirms that the majority of competitors are white and wealthy.**

While most might be aware of this bias, formal studies have been lacking and past researchers have only studied the wealth of countries participating in the Olympics. This is the first comprehensive study at the individual athlete level.

“I studied the prevalence of white and privately educated athletes in comparison to the general population,” says Dr. David Lawrence, a staff physician at the Faculty’s David L. MacIntosh Sport Medicine Clinic.

“There have been many anecdotal reports highlighting the potential disparity in participation, but no one has formally studied it. I think the degree to which race and wealth play a role in elite sport might be surprising.”

To conduct the study, Lawrence collected photos and school data for 568 athletes from the 2014 Sochi Winter Games and 1,643 athletes from the 2016 Rio Summer Olympic Games. He focused on athletes from Canada, US, Great Britain and Australia.

At Rio 2016, 81.7 per cent of athletes were white and 32.7 per cent were privately educated, which is a relative marker of wealth according to Lawrence. At Sochi 2014, 94.9 per cent of athletes were white and 30.3 per cent were privately educated.

Lawrence also discovered that more winter than summer athletes were white.

His findings were recently published in *the Journal Public Health*.

Lawrence hopes that by bringing awareness to this issue, he can help shed light on how to reduce barriers to participation and advancement within sport.

**“A major barrier to participation in many sports is access to wealth. Participating in many sports is costly and the financial burden only increases with advancement – whether it’s equipment, access to facilities or time requirements for both parents and the children,”**

“A major barrier to participation in many sports is access to wealth. Participating in many sports is costly and the financial burden only increases with advancement – whether it’s equipment, access to facilities or time requirements for both parents and the children,” says Lawrence.

In the future, Lawrence would like to find more effective ways to promote physical activity and health in the general population. Research has shown that the public funding given to Olympic athletes doesn’t necessarily promote health in a broader sense, as many people believe.

“Initiatives aimed at increasing physical activity in the general population should target the general population, including increasing access to green space, recreational facilities and public programming. I want to start an honest discussion about the value we place on Olympic sports and explore more effective ways to get people moving.”

Published 10/05/2017 By Katie Babcock

# Sport and sustainable development: setting a research agenda



In recent years, organizations such as the United Nations (UN) have touted the ability of sport to address a myriad of social issues, from poverty and illiteracy to healthcare, particularly in marginalized communities. In 2015, sport was named in Article 37 of the UN's Sustainable Development Goals (SDGs), as a potential tool to meet environmental goals.

On June 8, the Faculty of Kinesiology and Physical Education will bring together scholars from international development, environmentalism, geography and the sociology of sport for a symposium called Sport and sustainable development: setting a research agenda. This research agenda will also incorporate the Truth and Reconciliation Commission of Canada 2015 findings, which balance the respective rights, legal interest and needs for Aboriginal peoples, governments and industry in the face of climate change. The president and CEO of WWF-Canada and former mayor of Toronto David Miller will deliver the keynote address.

We spoke to KPE Assistant Professor Simon Darnell about the growing research field.

## Why is sport such a promising tool for development?

I think sport represents a novel approach to the ongoing challenges of development inequalities. The record of success of international development over the past 50 years is not particularly good, at least not in terms of making the world more fair and equitable. So in that sense, sport may offer a method or framework in which to approach development differently. On top of that, sport is generally seen as a fun and engaging activity that has both wide appeal and a range of benefits, from physical fitness to socialization.

## What kind of positive outcome can sport for development produce at community and national levels?

The outcomes vary, and we should be honest in recognizing that not everyone derives positive outcomes from sport participation or from sport for development programs.

But in the field of sport for development, the most promising results have been as follows: individuals may learn healthy practices via sport that make it more likely that they will, for example, practice safe sex or reproductive health; community members can become more familiar with each other through sport, which can be very important in post-conflict situations or contexts of ethnic or political violence; on an international scale, sport for development (particularly when led by high profile organizations or celebrities) might draw more attention to the importance of development and the plight of those who suffer.

## How can sport impact the environment specifically?

Specifically in relation to the environment, what is promising is the recognition that sport has had a rather poor environmental track record to date, and that things need to improve. So, for example, sustainability is now an

important element of any city's bid to host a sports mega-event like the Olympic Games. This doesn't mean that environmental promises are always met, but the issue of the environment is more important than ever within sport. In turn, if high-profile, global sport organizations like the International Olympic Committee take environmental issues seriously, this can help to continue to make the case that things need to change in response to the threat posed by climate change.

## How does sport connect with marginalized people in a way that government policies do not?

One thing I've found in my fieldwork is that people living in sustained or generational poverty and/or violence are often skeptical of the government and don't trust the ability or willingness of their elected officials to make a positive contribution to their lives. In the midst of this mistrust and various policy failures, civil

society organizations have become important leaders in the field of sport for development. It is within this context, I would say, that sport has really taken more of a hold within the field of international development.

## What evidence is there of long-term impact of sport for development initiatives?

The long term benefits of these programs are hard to measure, for a number of reasons. So we certainly could use more data that helps us to understand the answers to such questions. But I would say that the best long-term impact is that many young people who come up through sport for development initiatives eventually become program leaders and officials themselves. This 'train the trainers' approach - or cascading model - has proven effective in the field of sport for development for supporting the sustainability of such programs.

23/06/2017 Jelena Damjanovic

# PLAYGROUND SUPERHEROES

## RESEARCH FINDS KIDS OVERESTIMATE THEIR PHYSICAL ABILITIES



**Does your child fearlessly fly through the air** or leap over large obstacles like an extreme athlete? New research from the Faculty sheds new light on this reckless behaviour, finding that young children often overestimate their physical abilities.

It's a discovery that could not only console exasperated parents, but could also create new guidelines for sport training and help individuals with movement disorders.

"In this study we measured how accurately kids and young adults could imagine their movements and how well they could perceive what actions were possible for them to perform," says KPE researcher and professor, Tim Welsh. "We found that adults tend to estimate their abilities fairly accurately, while young children will overestimate these same abilities."

Welsh and his team studied how well 45 people between the ages of seven and 25 imagined, perceived and executed a specific movement. The study was published in *the Journal of Motor Behavior*.

Past research has shown that the more times a person performs a task, the better they become at estimating their abilities to perform that task in the future. Younger children haven't had as much experience moving and this may be why their

perception of what is possible could be less accurate.

The findings may influence approaches to training athletes.

"Athletes often use visualization as a training tool, and they also learn by watching others and imagining how they would perform the task themselves," says Welsh. "We're trying to understand how this mental practice works so we can help shape learning and coaching environments."

**"We found that adults tend to estimate their abilities fairly accurately, while young children will overestimate these same abilities."**

And those changes are already taking place. Emma Yoxon, a graduate student at the Faculty and lead author of the study, has put her research into practice as a synchronized swimming coach.

"We use visualization a lot because access to the pool can be limited and we want to avoid overtraining. While imagination is an important tool for many athletes, it might not be as effective for younger children – now I try to get kids moving more."

Such mental practice might not only benefit high performance athletes, but it might also help people with movement disorders recover their abilities.

Welsh and Yoxon are currently working with scientists at the Movement Disorders Clinic at Toronto Western Hospital, University Health Network. They want to understand how well these individuals could use their imagination to train while resting as opposed to stressing their systems through constant physical performance.

In the future, the team plans to run the same studies in individuals with autism, who often have challenges observing and executing actions.

"Now that we know people imagine, perceive and execute actions differently, we're trying to understand the different brain areas involved," says Welsh. "We're excited to be breaking new ground

in this area to hopefully help a wide range of people, from children to elite athletes and those simply wanting to pick up a glass of water."

Published in *Pursuit* fall 2017 By Katie Babcock

# How parents can improve the car ride home with young athletes



**The car door closes** and your adolescent daughter slumps in the seat—a sheen of sweat from the game still lingers on her brow and a scowl emerges on her face. She reaches for her ear buds and avoids eye contact. Clearly, the game didn't go well.

Faculty of Kinesiology and Physical Education Assistant Professor Katherine Tamminen recently published one of the first studies to explore the ways that parents and young athletes interact during the car ride home and how this unique interaction might influence the parent-child relationship.

Tamminen spoke with 27 adolescents between the ages of 11 and 16 involved in a range of sports including baseball, hockey and figure skating, as well as with their parents. She asked athletes about interactions with their parents while they drove home after games and practices.

She found that while there isn't a one-size-fit-all approach for parental communication during the car ride home, there are some points for parents to consider to ensure the experience is as positive as possible for both parties.

## Take some time

This is advice for both parents and athletes. "Give the child some time to think and give yourself some time to think rather than just attacking the topic of the athlete's or the team's performances," Tamminen advises. "Parents said it was really valuable to let the emotions cool down. When people get in the car right after the game, especially if it's a poor performance, there is the potential for conflict or negativity. Just take time to think before you speak."

## Use the privacy as a positive

"The physical set up—you're side by side, you're not facing each other—also opens up the conversation," Tamminen says. "You're non-confrontational. We found that the car ride creates this pod of privacy where you can talk about things you might not otherwise talk about in front of other people, which could be a good or a bad thing," she explains. If an athlete was being treated poorly by teammates or their coaches, for example, the car could provide a safe space to talk about that. But in other cases, Tamminen found things could get more heated when there weren't spouses, siblings or teammates in the car to act as potential buffers.

## Talk about the actual car ride home

It could be helpful to directly address the car ride home with your kids. "Some parents said that even having a conversation about the car ride helped," says Tamminen. "Ask them what they want to talk about during that time. Maybe they'd prefer to talk about their performance after dinner or before bed. Perhaps you'd rather use the car ride home as a cooling off period, perhaps to put on music or just relax."

## Develop rules of the road

Allow your child to contribute to the plan. Your child may say, "I'd really rather you start with something positive rather than always telling me the negative." Having that conversation with your child and allowing them some input on how these talks unfold can be very valuable, according to Tamminen's research.

## Pay attention to non-verbal communication

Every relationship is different. But some children may come to the car and ask directly how they did or what they did wrong. "In other cases, athletes might get in the car, put in their headphones and look out the window," Tamminen explains. Some of the athletes admitted that they'd pretend to fall asleep to avoid having to talk about the game. "That could be an example of athletes trying to assert their power over the direction of the conversation. They may choose not to talk sometimes as well, and sometimes that silence is useful if everyone needs to cool down. It's important to distinguish between good silence and bad silence."

## Don't be afraid of tough conversations

There are non-accusatory ways to talk about mistakes on the field. "I think that there's value in those hard conversations," Tamminen says. She emphasizes that these must be measured, thoughtful and productive. "Maybe you witness something negative that happened to your child during that game and you need to debrief about it because it can't sit and fester. These tough conversations can be valuable for the athlete's development or more broadly for the child's development and for the parent-child relationship. But you want to ensure that your child doesn't feel alienated from you, or dread the car ride home. It's a fine balance."

*The Car Ride Home: An Interpretive Examination of Parent-Athlete Sport Conversation research by Assistant Katherine Tamminen was funded in part by the U of T Connaught Fund and the Social Sciences and Humanities Research Council.*

Published 04/10/2017 By Valerie Iancovich



## Even Canadian babies and toddlers are not active enough: We could do much better, says KPE expert

Experts have been saying for decades that Canadians are in the midst of an inactivity crisis. Various research experts, including those at Ottawa's Children's Hospital of Eastern Ontario (CHEO), the Canadian Society for Exercise Physiology and ParticipAction, contributed to a report released November 20 that says babies and toddlers are far too sedentary and get too much screen time. The report includes new guidelines that advocate for three hours of physical activity for infants and children up to age four, with at least one of those hours committed to 'energetic play.' Faculty of Kinesiology and Physical Education Professor John Cairney has published extensively on early childhood physical activity and weighs in below on what these latest guidelines could mean for Canadian families.

This report seems to suggest that parents make assumptions about how much their small children are moving in a kind of innate, organic way. How do we get back to really allowing children to get the movement they need?

That is a real challenge for parents. For many families in Canada, children are in daycare from an earlier age, and are starting school sooner. This means there is much more structure in the lives of children than in previous generations. Parents should ask daycares and schools about their policies are around unstructured play – how much of the day is devoted to free play, which must include "active" play alongside other activities (e.g., arts and crafts)? It is also sometimes difficult to allow kids the time they need to explore and play and practice fundamental movement skills because of our busy lives. Some of that play also involves some risk (for example, the chance of falling while learning to walk). We want to keep our kids safe but we don't want to bubble wrap our children either. As difficult as it is, we need to step back sometimes and let our children take some, reasonable risks in their physical literacy journey – that is the how they learn and grow.

Is it mostly about eliminating screen time and getting back to play? What role, if any, does structured physical activity (toddler soccer, baby yoga) play in the solution?

There are clear guidelines about limiting screen time and those should be followed. But, as important as free play is, structured play is also important. We know from the literature on motor development that children do not acquire fundamental movement skills only through free play. Instruction, support and constant encouragement are also needed. There are some great programs in the community that support movement skill development. It is really important though to pick programs that emphasize movement skill across domains (fine, gross,

balance) and not just specific sport skills. The early years should be about acquiring the FUNdamentals of physical activity and sport. It is not the time to specialize in a single sport. It should always be about FUN!

The trend is hardly new. So, what might advocates and health promotion campaigns be getting wrong in raising awareness about this? Or is this just a result of the modern lifestyle demands on families?

It isn't new, but the hope is by continuing to raise awareness, we can get the message through. Often it is not about not having enough time but how we use the time we have. Instead of an hour of TV watching in the evening, play an active game together as a family. Go for a walk and use the time to connect with your children. I am not saying it is easy, but if we see the value and know the importance of doing it, we are more likely to make it happen. Part of this knowledge. Part of it is making a commitment to change. Remember, playing with your children is good for you too!

This report says daily toddler physical activity should include at least one hour of "energetic play" for three- and four-year-olds — something that previously wasn't recommended until age five. Why the change?

Part of it is related to concerns about how little time children three to four spend in energetic play. We used to think this just happened naturally but we see from research this is not so. It is tragic that we need to make these recommendations, but it speaks to how the experience of children (the ways children's lives are structured around sedentary pursuits) has changed so profoundly in our society over the past couple of decades.

Can you speak to any potential connection between these findings in preschool children and the lack of universal access to early childhood education? If we had a more regulated system that not only had standardized curriculum, but provided access to early childhood education for all young children (across the socioeconomic spectrum), could we perhaps expect healthier, more active kids?

A quality early childhood program (preschool, daycare) should include opportunities for the development of physical literacy. This requires training and support for staff and ongoing monitoring. The provision of quality day care that is universally accessible is extremely important. However, even in structured setting, we could do a better job.

Published 22/11/2017 Valerie Iancovich





# Drawing a different roadmap

## MPK students deliver kinesiology-based programming to kids with developmental needs

University of Toronto Master of Professional Kinesiology (MPK) students just capped off another successful term, working with sixteen Toronto children aged six to 12 who have a broad range of developmental abilities through the Faculty's S.M.I.L.E (Sensory Motor Instructional Leadership Experience) program.

MPK graduate Elaine Abramov discovered a passion for improving physical literacy in this population of kids. "Every week we saw a major milestone reached. We need more programs that allow these kids to tap into their potential – and they have endless amounts of it."

The innovative 12-week program is facilitated in partnership with Surrey Place Centre and Clinton Street Public School and is now in its second year at the Faculty. The program allows MPK students to work through the lens of a kinesiologist to fill a need in the community that is not currently being met.

The one-on-one sessions epitomize the best that experiential learning has to offer in developing the Faculty's and the University's connections in the community while providing MPK students with an opportunity to apply their knowledge in a meaningful way. This represents what Abramov loves about kinesiology, that it really is an "all-encompassing field."

The S.M.I.L.E curriculum is research-informed by Professors Arbour-Nicitopoulos, John Cairney and Ashley Stirling and applies the latest evidenced-based research on how to improve human movement, health and wellness. Barb Brophey, a seasoned gymnastics instructor at the Faculty, spearheads the work on the ground and calls her involvement in the experiential learning environment "the highlight of my fall and winter."

Michele Riel, a current MPK student, says working with the children enhanced her skills as a kinesiologist. "I have a much greater understanding of how to teach basic movement patterns and correct form. I have much more experience in breaking down skills and teaching progressions, also considering the important elements of client motivation," she explains. "A highlight for me was developing relationships with the children. It was extremely rewarding to see them persevere and master tasks after initially struggling. Their smiles and enthusiasm made this experience the highlight of this academic term."

Professor Stirling says that while the positive impact of the S.M.I.L.E. program on both clients and students is rewarding to see, this is only one step towards supporting the movement capabilities of these children.

Abramov agrees. "Educators and leaders should be creating more opportunities like the S.M.I.L.E program. These kids have tremendous potential to reach. They just have a different road map for getting there."

Published 10/12/2017 Valerie Iancovich



# Outpacing Cancer

## Professor Linda Trinh brings expertise in cancer survivorship and physical activity

Assistant Professor Linda Trinh knows a thing or two about going the distance. With dozens of ultramarathons to her name, some up to 40-hours long, the prolific researcher says she applies the same philosophy to her work as she does to her long distance races. “The mind that you enter a race with is not the mind you finish with. It’s a journey of rediscovery and anticipating challenges and being able to overcome them during that journey. You have to be ready to adapt at all times.”

Trinh completed her PhD at the Faculty of Physical Education and Recreation at the University of Alberta with a focus on exercise and health in kidney cancer survivors. Her appointment at KPE took effect on January 1, but she’s already a familiar face at the Faculty having completed a two-year post-doctoral fellowship here in 2015.

Trinh says that working alongside faculty who focus on chronic disease prevention and management through physical activity with knowledge translation skills is one of the many reasons she’s so inspired to join the Faculty. “I’m very excited to contribute to a world-class, cutting-edge collaborative research and teaching environment to fill a critical gap in the physical activity and cancer survivorship agenda. I’m not aware of any other institution in Canada that has such robust exercise oncology expertise housed in

one Faculty. All of us come at this topic with slightly different perspectives and expertise, so the potential to innovate here is incredible.”

The relationship development and interdisciplinary opportunities at the University and its academic hospital affiliations will also provide Trinh with access to outstanding new collaborations. “With such a breadth of experts and access to specialized populations, especially in the area of cancer control and cancer survivorship, U of T is a great place to be in terms of being able to fulfill my research ideas.”

Before coming to KPE this winter, Trinh was an assistant professor (tenure stream) in the Department of Kinesiology and Community Health in the College of Applied Health Sciences at the University of Illinois at Urbana-Champaign. Though she will be making several connections here locally, she continues to foster the many partnerships she established in the US—which will contribute to enhancing the Faculty’s already strong international reputation.

Currently her research focuses on the development of evidence-based and theoretically-driven physical activity and sedentary behaviour interventions for cancer survivors. She is also interested in examining the supports and resources required to help this population stay active

after treatment has ended. “I’m interested in providing the behavioral strategies needed not only for physical activity adoption, but for maintenance. These strategies can range from anticipating and overcoming barriers to physical activity to habit formation.”

She is also looking at the intersections between cancer and aging as it relates to cognitive functioning and brain health, making the possibilities of connecting with institutions like Baycrest Health Sciences, Sunnybrook Hospital, and the Toronto Neuroimaging Facility especially inspiring.

This term, Trinh is teaching Exercise and Mental Health to third year students. During her time at the University of Illinois she earned a spot on the ‘List of Teachers Ranked as Excellent by Their Students,’ so many KPE students should be in for a treat with Trinh at the helm.

“Dr. Trinh was recruited to the Faculty precisely because her research and teaching align so well with the Faculty’s Academic Plan, mission and vision,” says Dean Ira Jacobs. “I’m very optimistic about how her expertise in exercise oncology will develop, the synergy with the research of other colleagues in the Faculty, and the positive impact she is sure to have within the Faculty and beyond.”

Published 19/01/2018 Valerie Iancovich



## U of T researchers study how women feel when exposed to media's portrayal of women's bodies



Every day, media and social feeds are bombarded with images of women's bodies – the majority being what Western society considers the “ideal” physique. As a result, shaming (and more recently praising) of any bodies that are outside of this “ideal” has become commonplace.

In a unique study, University of Toronto's Faculty of Kinesiology and Physical Education researchers Tim Welsh and Catherine Sabiston, along with graduate student Eva Pila, came together to look at how the media contributes to how people feel about their own bodies.

“We wanted to learn the impact of repeatedly seeing images of what one believes to be the ideal body,” says Welsh.

Although Welsh and Sabiston were both interested in answering this same question, they have two entirely different focuses within kinesiology. “I focus on the cognitive neuroscience approach, while Catherine looks more at emotional traits and responses,” says Welsh. “She had already done a lot of research on how people feel when they look at different body types, specifically on what is considered to be the ‘ideal body’ versus the above-average body so the timing to take this research further was perfect.”

The next step in Catherine's research was to look at how people think about the body and the brain areas involved in those thoughts –

the mechanisms of the brain and how they shape how people respond emotionally. “We saw this as a new way of looking at and analyzing body image data. Instead of just looking at how women respond when they see images of ultra-thin, average-size and above average-size female models, we looked at their cognitive response – how they process and react to the different images. We were also interested in whether women's feelings of self-consciousness influenced how they would respond.”

To do this, graduate student Eva Pila recruited two groups of women between the ages of 18 and 25. “One group were women who have a very low tendency to feel self-conscious about their body,” says Pila. “The other was the opposite – women who had a high tendency to feel self-conscious about their body.”

Each group was then shown images of different bodies. On each image, there was a coloured target stimulus on one limb (for example, a red or blue dot on the hand or foot of the body in the picture). Then the women were asked – regardless of where the target was placed – to press a hand button if the circle was red, or press a foot pedal if the circle was blue.

“We were looking at response times and what is known as the body-part compatibility effect,” says Welsh. “The pattern of reaction times tells us if these women are matching or

comparing their own body to the so-called ideal body that is more common in the media, or the less commonly seen above-average sized body.”

The results were eye-opening.

“Our findings showed that there is a tendency for women who are more self-conscious to compare and match their bodies, at a neurocognitive level, regardless of the body type they see. The women who were less self-conscious did not compare or match their body to all other bodies.”

Sabiston says it's a finding with great implications for the media. “Even the newer advances we've seen lately in advertising campaigns and other forms of media that portray all body shapes and sizes may be futile among women who tend to be self-conscious about their body.”

The timing of this study coincides with news of Mattel's release of new Barbie dolls in different sizes and backgrounds. This will be the focus of the research team's next study. “We are interested in seeing how young girls compare themselves to these different body shapes and how it positively or negatively affects their responses in a similar process,” says Welsh. “The findings should be interesting.”

Published 26/01/2018 Janet Gunn

# Water Walkers

## Protecting life. Protecting movement.

Water research may not be the first thing people associate with the Faculty, but as graduate student Stephanie Woodworth sees it, nothing could be more related.

“If we think about the human body as being 70 percent made up of water, that alone should be enough reason to study water in order to understand the active human body.” But, Woodworth’s interest in water goes far beyond. She is interested in exploring the inequities with water security in Canada and how it shapes our movement and our lives.

“Access to safe, clean water determines how we’re able to move, where we’re moving, why we’re moving and if we’re moving. It ultimately shapes our entire lives,” says Woodworth, who is in her second year of a master’s degree in exercise sciences at KPE.

She is focusing her research on the Anishinawbe Water Walks, a movement initiated in 2003 by two Anishinawbe grandmothers, who started walking the perimeter of the Great Lakes to raise awareness about the importance of preserving clean water from pollution.

“We talk about increasing sport and physical activity participation in the North, but we’re not taking into account that a lot of these communities don’t have access to drinking water,” she says.

“So, how are they supposed to participate in sport and physical activity when they don’t have access to life’s basic necessity?”

Woodworth points to the similarities in the Global South where “imported” sport for development initiatives often fail because they overlook the realities of the people living there. This spring, she had a chance to discuss these issues first-hand as one of two Canadian youth ambassadors invited to attend the International World Water Forum in Brazil.

The Forum is the biggest water-related event organized by the World Water Council to promote awareness, build political commitment and trigger action on critical water issues. Prior to attending the Forum, Woodworth joined 70 youth from 50 countries at the World Youth Parliament for Water, a youth network acting for water.

“We’re all working together to share ideas and resources for actions we

can all take collectively within our communities and further,” she says.

Woodworth has already made a significant contribution. She co-wrote a children’s book called *Canada’s Great Water Adventure* to inspire children to take an interest in water and outdoor adventure. The book follows the adventures of Fernando, an exchange student from Brazil, and Brooke, a young Canadian whose family is hosting Fernando, as they visit each Canadian province and territory to learn about Canada’s diverse history, its waterways, and water’s impact on livelihood and well-being.

So, what’s next for this prolific student?

Woodworth’s hope is to continue expanding her understanding of water security in North America with a PhD in human geography, so that she can continue to raise awareness about the importance of protecting water and the inequities of water access in Canada.

“But, most importantly, I want to continue building relationships between people and water to show that we all have water bodies and that we’re all connected to bodies of water. I want to expose those connections and strengthen them, so that we’re all water stewards and protectors,” she says.

For those wondering about her transition from kinesiology to geography, Woodworth again points out the obvious connection.

“Physical cultural studies in kinesiology examine the power relations that are created and reproduced through the spaces in which bodies exist, so my integration into human geography will be expanding my analysis of space, and bodies and space.”

“I think it’s really important that we have these diversities of subject matter,” says Caroline Fusco, associate professor at KPE and Woodworth’s supervisor. “Stephanie’s study doesn’t just address water and indigeneity, but also women, who are the keepers of water. The fact that she could rely on our Faculty’s expertise, while also taking courses with Eve Tuck, associate professor of critical race and Indigenous studies at OISE, and Bonnie McElhinny, associate professor in anthropology, is a testament to the wealth of scholars working on social justice issues at U of T.”



**“Access to safe, clean water determines how we’re able to move, where we’re moving, why we’re moving and if we’re moving. It ultimately shapes our entire lives.”**

# KPE researchers dig deep into the meaning of subconcussion and find out it's not all bad news



A couple of years ago, Lynda Mainwaring was talking to her sport concussion class about the term subconcussion. They were having trouble wrapping their heads around what it actually means.

The concept has been garnering increasing attention ever since the surge of interest in chronic traumatic encephalopathy (CTE), a suspected long-term outcome of multiple repeated blows to the head – with or without concussion - that can manifest in different ways, from feeling depressed to being more irritable and impulsive.

“We knew it meant not a concussion, something that is under the threshold for the diagnosis of concussion, but what does that mean?” says Mainwaring, an associate professor at the University of Toronto’s Faculty of Kinesiology and Physical Education.

With the help of her graduate students, Kaleigh Ferdinand Pennock, Sandhya Mylabathula and Benjamin Alavie, Mainwaring embarked on a two year systematic review of all the literature on sport related concussion that examines the term subconcussion or repetitive hits to the head.

The first thing they noticed was a lack of consistency and clarity in defining and measuring variables related to the concept of subconcussion. Mainwaring and her group suggest replacing the term with subconvulsive impact, which can be measured and operationally defined - putting everybody researching the phenomenon on the same page.

Next, Mainwaring and her team classified the literature into three main categories based on primary focus: neurobiological, neuropsychological and impact exposure metrics.

They found the neurobiological studies suggest that prolonged exposure to repetitive head impacts in sports is associated with both microstructural and functional changes in the brains of male athletes. This can manifest in

many ways, including white matter changes, cortical thinning, decreased volume changes in some regions and transmission dysfunction in the corpus callosum-the major highway between the left and right hemispheres of the brain.

“We don’t have a direct one to one connection or evidence to say these kind of structural changes in the white matter will lead to cognitive impairment, depression or irritability, but we can tell that some of the areas of the brain that were affected – the limbic system and the dorsolateral prefrontal cortex – are areas of the brain that influence emotions.”

There was not enough evidence to suggest whether these changes are neuroprotective (a temporary shutting down of the nervous system to help the brain heal), transient or permanent. But, the message is clear, according to Mainwaring.

“It’s not a good idea to be exposed to any situation where you’re getting repeated blows to the head. Our brain is not meant to be knocked about like that.”

The neuropsychological studies didn’t show clear evidence for a relationship between repetitive hits to the head and deterioration in neurocognitive performance, such as memory and attention.

“This may be either because that’s not happening or because our measures aren’t sensitive enough to pick it up,” says Mainwaring.

Finally, there was insufficient evidence to determine a minimal threshold for injury from repetitive hits to the head. According to Mainwaring, each individual is going to respond to a blow to the head differently, because everybody’s brain is different. Differences in time between impacts, hit location (top or front of the head), frequency of impacts, age, history of concussions, type and magnitude of force and history of depression, for example, all play a role in outcome.

“Whereas you may not get a concussion from an impact of 60 g, I may get one from 50 g. So, we can’t say with certainty that a particular amount of force will necessarily give you a concussion. Similarly, we cannot say that a certain force will not lead to a concussion, but may lead to a problem down the road. We need standardized measures and protocols in relation to each dimension of impact exposure to help us understand what repetitive hits to the head are doing,” says Mainwaring.

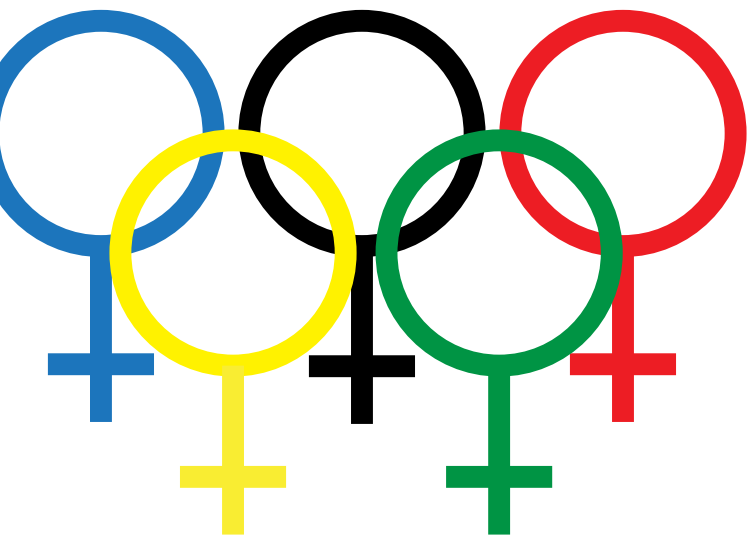
Mainwaring hopes this review serves as another warning to athletes to avoid banging their heads, but also to encourage modifications in sports that will prevent hits to the head. She also wants people to realize that you don’t need to have a diagnosis of concussion, but if you’ve been exposed to a number of hits to the head that result in some changes in the brain, you may face problems down the road.

The good news, according to Mainwaring, is that this research review shows that repetitive hits to the head do not necessarily lead to neuropsychological problems - thinking and emotional problems. That’s because the brain is much more plastic than we realize and we’re developing new brain cells throughout the lifespan. And, there is plenty of evidence of how important exercise is for neurogenesis (the growth of new neurons). So, we can recover if we don’t expose ourselves to repeated opportunities in which we’re going to be vulnerable to further damage. In other words, we can do something to help ourselves.

“Your brain is going to heal and you will go on to be a healthy functioning individual,” says Mainwaring. “I would say that most of the people I know have had at least one concussion and we’re all doing okay.”

Subconvulsive head impacts in sport: A systematic review of the evidence was published on February 3 in the *International Journal of Psychophysiology*

Published 12/02/2018 Jelena Damjanovic



# International Shift

## Research fuels IOC Gender Equality Review Project

On International Women's Day, the International Olympic Committee pledged to advance women's participation and leadership in sports by promising to act on 25 gender equality recommendations.

The announcement follows years of KPE research highlighting gender inequalities at the Games. The Faculty's Centre for Sport Policy Studies has done gender audits of the Olympics going back to the London Games of 2012.

"I think it's fair to say that the Centre for Sport Policy Studies has contributed significantly to the environment that produced these recommendations," says Professor Bruce Kidd, an Olympian and vice-president and principal of U of T Scarborough.

He adds that he has shared the U of T surveys with senior IOC staff in Lausanne, Switzerland. "The surveys have not only focused on numbers, but the quality of opportunities, including the nature of events and whether they were equal," he says.

Kidd says the U of T research is reflected in the IOC's Gender Equality Review Project, which aims to further gender equality across the global sports community by removing barriers to women's and girls' participation in sports at all levels.

"The CSPS has been involved in gender equality work for some time, but the international shift started in association with the London 2012 Olympics," says Professor Peter Donnelly, director of CSPS.

"There was a great deal of gender equality triumphalism (on the part of the male-dominated IOC) associated with the fact that there were, for the first time, women in every sport (with the introduction of women's boxing), and women athletes on every team from countries that had previously excluded women from participating.

"These were important achievements, so some of the triumphalism was deserved, but I was a little sceptical about the announcements that these were 'the Women's Olympics.'"

The CSPS researchers decided to carry out a gender audit that asked what remained to be done to achieve gender equality at the games. They found there were significantly more medal events for men

than women, more male athletes than female athletes and important differences in the circumstances of participation for women.

The researchers followed this with an audit of the Sochi Olympics (2014), and are preparing reports on Rio

(2016) and Pyeongchang (2018).

The IOC's new 25 recommendations were also informed by the work of Nancy Lee, a Varsity Blues swimming alumna and former head of CBC Sports, who was hired as an adviser and co-ordinator for the IOC Gender Equality Review Project.

"The work that went into this report is comprehensive," she says. "In the past, IOC and IFs have dealt with various women's issues, but they didn't look at the whole picture.

"We can't just talk about getting equal numbers of athletes on the field of play if we don't have equality in the boardroom and if we're portraying them in a sexist or non-gender neutral way."

"This report is comprehensive across the board and the outcomes are tangible," she adds. "There are dates and timelines and people with assigned responsibilities. That should make a difference this time around."

**"I think it's fair to say that the Centre for Sport Policy Studies has contributed significantly to the environment that produced these recommendations."  
— Professor Bruce Kidd**



# Public Symposium mobilizes change



On March 1, U of T's Faculty of Kinesiology and Physical Education hosted a free symposium called Mobilizing Change, the eleventh installment of its annual public research series. With the Paralympic Games in PyeongChang, South Korea, just around the corner, the symposium focused on the importance of accessibility in sport and recreation, as well as the significance of physical activity across the lifespan.

"We know already that physical and metaphorical barriers can impact one's ability to enjoy healthy active living," said Professor Ira Jacobs, dean of KPE, in his opening remarks. "Our Faculty believes strongly in breaking down such barriers to enable more individuals to become more active throughout their lifetime and reap the many related benefits."

The speakers at the symposium were KPE's Professor John Cairney and Assistant Professor Kelly Arbour-Nicitopolous, who were joined by University of Alberta Assistant Professor Danielle Peers and Mount Royal University Professor David Legg. They each drew on their research and lived experiences to reveal the societal implications of limited participation opportunities for individuals with disabilities, particularly in the area of sport and physical activity.

"Stories about disability and sport often focus too heavily on athletes achieving high performance success after a traumatic injury, neglecting the larger, often invisible, population of individuals, including those born with neurodevelopmental and congenital conditions that affect their ability

to participate in physical activity," said Cairney, whose expertise lies in motor development, pediatric exercise sciences and adapted physical activity.

His presentation focused on the policy and programming required to support the physical activity journeys of children and youth across a wide range of abilities.

Arbour-Nicitopolous' talk focused on diversifying 'play' and grassroots programs for young people with disabilities.

"Adolescence and emerging adulthood are pivotal developmental periods during which lifestyle behaviours can shape health habits into adulthood. Engaging youth and emerging adults with disabilities in physical activity within their communities is imperative, not only for reducing the risk of secondary health conditions but for enhancing quality of life in adulthood," said Arbour-Nicitopolous, an expert in exercise psychology, disability and physical activity.

2018 KPE public symposium David Legg, John Cairney, Kelly Arbour-Nicitopolous and Danielle Peers presenting at KPE's 2018 public symposium Legg reviewed the legacies of past Paralympic Games, addressing the challenges and opportunities of future Games in helping to create a more equitable society.

"The vision of the global governing body of the Paralympic movement and Games, the International Paralympic Committee (IPC), is to 'enable Para athletes to achieve sporting excellence and inspire and excite the world.' But, is this vision achievable or even appropriate," asked Legg, whose research

interests range from sport management to adapted physical activity.

Peers, an expert on disability, sport and social justice movements, questioned whether Para sport systems still reflect the needs and backgrounds of most Canadians with disabilities, focusing her talk on equity, joy and community in our sport and movement cultures and in Canadian culture more broadly.

"The playground holds more potential for social movements within disability communities than the podium ever could," said Peers, who won a Paralympic bronze medal and five national championships during her career as a wheelchair basketball athlete.

The presentations were followed by a Q & A session with the audience who posed their questions on Twitter using the hashtag #UofTmobilizingchange.

Dean Jacobs closed off the evening by thanking the presenters for sharing their individual areas of expertise and multi-pronged solutions.

"This symposium highlights the research excellence and creativity to which we continually aspire at the University of Toronto with networks of collaborating scholars from elsewhere."

Jacobs also thanked the audience, saying that these important conversations couldn't take place or create a lasting impact without them.

Published in *Pursuit* summer 2018 By Jelena Damjanovic



## Starting aerobic exercise soon after concussion improves recovery time, U of T study finds

A new study from the University of Toronto's Faculty of Kinesiology & Physical Education has found that starting aerobic exercise sooner rather than later after a diagnosed concussion contributes to a faster recovery and return to sport, school and work.

The study, published in the journal *PLOS ONE*, supports the view that aerobic exercise is safe and potentially protective in symptomatic individuals.

"We knew aerobic exercise had a positive influence in other conditions that affect the brain (such as depression, stroke and cognitive impairment) and in cases of persistent symptoms following concussion. However, only a couple of studies previously examined aerobic exercise in the acute period, and none as early as we did," said Dr. David Lawrence, staff physician at the David L. MacIntosh Sport Medicine Clinic at U of T and principal author of the study.

So, how soon after a concussion is it safe to start doing aerobic exercise? Lawrence says the study, which followed the recovery of 253 people between the ages of 15 and 20, has shown that some individuals benefit from starting low-impact, aerobic activity as early as 24 hours after injury.

For each successive day of delaying the start of aerobic exercise, individuals had a less favourable recovery trajectory, according to the study. Initiating aerobic exercise at three and seven days following injury was associated with a reduced probability of 36.5 per cent and 73.2 per cent respectively of a faster full return to sport, and a reduced probability of 45.9 per cent and 83.1 per cent respectively of a faster full return to school and work.

"Historically, concussion management was based on a simple recipe of rest until your symptoms go away. However, what we have realized is that in many people symptoms take time to resolve and prolonged periods of rest may have a negative impact because rest

was interpreted as no activity in sport, school, work, screen and social activities," said Michael Hutchison, director of the concussion program at the MacIntosh clinic and co-author of the study.

"We still believe that a brief reduction in activity from normal levels is beneficial," he said. "However, we recommend maintaining activity levels that do not exacerbate symptoms in the acute period."

Lawrence suggests initially doing low-impact aerobic exercise with minimal head movement, such as stationary cycling, elliptical and walking. Jogging and swimming are not recommended at this stage as they involve greater head movement.

"Exercise recommendations should be individualized based on the clinical assessment, but we feel the intensity of aerobic exercise should begin with low-intensity (you should be able to have a conversation with someone as you exercise) and should not worsen the symptoms," says Lawrence.

The results of this study did not observe a different recovery pattern between men and women. However, a history of concussion, higher symptom burden and loss of consciousness were associated with a prolonged recovery.

The scientists recommend any exercise plans prescribed by physicians following an injury such as a concussion should include recommendations about when to start exercise post-injury, in addition to the customary recommendations about the frequency, intensity and type of exercise.

The study's co-authors include Doug Richards, an assistant professor in the Faculty of Kinesiology & Physical Education, and Paul Comper from the Toronto Rehabilitation Institute, University Health Network

19/04/2018 By Jelena Damjanovic



# RECYCLING INJURED LIGAMENTS FOR RESEARCH



Ligament and tendon sprains account for almost half of all injuries in youth sport and can keep athletes off the field and ice for months at a time. Injuries of the anterior cruciate ligament (ACL), a major ligament which runs diagonally in the middle of the knee, are particularly devastating, often occurring when an athlete – typically in sports like soccer, football or basketball – suddenly decelerates and pivots at the same time.

Yet despite the statistics, research on ligaments and tendons is limited because, unlike blood or muscle, tissue samples that can be examined are difficult to obtain, says Daniel West, who is doing an industry related post-doctoral fellowship in the Iovate/MuscleTech Metabolism and Sports Science Lab, run by Assistant Professor Daniel Moore at the Faculty of Kinesiology and Physical Education

“You can study the metabolism of ligament cells (fibroblasts), how they grow and multiply, flat on a dish. However, that doesn’t tell you any functional information, such as how strong or elastic they are,” says West. Fortunately, there is a technique, used in only a handful of labs around the world, that lets scientists form mini 3D ligaments that can be tested for metabolism and strength.

“ACL injuries generally require surgery. During surgery, the injured ligament is cut out and normally discarded. Instead of discarding it, we take the ligament at the time of surgery, harvest the alive cells from it, and re-grow a mini ligament that can be used for research,” says West. “These immature ligaments are smaller and weaker than healthy ligaments and so aren’t good for transplanting back into the people, although some testing of this is underway. However, they are an excellent research model to help us understand the underlying factors that make ligaments strong and healthy.”

West learned the technique while doing his first post-doctoral fellowship with Professor Keith Baar at UC Davis. A video featuring West and his colleagues demonstrating the technique was recently posted on JoVE, a scientific video journal that publishes how-to videos of scientific experiments from top laboratories around the globe.

When the opportunity to work at KPE with Professor Moore presented itself, West was happy to take it. He and Moore knew each other from ten years ago, having shared the same PhD supervisor Professor Stuart Phillips at McMaster University.

“At one point I actually said to Dan when we were going to go our separate ways, I’m going

to learn some new things and then I’ll come back and work in your lab,” says West.

Now that he is, the hope is to merge some of the fundamental science techniques, such as the “recycling” of discarded ligaments, with the human physiology research that is the focus in Professor Moore’s lab.

“In Dr. Moore’s lab we are interested in partnering with Toronto orthopaedic surgeons and the David Macintosh Sports Medicine clinic to use this model to reveal how exercise and nutrition interventions can help repair injured ligaments, or prevent those injuries from happening in the first place.”

Professor Moore calls it a unique opportunity to apply a more holistic rehabilitation strategy to injured athletes.

“Our current research is focused on skeletal muscle repair and growth,” he says. “Injured athletes or those recovering from reconstructive surgery generally lose a significant amount of muscle mass that subsequently must be recovered during their rehabilitation. This research model will give us the ability to study how exercise and nutrition can help rebuild and strengthen both skeletal muscle and the connective tissue in tendons and ligaments, ultimately accelerating the athlete’s return to play.”

01/10/2017 By Jelena Damjanovic

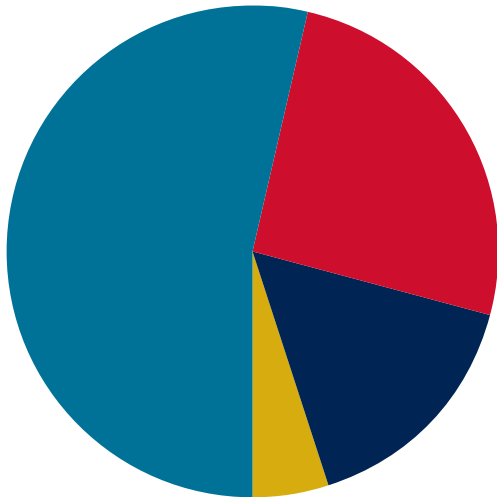
# KPE RESEARCH FUNDING AWARDED – 2017-2018

Primary Investigator	Sponsor	Research Project Title	Funding Type	Amount
Arbour-Nicitopoulos, Kelly	Social Sciences & Humanities Research Council (SSHRC)	Multi perspective exploration of disability sport experiences among emerging adults	Operating	\$1,395
Arbour-Nicitopoulos, Kelly	University of British Columbia – SSHRC Subgrant	The National Physical Activity Measurement Project for Children and Youth with Disabilities	Operating	\$58,695
Arbour-Nicitopoulos, Kelly	University of British Columbia – SSHRC Subgrant	The National Physical Activity Measurement Study for Children and Youth with Disabilities	Operating	\$9,554
Beach, Tyson	Canada Foundation for Innovation (CFI)	Movement assessment and (re)training for the prevention of musculoskeletal disorders	Physical Infrastructure	\$199,090
			Operating	\$59,727
Beach, Tyson	Ministry of Research and Innovation (ON)	Movement assessment and (re)training for the prevention of musculoskeletal disorders	Physical Infrastructure	\$199,090
Cairney, John	City of Ottawa	Healthy Eating and Active Living in Early Childcare Settings	Operating	\$50,000
Cairney, John	Social Sciences & Humanities Research Council (SSHRC)	Youth Sport Participation: A Survey Measure of Youth Sport Experience	Operating	\$46,282
Darnell, Simon Cale Decker	Adelphi University – Laureus Sport for Good Foundation Subgrant	Laureus Sport for Good Foundation USA Grant	Operating	\$1,857
Darnell, Simon Cale Decker	Ministry of Research and Innovation (ON)	Using Participatory Action Research to understand Sport and Social Development in Toronto, Ontario	Other Personnel	\$89,406
Darnell, Simon Cale Decker	Social Sciences & Humanities Research Council (SSHRC)	Sport and Sustainable Development: History, Policy and Practice	Operating	\$7,424
Dean, Physical Educ. & Health	Natural Sciences & Engineering Research Council (NSERC)	NSERC Undergraduate Student Research Awards	Studentship (Grad)	\$13,500
Donnelly, Peter	Social Sciences & Humanities Research Council (SSHRC)	Physical Culture and Centennial Projects in Canada: Remembering 1967	Studentships (Undergrad)	\$12,000
Donnelly, Peter	Social Sciences & Humanities Research Council (SSHRC)	Multiculturalism and physical culture: The case of the GTA	Operating	\$20,000
Faulkner, Guy	Canadian Institutes of Health Research (CIHR)	Active Canada 20/20: Evaluating a population approach to reducing physical inactivity in Canada	Scholarship	\$25,000
Goodman, Jack	Active And Innovative Inc.	A randomized, placebo-controlled double-blinded clinical trial of over-the-counter non-pharmacological topical analgesics MuscleCare and Voltaren for myofascial pain	Operating	\$1,000
Goodman, Jack	Canadian Institutes of Health Research (CIHR)	Laura Jane Irene Banks - Fellowship - Cardiac Consequences of Excessive Exercise	Fellowship	\$37,500
Goodman, Jack	Canadian Institutes of Health Research (CIHR)	Vascular-Ventricular Coupling: Influences of age, sex, and fitness level - Katharine Dianne Currie	Fellowship	\$20,833
Hutchison, Michael	Queen's University - Subgrant	Understanding Concussion: From Injury to Return-to-Action	Operating	\$215,385
Hutchison, Michael	Social Sciences & Humanities Research Council (SSHRC)	Concussion knowledge among university athletes and student-therapists: Implications for future educational programs	Studentship (Undergrad)	\$6,000
Kerr, Gretchen	Canadian Association for the Advancement of Women and Sport and Physical Activity (CAAWS)	CAAWS-CAC Female Coach Mentorship Model [final workbook resources]	Operating	\$38,170
MacNeill, Margaret	Canadian Institutes of Health Research (CIHR)	Debra Kriger - Doctoral Studentship - The Fat Body: Making Sense of Blame, Shame & Stigma in Public Health	Studentship (Grad)	\$35,000

Primary Investigator	Sponsor	Research Project Title	Funding Type	Amount
Moore, Daniel	Ajinomoto Co., Inc.	The impact of protein intake on amino acid and protein metabolism, and performance during intensified training period	Operating	\$5,000
Moore, Daniel	Ajinomoto Co., Inc.	Effect of leucine-enriched essential amino acid on integrated muscle protein synthesis and muscle recovery after resistance exercise	Operating	\$121,072
Moore, Daniel	Canadian Institutes of Health Research (CIHR)	Jenna Gillen - CIHR Fellowship - High-intensity exercise as a countermeasure to inactivity-induced anabolic resistance and metabolic dysregulation in healthy adults	Fellowship	\$45,000
Moore, Daniel	lovate Health Sciences International Inc.	The effect of post-exercise protein supplementation on whole body protein anabolism and acute performance recovery	Operating	\$19,989
Moore, Daniel	Natural Sciences & Engineering Research Council (NSERC)	Mechanisms of human skeletal muscle remodelling with exercise	Operating	\$29,000
Sabiston, Catherine	Canadian Institutes of Health Research (CIHR)	Lifestyle activity and the promotion of emotional well-being, biological functioning, and physical health among breast cancer survivors over time.	Operating	\$81,555
Sabiston, Catherine	Canadian Institutes of Health Research (CIHR)	Canada Research Chair in Physical Activity and Mental Health	CRC-Scholarship-Tier 2	\$100,000
Sabiston, Catherine	Canadian Breast Cancer Foundation	Improving physical activity and reducing sedentary behaviour among breast cancer survivors: MOVING research to practice	Operating	\$83,349
Sabiston, Catherine	Social Sciences & Humanities Research Council (SSHRC)	Body-related self-conscious emotions and sport participation among adolescent females	Operating	\$11,514
Sabiston, Catherine	Social Sciences & Humanities Research Council (SSHRC)	Keeping Girls In Sport: Efforts to reduce the impact of body image and weight commentary on disengagement and drop-out	Collaborative Team (Operating)	\$73,050
Sabiston, Catherine	Social Sciences & Humanities Research Council (SSHRC)	Powwows, parkour, or pilates? Exploring physical activity experiences among Indigenous university students	Studentship (Undergrad)	\$6,000
Sabiston, Catherine	Social Sciences & Humanities Research Council (SSHRC)	It takes an International Village to understand the emotions, motives, well-being process	Operating	\$5,020
Santa Mina, Daniel	Movember Canada	INTense Exercise foR surVivAL among men with Metastatic Cancer - Multicentre, Randomized, Controlled, Phase III Study	Operating	\$23,697
Tamminen, Katherine	Canada Foundation for Innovation (CFI)	Developing the University of Toronto Sport and Performance Psychology Lab	Physical Infrastructure	\$61,341
			Operating	\$18,402
Tamminen, Katherine	Ministry of Research and Innovation (ON)	Developing the University of Toronto Sport and Performance Psychology Lab	Physical Infrastructure	\$61,341
Tamminen, Katherine	Social Sciences & Humanities Research Council (SSHRC)	Interpersonal Emotion Regulation in Sport	Operating	\$26,512
Thomas, Scott	Canadian Institutes of Health Research (CIHR)	Alis Bonsignore - DRA Studentship - Cardiac-Oncology- Rehabilitation Exercise for Breast Cancer Survivors with Reduced Cardiac Function (CORE Study)	Studentship (Grad)	\$35,000
Tremblay, Luc	Natural Sciences & Engineering Research Council (NSERC)	Real-time multisensory utilization during the different online control phases of voluntary actions	Operating	\$24,000
Welsh, Timothy	Natural Sciences & Engineering Research Council (NSERC)	The Processing of Nonhuman Animal Bodies and Point of Gaze	Operating	\$28,000
Welsh, Timothy	Ryerson University – SSHRC Insight Subgrant	Supporting spatial ability with tangible and embodied interactions	Operating	\$30,000
Welsh, Timothy	Social Sciences & Humanities Research Council (SSHRC)	Beauty is in the Eye (and Body and Brain) of the Beholder: Identifying and testing predisposing body	Operating	\$14,567

Source: RIS Award Report by Sponsor, April 1, 2017 to March 31, 2018. Faculty of Kinesiology and Physical Education

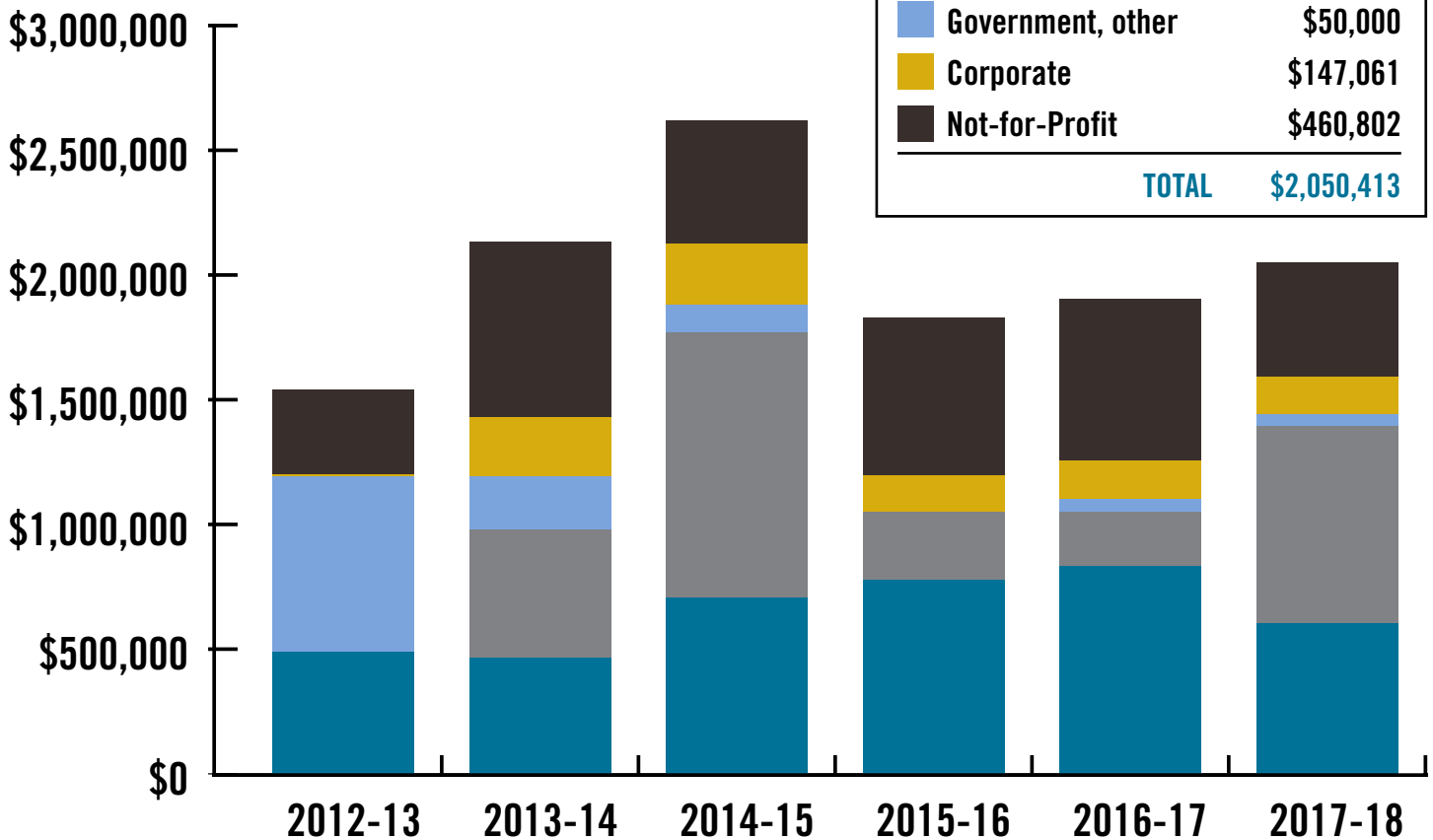
# 2017-2018 Funding by Grant Type



Operating Grants	\$1,104,311
Research Infrastructure	\$520,862
Student Scholarships and Post-Doc Fellowships	\$325,240
Canada Research Chair (CRC)	\$100,000
<b>Total</b>	<b>\$2,050,413</b>

Source: RIS Award Report by Sponsor, April 1, 2017 to March 31, 2018. Faculty of Kinesiology and Physical Education

# Research Funding by Year



Source: Research Data Cube Funding by Sponsor, April 1, 2017 to March 31, 2018. Faculty of Kinesiology and Physical Education

# PUBLICATIONS (2017-2018)

Sorted alphabetically by first listed KPE faculty member and does not include accepted or in press publications

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## Books (9)

Whitley, M., Massey, W., **Darnell, S. C.** & Smith, B. (Eds.). (2018). *Sport in Under-resourced, Underdeveloped and Conflict Regions*. London: Routledge.

Kowalski, K., McHugh, T., **Sabiston, C. M.**, & Ferguson, L. (2018). *Research methods in Kinesiology*. Oxford, UK: Oxford University Press.

**Shephard, R. J.** (2018). *A history of health & fitness: implications for policy today*. New York, NY: Springer.

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**Shephard, R. J.** (2017). *Physical activity and the gastro-intestinal tract*. London, U.K., Routledge.

**Shephard, R. J.** (2017). *Physical activity and the visceral organs*. London, U.K., Routledge

**Stirling, A., Kerr, G., Banwell, J., MacPherson, E., & Jewett, R.** (2017). *A mentorship guide for advancing women in coaching: Effective mentoring practices for the sport administrator*. Toronto, ON: Canadian Association for the Advancement of Women and Sport and Physical Activity/Coaching Association of Canada.

**Stirling, A., Kerr, G., Banwell, J., MacPherson, E., & Jewett, R.** (2017). *A mentorship guide for advancing women in coaching: Effective mentoring practices for the mentor*. Toronto, ON: Canadian Association for the Advancement of Women and Sport and Physical Activity/Coaching Association of Canada.

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**Kerr, G., Stirling, A. E., & Gurgis, J.** (2017). *An athlete-centred approach to enhance thriving within athletes and coaches*. In S. Pill (Ed.), *Perspectives on Athlete-Centred Coaching*. London: Routledge, 24-35.

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Dietz, C. M., Casey, S. L., **Stirling, A. E.**, & Porter, N. (2017). *Development and validation of the coach-athlete relationship emotional maltreatment scale (CAREMS)*. In Beedie, C. (Ed.), *Research in Sport Psychology*. Hauppauge, NY: Nova Science Publishers. 211-228.

**Tamminen, K. A., & Braun, C.** (2017). *Psychological considerations among adolescent athletes*. *The Oxford Research Encyclopedia of Psychology*. Oxford, UK: Oxford University Press.

Crocker, P. R. E., **Tamminen, K. A.**, & Bennett, E. (2017). *Stress, emotions, and coping in youth sport*. *Sport psychology for young*. In C. J. Knight, C. G. Harwood, & D. Gould (Eds.), New York: Routledge, 164-173.

## Peer-Reviewed Articles (162)

**Arbour-Nicitopoulos, K. P.**, Grassman, V., Orr, K., McPherson, A., Faulkner, G. E., & Wright, F. V. (2018). A scoping review of inclusive community-based physical activity program for children and youth with physical disabilities. *Adapted Physical Activity Quarterly*, 35, 111-138.

**Arbour-Nicitopoulos, K. P.**, Boross-Harmer, A., Leo, J., Allison, A., Bremner, R., Taverna, F., Sora, D., & Wright, F. V. (2017). Igniting Fitness Possibilities: A case study of an inclusive community-based physical activity program for youth. *Leisure/Loisir*, 42(1).

Sweet, S. N., Rocchi, M., **Arbour-Nicitopoulos, K. P.**, Kairy, D., & Fillion, B. (2017). A tele-rehabilitation approach to enhance quality of life through exercise among adults with paraplegia: A study protocol. *Journal of Medical Internet Research: Research Protocols*, 6, e202.

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**Arbour-Nicitopoulos, K. P.**, Sweet, S. N., Lamontagne, M., Ginis, K. A. M., Jeske, S., Routhier, F., & Latimer-Cheung, A. E. (2017). A randomized controlled trial to test the effects of the SCI Get Fit Toolkit on leisure-time physical activity behaviour and social-cognitive processes in adults with spinal cord injury. *Spinal Cord Series and Cases*, 3, 17044.

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Zehr, J. D., Howarth, S. J., & **Beach, T. A. C.** (2018). Using relative phase and vector coding analyses to distinguish between lifting techniques – A methodological investigation. *Journal of Electromyography and Kinesiology*, 39, 104-113.

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**Beach, T. A. C., Stankovic, T., Carnegie, D. R., Micay, R., & Frost, D. M.** (2018). Using verbal instructions to influence lifting mechanics – Does the directive “lift with your legs, not your back” attenuate spinal flexion? *Journal of Electromyography and Kinesiology*, 38, 1-6.

Tomescu, S. S., Bakker, R., **Beach, T. A. C., & Chandrashekar, N.** (2018). The effects of filter cutoff frequency on musculoskeletal simulations of high-impact movements. *Journal of Applied Biomechanics*, e-pub.

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Morrison, K., **Cairney, J., Eisenmann, J., Pfeiffer, K., & Gould, D.** (2018). Associations of body mass index, motor performance, and perceived athletic competence with physical activity in normal weight and overweight children. *Journal of Obesity*, Article 3598321, 1-10.

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Choi, S., Boyle, E., **Cairney, J., Grootendorst, P., Gardner, S., Collins, E., Kendall, C., Rourke, S. B., & O. H. T. N. Cohort Study.** (2018). Impact of Depression and Recreational Drug Use on Emergency Department Encounters and Hospital Admissions among People Living with HIV in Ontario: A Secondary Analysis using the OHTN Cohort Study. *PLoS One*, 13(4), e0195185.

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**Cairney, J., & Veldhuizen, S.** (2017). Organized Sport and Physical Activity Participation and Body Mass Index in Children and Youth: A Longitudinal Study. *Preventive Medicine Reports*, 6, 336-338.

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- Pila, E., **Sabiston, C. M.**, Castonguay, A. L., & **Arbour-Nicitopoulos, K. P.**, Taylor, V. (2018). Mental health consequences of weight cycling in the first-year post-treatment for breast cancer. *Psychology & Health*, e-pub.

# PUBLICATIONS (2016-2017) CONT'D

- Pila, E., **Sabiston, C. M.**, **Arbour-Nicitoplous, K. P.**, & Taylor, V. (2018). "The weight is even worse than the cancer": Exploring women's weight-related experiences after treatment for breast cancer. *Qualitative Health Research*, 1-12.
- Sabiston, C. M.**, Wrosch, C., Castonguay, A., & Sylvester, B. (2018). Effects of moderate-to-vigorous physical activity on C-reactive protein among breast cancer survivors over time. *Annals of Behavioral Medicine*, 1-7.
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- Sabiston, C. M.**, Lacombe, J., **Faulkner, G.**, Jones, J., & **Trinh, L.** (2017). Profiling sedentary behavior in breast cancer survivors: Links with depression during the early survivorship period. *Psycho-Oncology*, 1-7.
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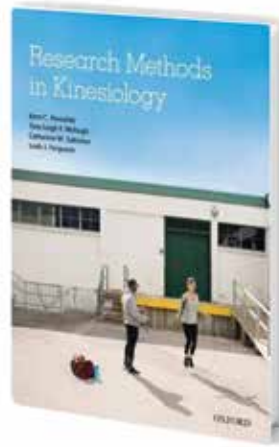
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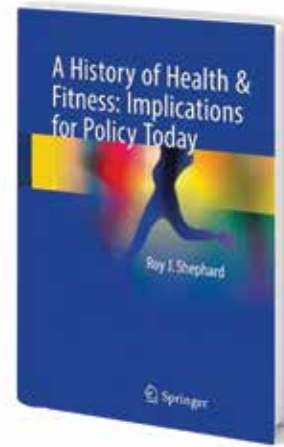
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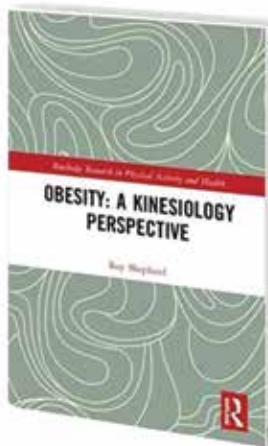
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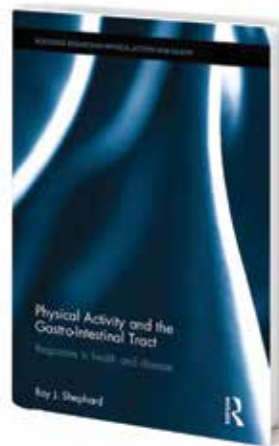
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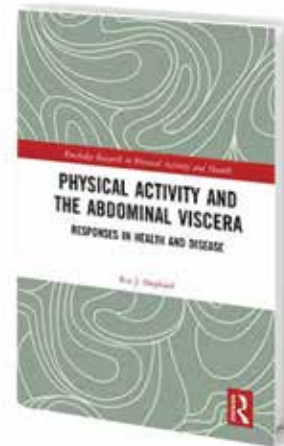
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