

2019

Research Report



Roger Jackson Centre for Health and Wellness Research

Sport Medicine
Centre

Human Performance Laboratory



Human Performance Laboratory

2019 might go into the records as the year before everything changed, the year before the pandemic. I send my sincere wish to all of you that you, your families, friends, and colleagues are healthy and safe.

2019 was altogether different than the times we live in now, and I want to remark on two extraordinary things directly related to the Human Performance Lab (HPL) and its global reach: (i) the ranking of the Faculty of Kinesiology globally, and (ii) the Congress of the International and the American Societies of Biomechanics.

Faculty of Kinesiology Ranking: Shanghai Ranking Consultancy is an independent organization dedicated to research on higher education. It ranks special focus institutions, and among them the hundreds of schools, faculties, and departments of sport science. For 2019, the Faculty of Kinesiology at the University of Calgary was ranked 7th globally and 1st in North America in the Sport Science category. Much of this success can be traced to the excellence and dedication of faculty members, students, trainees, technicians, and research assistants of the Human Performance Lab, which in turn is a direct reflection of the investment of our faculty and the university into the HPL. Our gratitude and thanks go to them. We are proud to contribute to the success and reputation of our faculty and University.

Congress of the International and American Societies of Biomechanics: In 2016 we made the successful bid to host the 2019 congress of the International Society of Biomechanics (ISB), and exactly three years later, the opening ceremony of ISB2019 took place in Calgary's Convention Centre. ISB2019 was joined by the annual conference of the American Society of Biomechanics, which made the event the biggest and most important for biomechanics research in 2019. Members of the biomechanics group of the HPL hosted the event, and members from other disciplines organized special symposia, helped with fundraising, and served among the contingent of over 100 volunteers that were required every day. It was a true team effort. The ISB/ASB 2019 congress was not only the biggest ever, it was also a resounding scientific and social success, and most of all, a lot of fun. Having been in self-isolation for three months now due to the coronavirus, I am reminiscent of those five days in August of last year, with crowded poster sessions and rooms filled to capacity, never ending discussions late into the night, dinners with friends, the banquet and the dancing, without fear, without restriction. That is what scientific conferences are all about. Let us hope we will meet again soon, in person and personally.

Two global events, two global successes. It was another eventful and exciting year for the HPL. My thanks go to the International and American Societies of Biomechanics for allowing us to host ISB/ASB 2019, and to the University of Calgary, the Faculty of Kinesiology, and all departments and sponsors of ISB/ASB 2019. It was a pleasure and privilege to be your host. My final thanks go to our families, friends, and supporters of the HPL. Your continued engagement and dedication, and your undeterred belief that we can be global leaders in human health wellness and performance research is needed more today than ever before.



Highlights

Honour	Preston Wiley — Calgary Booster Club, Honoured Athletic Leader Award
Appointed	Zachary Barrons — Informatics Officer, Footwear Biomechanics Groups
Appointed	Salvatore Federico — Past President of the Canadian Society for Biomechanics (2019-2020 term)
Appointed	Salvatore Federico — Member, Selection Committee, Society for Natural Philosophy (not listed in 2018)
Appointed	Salvatore Federico — Member, Editorial Advisory Board, Atti dell'Accademia Peloritana dei Pericolanti
Appointed	Salvatore Federico — Member, NSERC Discovery, Evaluation Group in Mechanical Engineering
Appointed	Bill Wannop — Associate Editor, Footwear Science
Appointed	Bill Wannop — Awards Officer, Footwear Biomechanics Group
Award	Joshua Cashaback — Alberta Innovates Health Solutions (AIHS) Postdoctoral Fellowship. Controlling and adapting our movements in the presence of muscle fatigue
Award	Mathieu Chin — 3M National Student Fellowship
Award	Carolyn Emery, Carla van den Berg, Sarah Richmond, Luz Palacios-Derflinger, Carly McKay, Patricia K Doyle-Baker, M McKinlay, Clodagh Toomey, A Nettel-Aguirre, Brent Hagel — Best Podium Presentation Awards. 'Implementing a school prevention program to reduce injuries through neuromuscular training (isprint): a cluster-randomized controlled trial'. Third World Congress of Sport Physical Therapy, Vancouver, BC. October.
Award	Salvatore Federico — 2018-2019 Teaching Achievement Award, Schulich School of Engineering, The University of Calgary
Award	Reed Ferber — Great Supervisor Award, University of Calgary
Award	Ifaz T. Haider — Tim Murray Short Term Training Award, Osteoporosis Canada



Highlights

Award	Jeff Ilg — Podium Presentation Award, McCaig Summer Student Symposium, Calgary, AB
Award	Lindsay Loundagin — Young Investigator Award, 22nd International Workshop on Quantitative Musculoskeletal Imaging
Award	Shyamchand Mayengbam — Metabolics Association of North America, Early Career Award
Award	Ryan Miller — Best Poster Award, ‘Modulation of the Nervous System during an Unpredictable Posture Task’. Campus Alberta Student Conference in Health, Edmonton, AB
Award	Sadhiq Nazeer — Winner, Faculty of Kinesiology Award, University of Calgary Undergraduate Research Symposium
Award	Eng Kuan Moo — Promising Young Scientist Award, International Society of Biomechanics Conference 2019, Calgary, AB
Award	Rob Moore — Best Presentation Award, ‘Adaptations to Novel Visuomotor Rotations After Stroke’. Alberta Biomedical Engineering Conference (Alberta BME), Banff, AB
Award	Jaqueline Rios — J.B. Hyne Research Innovation Award
Award	Jonathan Smirl — Michael Smith Foundation for Health Research: Post-Doctoral Fellowship
Award	Baaba Otoo — David Winter Young Investigator Award (Poster), International Society of Biomechanics Conference, Calgary, AB
Award	Tessa VanDerVeeken — Tim Murray Short Term Training Award, Osteoporosis Canada
Award	Valeriya Volkova — 2019 Best Presentation Award, UBC Wearable Summer School
Ph.D.	Osman Darici — Supervisor: Dr. Art Kuo. Thesis: Uneven Terrain Human Walking

Highlights

- Ph.D. Breda Eubank (Lau) — Supervisors: Drs. Preston Wiley and Mark Lafave. Thesis: Development of a Clinical Pathway for Patients with Chronic Rotator Cuff Tears (2018)
- Ph.D. Christian Clermont — Supervisor: Dr. Reed Ferber. Thesis: Making Sense of Sensor Data for Recreational and Competitive Runners: Detecting Typical and Atypical Running Biomechanics
- Ph.D. Danilo Iannetta — Supervisor: Dr. Juan Murias. Thesis: Identifying Exercise Intensity “Thresholds”: Implications for Metabolic Responses, Performance, and Exercise Intensity Prescription
- Ph.D. Teja Klancic — Supervisor: Dr. Raylene Reimer. Thesis: Early Life Antibiotic and Prebiotic Exposure: Impact on Gut Microbiota, Metabolism and Obesity Risk
- Ph.D. Jodi Nettleton — Supervisor: Dr. Raylene Reimer. Thesis: Dietary Modulators of Gut Microbiota: Impact on Metabolic Health and Behaviour
- Ph.D. Jacqueline Lourdes Rios — Supervisor: Dr. Walter Herzog. Thesis: Exercise and Dietary Interventions in a Rat Model of Metabolic Knee Osteoarthritis
- Ph.D. Rogerio Soares — Supervisor: Dr. Juan Murias. Thesis: The Use of Near-Infrared Spectroscopy for Microvascular Function Assessment in Healthy and With Obesity Individuals During Normo- and Hyperglycemia
- PhD. Mawafag Alhasadi — Supervisor: Salvatore Federico — Thesis: Effect of Defects, Inclusions and Inhomogeneities in Elastic Solids
- M.Sc. Kimberley Befus — Supervisors: Drs. Carolyn Emery and Meghan McDonough. Thesis: Motivation and Social Factors Associated with Exercise Fidelity in a Basketball Neuromuscular Training Prevention Warm-Up in Youth
- M.Sc. Alexander Chen — Supervisor: Dr. Brian MacIntosh. Thesis: Developing Procedures and Software for Correcting Artifacts in Motion Data



Highlights

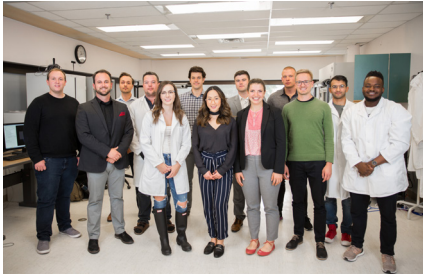
- M.Sc. Chevonne Codd — Co-Supervisor: Drs. Kathryn Schneider and Carolyn Emery. Thesis: Incidence, Risk Factors, and Mechanisms of Concussion and Musculoskeletal Injury in Youth Soccer Players
- M.Sc. Laura Crack — Supervisor: Dr. Patricia Doyle-Baker. Thesis: CHESS: Changes in Hormones with Exposure to Student Stress
- M.Sc. Tessa Gallinger — Supervisors: Drs. Brian MacIntosh and Jared Fletcher. Thesis: Muscle Length Adaptations to High-Velocity Training in Young Adults with Cerebral Palsy
- M.Sc. Colin Lavigne — Supervisors: Drs. Guillaume Millet and Nicole Culos-Reed. Thesis: The Effect of Radiation Therapy and a 12-week Novel Strength Training Intervention on Neuromuscular Function and Fatigability in People Diagnosed with Head & Neck Cancer
- M.Sc. Lauren Miutz — Supervisor: Dr. Kathryn Schneider. Thesis: Feasibility, Reliability and Concurrent Validity of a Field Test of Exertion in High School Students
- M.Sc. Ahmad Qahtan — Supervisor: Dr. Juan Murias. Thesis: Effects of a Single-Leg Exercise Training Intervention on Single and Double Leg Peak Power Output, Maximal Oxygen Consumption, Gas Exchange Threshold, and the Respiratory Compensation Point
- M.Sc. Elysa Sandron — Supervisors: Drs. Carolyn Emery and Elizabeth Condliffe. Thesis: Adapted Sport and Recreation Summer Camp: Youth with Physical Disabilities, Their Parents and Staff Perspectives on Psychosocial Outcomes and Physical Activity Participation

General Comments

Movement Science and Musculoskeletal Health

TYLER CLUFF

INTEGRATIVE SENSORIMOTOR
NEUROSCIENCE LABORATORY



We are a growing group in the Human Performance Laboratory. Our work is focused on the mechanistic, multidisciplinary study of human sensorimotor control and learning. We combine behavioural experiments with robotics, neurostimulation, medical imaging, and computational models to examine the function of the human sensory and motor systems. Our work is focused on understanding how basic aspects of sensory processing contribute to human motor control and learning.

Ongoing projects in the lab focus on four topics: 1) the role of sensory feedback in the selection, planning, and control of voluntary movements, 2) basic principles of sensory processing and how they impact individual patterns of human motor behaviour, 3) probing

the function of neural circuits that support motor behaviour, and 4) identifying how impairments in sensory and motor function caused by stroke and concussion influence sensorimotor control and learning. Through our basic science program and ongoing collaborations, we hope to generate tools that allow us to better assess, monitor and diagnose deficits in sensory and motor function.

BRENT EDWARDS

Mechanical fatigue of load bearing biological tissue is an inevitable consequence of physical activity. Over time, habitual loading of the musculoskeletal system causes microdamage accumulation that reduces the overall quality of the tissue and leads to a reduction in stiffness and an increase in mechanical strain with continued loading. Without adequate tissue repair and adaptation, the evolution and accumulation of microdamage may eventually lead to musculoskeletal injury. Mechanical fatigue is believed to play a predominant role in the pathophysiology of musculoskeletal injuries such as bone stress fracture as well as Achilles and patellar tendinopathy. Our research combines biomechanical experimentation with advanced medical imaging and computational modeling to investigate tissue damage and fatigue in response to mechanical loading.

Our unique approach allows us to estimate in vivo tissue mechanics in a non-invasive and subject-specific manner. The work in our group spans multiple dimensional scales, from basic experiments at the tissue-level that enhance our understanding of the mechanical fatigue process, to applied experiments at the whole-body level for the development of treatments and interventions to improve tissue quality and decrease injury risk.

SALVATORE FEDERICO

CONTINUUM
BIOMECHANICS GROUP

Continuum Mechanics is the study of matter at a length-scale at which the existence of the atomic structure can be neglected, and matter can be treated as continuous rather than discrete. Research in our group is devoted to the mathematical foundations of Continuum Mechanics and its applications to the Biomechanics of Soft Tissue. In particular, we are interested in modelling soft tissue accounting for its structural elements, i.e., collagen fibres, cells, non-fibrous extracellular matrix and fluid. Most phenomena of structural rearrangement in a biological tissue can be described under the umbrella of growth and remodelling. Structural damage is what can initiate injury and disease.

A main theme is the modelling

of articular cartilage. Articular cartilage is the thin layer of connective tissue covering the end of bones in our joints: for the span of a lifetime, it provides stress redistribution and an extremely low-friction contact. When the tissue degenerates because of diseases such as osteoarthritis, it cannot perform its function properly and this results in pain, limitation of mobility, and ultimately a decrease in quality of life. Understanding the relationship between the tissue structure and its function, remodelling and damage processes may shed light on the causes of the initiation of degeneration, and suggest possible treatments to prevent disease.

REED FERBER

RUNNING INJURY CLINIC

I am a clinical biomechanist and my research is aimed at optimizing rehabilitation and predicting injuries. Overall, my group is engaged in two streams of research: clinical gait analysis and wearable sensors.

My group has successfully established an international and growing gait analysis research network currently consisting of 15 researchers and over 100 clinical partners. Each centre is linked to the world's largest research database of biomechanical gait and clinical data. They are transforming the biomechanics

research community by openly sharing data between laboratories, employing unique data science analysis methods, and growing our research network.

Our wearable research is based on three challenges: (1) wearable sensors generate a profound amount of data that is largely ignored; (2) the information derived from these sensors is not placed within a contextual narrative; and (3) most sensors are designed for activity monitoring and not for healthcare. To address these challenges, I lead the recently awarded NSERC Wearable Technology Research and Collaboration (We-TRAC) training program. This program builds on being selected in 2016 (by the Vice President – Research Dr. Ed McCauley) to lead the Sensor Technology in Monitoring Movement (STiMM) research program supporting the University's Eyes High "Engineering Solutions for Health" research strategy.

WALTER HERZOG

For the past three years, much of our efforts were focused on hosting the Conference of the International Society of Biomechanics (ISB), and the conference finally took place between July 31st and Aug 4th, 2019. With 2,200 participants, the ISB conference was by far the largest ever, and with the help of almost 100 volunteers, it was a scientific and social success.

In the area of muscle contraction mechanisms, we showed unequivocally that cardiac muscle possesses residual force enhancement properties, a fact disputed previously in the literature. In the area of bone and joint biomechanics, we found that aerobic exercise and a fibre diet intervention can prevent the onset of metabolic knee joint osteoarthritis, but only if the interventions are timed properly, otherwise they have no effect. Finally, in our applied biomechanics research, we have collected data that should provide a final answer to the question if chiropractic spinal manipulation can damage vertebral arteries, thereby initiating/causing strokes.

ART KUO

My laboratory studies the biomechanics, energetics, and neural control of human movement. We develop computational models of the human body dynamics, and apply them to simulations and analyses of locomotion and upper extremity reaching movements. We also perform experiments to test model predictions of stability, motion trajectories, and energy expenditure. Ongoing projects include studies of human walking on uneven terrain, use of inertial measurement units to record locomotion in the real world, energetics of human reaching, and modeling of neural central pattern generators for locomotion. These

projects are intended to reveal basic mechanisms of locomotion and other movements, with applicability to neural rehabilitation and diagnosis of movement impairments.

BENNO M. NIGG & SANDRO NIGG

Our group concentrates on topics that are health and performance related with special considerations for footwear, apparel and equipment. This last year, we made significant progress in our understanding of 1) the biomechanical effects of altering midsole bending stiffness, 2) applying machine learning tools to identify the underlying principles of human locomotion, and 3) to better understand the inter-coordination of segment motion during human locomotion.

Midsole Bending Stiffness: The effect of modifying the longitudinal bending stiffness of a sports shoe has many biomechanical and physiological effects. Specifically, we have studied the effects of increased longitudinal midsole bending stiffness of sport shoes on running mechanics. The focus has been on how increased midsole bending stiffness can be used to redistribute lower limb joint work during running, and how this increased stiffness affects the amount and velocity of muscle and muscle-tendon unit shortening. Our research aims to provide

a deeper functional understanding as to why running in stiff shoes can improve running performance by applying ultrasound imaging and musculo-skeletal modelling. Furthermore, we have developed the teeter-totter concept to explain the positive physiological effect of a curved midsole stiffness on running performance.

Machine Learning and Human Locomotion: The objective is to better understand the underlying principles of human locomotion with the application of machine learning techniques. Specifically, our group has harvested extensive inertial measurement unit data to automatically detect movements of interest (e.g. sprint stride, cross over stride) in large continuous data sets. Further algorithms have been created with the ability to classify the skill level of novice and elite hockey players executing these specific movement tasks. These accomplishments establish the foundation to provide real time feedback to an individual's skating technique.

Inter-Coordination of Segment Motion: Our group is investigating how the movement of segments of the foot and the lower extremities are affected by changes in muscle activity, integrity of ligaments or various footwear characteristics using novel technologies such as dual fluoroscopy. The results determined using these techniques allow for a better interpretation

of results than using traditional motion analysis techniques. The results are further used to determine the movement coupling between lower limb segments during running.

RYAN PETERS

INTEGRATIVE SENSORIMOTOR
NEUROSCIENCE LABORATORY

Our laboratory investigates the neural basis of human movement using a variety of physiological, behavioural, and computational techniques in concert. There are both basic and applied streams of research currently ongoing in the lab. Within the basic science stream, we study the complex interaction between sensory and motor neurons during voluntary movement. We specialize in microneurography: the only method for directly recording the activity of human somatosensory neurons (muscle spindles, Golgi tendon organs, skin and joint receptors). We are currently focused on the functional properties of the muscle spindle's fusimotor system, which remains poorly understood to-date, particularly in humans. In the applied research stream, we are translating our basic science into the development of new vibration-emitting wearable technologies for remote neurological diagnostics and monitoring. Both healthy older adults and individuals suffering from neurological disorders (e.g.,

diabetic- and chemotherapy-induced peripheral neuropathy) experience a decline in somatosensory function that is associated with impairments in manual dexterity and balance. Standard clinical tests of neuropathy are arduous for clinicians and not well-controlled – vibration-emitting wearable technologies offer a promising alternative approach. These new wearable technologies will enable frequent and accurate assessments of neurological function to be performed outside of the clinical setting, freeing-up valuable clinician time, and improving the quality of patient care.

DARREN STEFANYSHYN

The general research interests of our group focus on questions related to human locomotion, sport performance and sport injury biomechanics. Our research extends to functional sport equipment with a goal of tuning the properties of the equipment to specific athlete characteristics in order to maximize the athlete's performance and minimize the risk of injury. Performance research involves developing a basic understanding of the mechanics of human movement during various locomotor and athletic movements. The goal is to determine the mechanical factors dictating an athlete's performance and how performance can be improved by manipulating these particular

factors. In 2019 we extended our industry work on identifying methods of matching sport equipment to individual athletes. We also continued to investigate the internal mechanisms that explain successful athlete-equipment interactions and in 2019 expanded our capabilities to study Achilles tendon mechanics using ultrasound measurements. We also began work with personalization of footwear and insoles, working with 3D foot scans and 3D printing of insoles and footwear.

Injury research involves identifying potential injury factors such as global loading characteristics associated with ankle and knee sport related injuries as well as developing an understanding of the role played by equipment. This past year we gained valuable insight on the role of sport surface characteristics as well as traction of rugby boots on lower extremity joint loading.

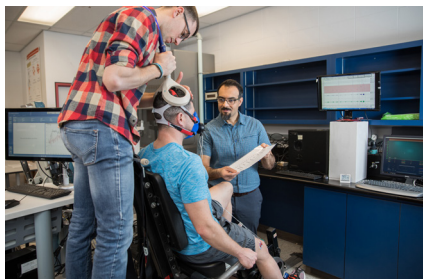
Exercise Physiology and Nutrition in Health and Sport

SAIED JALAL ABOODARDA

EXERCISE NEUROPHYSIOLOGY
LABORATORY

The research that we conducted in our lab in 2019 was the continuation of the outstanding research environment that Prof. Guillaume Millet established in

the Faculty of Kinesiology. We measured acute and chronic neuromuscular and cardiovascular adaptations in response to different exercise interventions. Our work concentrated on neurophysiological adaptations that occur in the structure and function of the motor network (from the brain to the skeletal muscles) in response to different modes of upper and lower limb exercises. With application of non-invasive techniques such as transcranial magnetic stimulation of the brain, transmastoid and thoracic electrical stimulation of the spinal cord as well as peripheral nerve electrical stimulation of the skeletal muscles, we investigated the relative contributions of central (i.e. the brain and spinal cord) and peripheral nervous system (i.e. skeletal muscles) to the development of neuromuscular fatigue in healthy individuals and people with clinical conditions. We published our work in the flagship journals of our field including The Journal of Physiology, Brain Sciences, Journal of Experimental Biology.



PATRICIA K. DOYLE-BAKER

APPLIED PHYSIOLOGY AND
PREVENTION THROUGH
LIFESTYLE AND EXERCISE

The Doyle-Baker lab continued this past year with a focused interest in hormonal levels and hormone shifts that affect aerobic performance and heart rate variability, muscle and bone, and perceived fatigue and stress levels. We employed human and animal model research, and lab and field work studies. To measure hormone levels (estrogen, progesterone and testosterone) several biomarkers need to be employed so that the variability in hormonal shifts during each menstrual cycle can be identified. This means physically tracking the cycle length and using both salivary and urine samples to determine when ovulation occurs. The population inclusive to those individuals taking exogenous hormones such as oral contraceptives. Our collaborations with other exercise physiology lab groups in the HPL has very importantly contributed to the research surrounding menstrual cycle phases and exercise performance. The Doyle-Baker lab also places importance on field testing because many athletes do not have access to laboratory testing and gaps in field research in sports, such as cross-country skiing, are common in Canada. Field testing, although in a familiar

environment for the athlete, is challenging for the researcher because of the influence of changing weather conditions on testing days. Conversely, field testing can also be exciting as often there is an outcome that can be translated quickly to a target audience such as coaches. We look forward to publishing our research related to the menstrual cycle phase influence on performance after a HIIT (high intensity training session) in cross-country skiers.

Lastly, in collaboration with groups in the HPL and University of Alberta we recently completed a study investigating the influence of eccentric training with and without bisphosphate drug in an older female rabbit model. The long-term goal of this research program is to employ a sex specific complex training strategy that will ensure bone strength is maintained across the life span.

JOHN HOLASH

EXERCISE PHYSIOLOGY
LABORATORY

In my new instructor's role in the faculty, I am currently working on updating, developing, and modifying courses, and instructional materials within the Exercise Physiology group so that we can leverage new technologies and instruments for course delivery. In this role I have participated in a specialized focus group for Video Technologies in Classroom

(Yuja) at the University of Calgary this spring and summer of 2019, and I currently represent the faculty on the current “Learning Technologies Advisory Committee”. I also hope over the next few years to develop a subgroup within the exercise physiology umbrella, with hopes to integrate and develop the use of state-of-the-art computer-based methods for measuring, recording, and analyzing these potentially very large data sets of physiological variables. The ultimate goal of this subgroup will be to enhance the student experience with opportunities for experience with: product development, rapid prototyping, machine learning, and data processing, and potentially some entrepreneurship opportunities that revolve around leveraging digital technologies and scaling them.



MARTIN MACINNIS

EXERCISE AND ENVIRONMENTAL PHYSIOLOGY LABORATORY

We are an integrative physiology laboratory interested in understanding how humans respond to acute and chronic exercise and the extent to which these responses are influenced by nutrition, sex, and the environment. Our research group launched in 2018, and our ongoing projects investigate (i) adaptations in the skeletal muscle, cardiovascular, and hematological systems to different exercise training programs (ii) the mechanisms underpinning the plasticity of these physiological systems; (iii) the development of non-invasive methods to assess skeletal muscle fitness; (iv) the influence of oxygen availability on aerobic metabolism, neuromuscular fatigue, and exercise performance; and (v) the use of wearable technologies to improve exercise testing and prescription. We employ a wide breadth of techniques, ranging from the biochemical and molecular analysis of human tissue (e.g., blood and muscle) to whole-body measures of exercise metabolism, tolerance, and performance (e.g., pulmonary gas analysis and femoral nerve stimulation). The overall aim of our research program is to understand how molecular and physiological mechanisms regulate physiological systems in humans, with goals to trans-

late and apply this research to improve the health and fitness of individuals ranging from athletes to those with chronic disease and disability.

BRIAN MACINTOSH

APPLIED MUSCLE
PHYSIOLOGY GROUP

The central theme of research in my laboratory is the study of force modulation in skeletal muscle. This includes the study of force-velocity, force-frequency and force-length relationships, and the interactions of these with and without prior activity. Prior activity can be an acute modifier, as in potentiation or fatigue. Alternatively, prior activity can be a chronic modifier, as in training, illness or disuse atrophy. A new theory of muscle fatigue has been proposed which states that fatigue is a consequence of the elegant regulation of excitation-contraction coupling in skeletal muscle to prevent depletion of adenosine triphosphate. Recent work has evaluated the potential role of changes in calcium sensitivity at physiological temperature contributing to muscle potentiation and fatigue. We are continuing the work on warm-up and post-activation potentiation. Work on understanding the slow component has revealed that it does not represent a rising energy cost of exercise, but a slow switch from anaerobic to

aerobic energy supply. Prior heavy exercise performed as a warm-up results in acceleration of the aerobic contributions to subsequent exercise and smaller anaerobic requirements. A structurally realistic computer model of a sarcomere has been created, and the impact of myofilaments at different sarcomere lengths on calcium diffusion has been evaluated. Our research group uses a number of approaches to study the contractile properties of skeletal muscle including: (1) in vitro single intact or skinned fibers and fiber bundles; or (2) in situ whole muscle and intact human subjects performing in vivo with isolated muscle or muscle group contractions or performing whole body exercise.

JUAN MURIAS

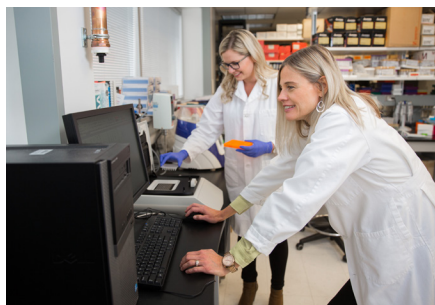
CARDIOVASCULAR EXERCISE
PHYSIOLOGY GROUP

I am interested in determining the effectiveness of exercise training programs for promoting health as well as for improving performance. The main goal of my research relates to the use of exercise training interventions as “medicine” to prevent or alleviate the detrimental effects of aging and disease on cardiovascular function, as well as to improving performance. Although my laboratory examines both central and peripheral cardiovascular adaptations to exercise training,



a current direction of my work is focusing on the vascular side of these adaptive responses. More specifically, I am interested in the role of the endothelium in the control and distribution of blood flow and the effects of endurance training exercise in preventing or alleviating the age-related reduction in endothelium-dependent vasodilation, and the associated limitation in O₂ transport to the sites of metabolic need.

Some of the measures commonly assessed in my laboratory include: Breath-by-breath VO₂ and near-infrared spectroscopy (NIRS) to estimate blood oxy- and deoxygenation within the area of NIRS “inspection”. The use of this technique combined with measurements of VO₂ can provide an estimate of the matching of muscle O₂ delivery to O₂ utilization. Additionally, Doppler Ultrasound is used to estimate blood flow, vascular conductance and flow mediated dilation responses at rest and during exercise, and to obtain morphological measures to derive the lumen-to-wall ratio in different arteries.



Nutrition, Metabolism and Genetics

RAYLENE REIMER

Our research focuses on understanding how nutrition and the bacteria that live in our intestine (called gut microbiota) interact to affect our risk of developing chronic diseases such as obesity, type 2 diabetes and fatty liver disease. This year we examined how exposure to antibiotics in early life (mother during pregnancy or early infancy) increases obesity risk and how diet can be used to lessen this risk. Specifically we are showing that prebiotic fiber, a unique type of dietary fiber that increases healthy bacteria in the intestine, when given at the same time as antibiotics can reduce the risk of obesity. We have also been examining how to bring human infant formula closer to the nutritional gold standard of breastmilk. This work is examining how supplementing early life diet with human milk oligosaccharides (which act like fiber in mother's milk and feed the healthy bacteria in the gut) can improve gut microbiota profiles and lifelong metabolic health. We are also very involved in translating animal studies into human clinical studies. We are currently evaluating: (1) the effect of prebiotic fiber on liver health in patients with non-alcoholic fatty

liver disease; (2) the effect of prebiotic fiber supplement on pain and function in individuals with knee osteoarthritis and obesity; and (3) how gut microbiota differ in youth with obsessive compulsive disorder compared to healthy control youth. Ultimately our goal is to design and evaluate new food ingredients and diets aimed at body weight management and optimal gut microbiota profiles.

Injury Prevention, Sport Medicine and Rehabilitation

AMANDA BLACK

The injury prevention, clinical intervention, and implementation science research group is a new group in the Sport Injury Prevention Research Centre. Core projects focus on: 1) injury surveillance and epidemiology, 2) evidence-based practice and knowledge translation, and 3) theory-driven implementation, behaviour change and evaluation. Ongoing projects include examining the implementation of concussion guidelines, education and management protocols for sporting organizations and high schools, examining the context for implementation for injury prevention initiatives, and injury surveillance in high school and university athletic populations.

CAROLYN EMERY

SPORT INJURY PREVENTION RESEARCH CENTRE (SIPRC)

I am the Chair of the Sport Injury Prevention Research Centre (SIPRC), 1 of 11 International Olympic Committee Research Centres for Injury Prevention of Injury and Protection of Athlete Health (2019-2022). Evaluation of prevention strategies to reduce the burden of injuries and their consequences in youth sport is the focus of my research program. Our group continues to build on national body checking policy change in 11-12 year old ice hockey to demonstrate a 56% reduction in all injuries (including concussions) in non-elite 13-14 year old leagues following policy disallowing body checking (preventing 6386 injuries nationally each year). My research team evaluated a neuromuscular training (NMT) warm-up program implementation in junior high school physical education in a 3-year randomized controlled trial (RCT), demonstrating a 46% reduction in injury risk in girls. Through a National Basketball Association General Electric partnership grant, the SIPRC team is contributing to a greater understanding of patellar and Achilles tendinopathies in youth basketball players including workload and other risk factors and informing prevention strategies. Canadian Institutes of Health

Research funded Surveillance in High Schools to Reduce Injuries and their Consequences in Youth Sport (SHRed Injuries) focuses on the prevention of musculoskeletal injuries and their consequences in multiple youth sports and communities (e.g., indigenous). An RCT in young adults is underway to evaluate an exercise intervention to prevent early osteoarthritis following sport-related knee injury in youth. A National Football League Scientific Advisory Board funded program, SHRed Concussions, is a pan-Canadian program of research aiming to inform best practice in concussion prevention detection, diagnosis, prognosis, management and rehabilitation across multiple youth sports. Through the Vi Riddell Pediatric Rehabilitation Research Program, her team strives to inform evidence-based rehabilitation strategies and adapted physical activity programs for children with cerebral palsy, joint injuries, juvenile idiopathic arthritis, and concussion.

NICK MOHTADI

My research activities at the University of Calgary, Sport Medicine Centre (SMC) involve: Osteoarthritis, knee injury, shoulder research, sport injury prevention and clinical trials. In 2019 a randomized clinical trial comparing three different

anterior cruciate ligament (ACL) techniques was published in the Journal of Bone and Joint Surgery and was one of the top 10 most read articles in 2019. This is the largest randomized trial on ACL surgery ever published with 330 patients and 95% follow-up at 5 years.

The International Hip Outcome Tool (iHOT) was primarily developed at the SMC and as of 2019, has been translated into five languages with more in the works for 2020. This outcome measure has been used in clinical trial and studies worldwide to evaluate young and active patients with hip-related disorders. Further partnerships continue with the McCaig Institute in the area of bone density and x-ray evaluation in patients with ACL injury and long-term outcomes of ACL surgery are on-going.

In 2019 the STABILITY-1, ACL surgical multi-centre trial, received awards at the International Society of Arthroscopy Knee Surgery and Sports Medicine conference. This clinical trial was established at Western University in London, ON and included centres in England, Belgium and multiple sites in Canada. This trial is now the largest randomized trial ever conducted in the world with 626 patients. The SMC Acute Knee Injury Clinic contributed 10-20% of the surgical patients

and are now working on the next ACL study, the STABILITY-2 trial. This has support from the CIHR and the NIH and will be recruiting 1200 patients.

The Sport Medicine Centre continues to provide healthcare services based on the research conducted in the area of knee and shoulder injuries and sport concussion.

KATI PASANEN

My research program is focused on research of sport injuries, including epidemiological, clinical, biomechanical and experimental studies. Our ongoing studies focus on: 1) development of novel methods for monitoring movement patterns and training load by using wearable technology in youth soccer, 2) identification of risk factors for lower extremity injuries in youth team sports, and 3) development and evaluation of neuromuscular training programs to decrease the risk of injuries in youth team sports. We also have four collaboration studies in Finland – four of them in team sport and one in professional ballet (Principal investigator: K Pasanen). Knowledge generated from our research work and collaboration could ultimately lead to better understanding of causes and mechanisms of lower extremity injuries which could allow us to develop current injury prevention strategies, promote lifelong sport participation, and lower the public

health care costs related to sport injuries.

KATHRYN SCHNEIDER

CONCUSSION PREVENTION,
DETECTION AND
REHABILITATION LAB

Our lab focuses on the prevention, detection and rehabilitation of concussion with a special interest in the role of the cervical spine and balance systems. We use clinical and technological tests that evaluate multiple different areas of sensory and motor function, ultimately gaining insight into changes that may occur following a concussion. Additionally, with the use of technological tests alongside clinical tests we are gaining a better understanding of how to best evaluate various components of function.

Ongoing projects in the lab focus on: 1) the role of neuromuscular training and sensorimotor training in the prevention of concussion 2) changes that occur in measures of cervical spine, vestibular and sensory function with growth and development 3) changes that occur in measures of cervical spine, vestibular and sensory function following a concussion, 4) optimizing rehabilitation techniques to enhance recovery and inform clinical care and 5) Evaluating implementation of concussion protocols. Our program of clinical research involves collaboration with multiple

clinicians and researchers across the University of Calgary and other national and international institutions, ultimately enabling clinically meaningful questions to be evaluated and translated back to the clinic.

JONATHAN SMIRL

CEREBROVASCULAR CONCUSSION RESEARCH LABORATORY

We are a newly established group in the Sport Injury Prevention Research Centre and the Human Performance Laboratory. Our work is focused on understanding the basis of the physiological and autonomic disruptions which occur following concussion. We aim to use this knowledge base to develop informed interventions (exercise, physiological and pharmacological) which can be used to aid in the recovery process during both the acute and chronic symptom periods.

Our group is currently leading the exercise-based measures in the Pan-Canadian Surveillance in High Schools to REDuce (SHRed) Concussions project. Additionally we are actively collaborating with other Canadian institutions on objectively quantifying the extent concussed athletes rest and exercise following concussions. We are excited to have our new lab space operational early in 2020 and will be adding numerous other physiologically informed projects to our mandate throughout the year. Through our integrative approach to concussion research and collaboration network, we aim to create new approaches and interventions which will enable us to objectively assess physiological disruptions following concussion and improve outcomes for individuals following this traumatic injury.



PRESENTATIONS

Bike 2019 Conference. Calgary Central Library. Calgary, Canada. May 8.

Patricia K. Doyle-Baker — *Bikes and Bike Share: What is the benefit of e-Bikes?*

The Bone Academy Mexico. Puerto Vallarta, Mexico. March.

Brent Edwards — *Biomechanics of atypical femoral fracture.*

Siksika Community. November.

Amanda Black — *Concussion Management Protocols: Recognition and Management.*

Counselling and Development Centre. York University. November 20.

Amanda Black — *Concussion Recognition, Accommodations, and Management.*

Chinook Rotary Club. Calgary, Canada. October 2,.

Kathryn Schneider — *Concussion: Who, What, Where, When and What's Next?*

Seminar in Exercise Physiology. Saint-Etienne, France. July 4.

Juan Murias— *Exercise intensity prescription: How close (or how far) are we from getting it right?*

Seminar in Exercise Physiology. Verona, Italy. July 8.

Juan Murias— *Exercise intensity prescription: How close (or how far) are we from getting it right?*

Tips for Hips - Community Outreach. University of Calgary Sport Medicine Centre. Calgary, Canada. April.

Preston Wiley — *Hip Anatomy and Soft Tissue Injury.*

Calgary Youth Science Fair. Calgary, Canada. April 5.

Kathryn Schneider — *How Science Has Impacted My Life.*

Canadian Concussion Prevention Meeting, Sport Information Resource Canada (SIRC). Ottawa, Canada. June.

Kathryn Schneider — *Models of prevention (of concussion).*

Retirement Presentation, Faculty of Kinesiology, University of Calgary.

Calgary, Canada. October 3.

Brian MacIntosh — *Reflections and illuminations: with a little help*

from my friends (students).

University of Sao Paulo. Ribeirao Preto, Brazil. October 22.

Walter Herzog — *Reflections on muscle: how do muscles contract?*

Calgary Winter Club, Skating Banquet. Calgary, Canada. May 3.

Patrician Doyle-Baker — *Talk, Knowledge and Outcome: Communicating the value of sport.*

Academic Education Day in Rheumatology. Cumming School of Medicine, University of Calgary. Calgary, Canada. November.

Reed Ferber — *Using wearable sensor data to inform clinical care.*

Canadian Athletic Therapists' Association Annual Meeting. Calgary, Canada. June.

Reed Ferber — *Wearable Technology in Injury Prevention and Rehabilitation.*

Canada West University Athletics Association (CWUAA) Medical Committee 2019 Meeting. Calgary, Canada. January.

Reed Ferber — *Wearable technology in injury prevention and rehabilitation.*

Seminar in Kinesiology. University of Saskatchewan. Saskatoon, Canada. October 9.

Brian MacIntosh — *Where you come from will determine what you see: a fresh look at the slow component of oxygen intake.*

WORKSHOPS, PANELS, & BOOTHS

Cervical spine and vestibular considerations following sport-related concussion. — Kathryn Schneider

Concussion symposium, World Sport Physiotherapy Congress 2019, Vancouver, Canada. October 3.

Concussion Harmonization IMpLementation and Evaluation in Canada workshop. — Kathryn Schneider, Amanda Black

National Sport Organizations. October 31 & December 2.

Concussion Harmonization IMpLementation and Evaluation in Canada (CHAIMP) study. — Kathryn Schneider, Amanda Black

Audience: National Sport Organization (NSO) stakeholders including health care professionals, administrators.

In collaboration with:

Parachute and Own the Podium (OTP). October 31;

Parachute and Coaching Association of Canada. December 2.

Managing our healthy 'selves' is a leadership challenge. — Patricia K.

Doyle-Baker

Student and enrolment services professional day workshop.

University of Calgary, Calgary, Canada. June 27.

Models of prevention (of concussion). — Kathryn Schneider

Canadian concussion prevention meeting. SIRC meeting,

Ottawa, Canada. June 10.

Neuromuscular Training. — Kati Pasanen

Presentation and practical session at the 5th IOC Sport Medicine
Diploma Program.

Neuromuscular Warm-up Program. — Larissa Taddei, Carla van den
Berg

Workshops for soccer coaches for approximately 80 coaches from
the Minor Soccer Association. November.

Physical activity and aging. — Meghan McDonough, Juan Murias, Patricia
K. Doyle-Baker, Graduate Students.

Approximately 50 older adults and stakeholders from Calgary.
public event hosted by the Aging PEEPS. May 16.

*Preventing and managing head injuries in sport – Rehabilitation after
concussion: multidisciplinary approach.* — Kathryn Schneider,
Carolyn Emery

Panel presentation. Preventing and managing head injuries in sport.
Norwegian Sport Medicine. Lillehammer, Norway. November 22.

Primary prevention in youth sport: Time to get on with it! — Carolyn
Emery

Prevention of injury in youth sport webinar. Pediatric Research in
Sports Medicine Society (PRiSM) and Canadian Athletic Therapists
Association (CATA). May.

Recent research using wearable sensor data. — Reed Ferber

Video conference with Rothesay Netherwood School,
New Brunswick. May.

Shoulder check: The causes and treatment for non-arthritis shoulder

Public Engagement

pain. — Nicholas Mohtadi, Richard Boorman, Aaron Bois, Ryan Shields, Martin Zacharias
Free public forum. September 23.

SHRed concussions: Moving upstream to the prevention of sport-related concussion in youth. — Carolyn Emery
Canadian Concussion Prevention Workshop. Sport Information Research Canada/ Sport Canada, Ottawa, Canada. June.

Small group learning presentation on exercise performance and development in master's athletes. — John Holash
Winter snow camp, Foothills nordic ski club. November 17-18.

The basic function of the heart. — David Montero
Workshop for 25 students. Discovery Day of Health Sciences, Canadian Medical Hall of Fame.

The role of an exercise specialist in chronic disease management. — Patricia K. Doyle-Baker
Physician workshop, EIMC National Student Research & Medical Conference 2019. University of Calgary, Calgary, Canada. June 28.

The stickiness factor: Do we have it. — Patricia K. Doyle-Baker
Panel presentation, ActiveCITY Summit, Winsport, Calgary, Canada. September 18.

Tips for hips: How to manage non-arthritic hip pain. — Nicholas Mohtadi, Preston Wiley, Alex Rezansoff, David Lindsay
Free public forum. April 8.

Wearable Technology Research And Collaboration (We-TRAC). — Reed Ferber
Annual Workshop, Calgary, Canada. November.

MEDIA & INTERVIEWS

6000 fewer injuries when bodychecking pulled from some bantam hockey: study. — Carolyn Emery
CBC News Calgary, David Bell. November 7.

A weighty subject: How the obesity epidemic is taking a toll on our bones and joints. — Raylene Reimer
UCalgary News, Nancy Whelan, McCaig Institute for Bone and

Joint Health. March 25.

Are High Priced Shoes Worth the Cost? — Darren Stefanyshyn, Bill Wannop
Are High Priced Shoes Worth the cost? Testing Adidas, Nike and Under Armour.

CBC Marketplace. Jeremy McDonald, Tyana Grundig and Asha Tomlinson. November 2.

Shoe Wars: High Cost vs. Low Cost.

CBC Marketplace. Jeremy McDonald, Tyana Grundig and Asha Tomlinson. November 2.

Ban on bodychecking in non-elite Bantam ice hockey significantly reduces injury. — Carolyn Emery

UCalgary news, Stacy McGuire, Faculty of Kinesiology. November 12.

Boxing deaths could have been prevented. — Ryan Peters

Calgary Sun, Michael 'Mr. Boxing YYC' Short. August 12.

Calgary researcher faces off against concussions in young athletes. — Carolyn Emery

Calgary Journal, on-line, Bill Atwood. September 11.

Carbon fibre plate tech: the Calgary connection. — Darren Stefanyshyn
Canadian Running, Anne Francis. August 21.

Citizen scientists with wearable tech needed for UCalgary project. — Reed Ferber

UCalgary news. September 18.

Here's What Proper Running Form Actually Is and How Much You Should Care About. — Reed Ferber

Self: Running, Amy Marturana Winderl. April 2.

How do you eat to feed trillions? Food and the health of our gut microbiomes. — Raylene Reimer

Explore UCalgary, Doug Ferguson. December 17.

How does research make better policy? Public policy and the dance of democracy. — Kathryn Schneider

Explore UCalgary, Jane Chamberlain. May 1.

In Conversation with Kathryn Schneider, Renowned Clinician Scientist. — Kathryn Schneider

The Muse, Modeline Longjohn. April 10.

Markin undergrad looks at link between exercise intensity and prevention of cardiovascular disease — Juan Murias
UCalgary News, Stephanie Vahaaho, Markin USRP in Health and Wellness. April 1.

Massive Open Online Course (MOOC). — Kathryn Schneider
University of Calgary says “come one, come all” to free sports concussion course.

The Canadian Press, Donna Spencer. February 4.

Calgary Herald

National Post

Nanaimo News

Battlefords Now

PG Citizen

University of Calgary making free sports concussion course available to anybody who is interested.

Global News

University of Calgary offers “groundbreaking” free online course on sports concussions.

CBC News

University of Calgary offers free course on concussions.

The Star

University to offer free concussion prevention course.

660 News, Derek Craddock. February 5.

Concussion Training at U of C.

Calgary Today with Joe McFarland. February 7.

Massive Open Online Course on Concussion.

CityTV, Josh Ritchie. February 4.

Online course allows anyone, anywhere to learn about concussions.

UCalgary News, Live on Instagram, University Relations Staff. June 10.

Kinesiology researcher partners with Universite Laval on free concussion course.

UCalgary News, Leanne Yohemas. February 4, 2019.

MPowrx announces launch of BellyCrush - a new way to manage your weight. — Raylene Reimer
Cision News. December 4.

New study looks at injuries and concussions in minor hockey. — Carolyn Emery
CBC News, The Homestretch. November.

Researchers gaining yards against concussions (CIHR). — Kathryn Schneider myFM radio. January 29, 2019.

CKNW Global News Radio Vancouver. February 2.

Riding a Lime e-Bike. — Patricia Doyle-Baker

770 Radio CHQR, Gord Gillies. May 28.

Should You Do Single-Leg Cycling Drills? — Juan Murias

Bicycling, Selene Yeager. November 8.

UCalgary researcher passionate about this emerging sport, along with understanding ways to prevent injury in all sport. — Kati Pasanen

UToday. May 30.

GROUP HOSTING, TOURS & EVENTS

Bishop Grandin High School — March 18 (20 students), December 9 (20 students)

40 sport medicine students toured the University of Calgary and attended a lecture on injury prevention, concussion, and neuromuscular training warm-ups.

Concussion and injury prevention research demonstrations and education — 12 visits throughout 2019

8 high schools (12 visits with 20-100 students per visit) hosted by the Sport Injury Prevention Centre.

Heritage Youth Researchers Summer Program (HYRS) — August 19

34 students with the Heritage Youth Researchers Summer Program visited six stations presented by various groups in the HPL.

XXVII Congress of the International Society of Biomechanics (ISB2019)

and the 43rd Annual Meeting of the American Society of Biomechanics (ASB2019) — July 31 - August 4

Over 2100 attendees, representing more than 40 countries.

Nelson Mandela High School — January 9 (60 students), January 11 (60 students), October 22 (66 students)

186 sport medicine students toured the University of Calgary and attended a lecture on injury prevention, concussion and neuromuscular training warm-ups..

Public Engagement

Operation Minerva — May 12

14 female junior high students visited stations and attended a lecture featuring female scientists in the HPL and faculty.

Sanofi BioGenius — April 18

11 students visited 5 research demonstration stations, presented by various groups in the HPL.

IBM STEM4Girls — August 14

28 students visited 5 stations, presented by various groups in the HPL

Shad Valley Tour 2019 — July 15

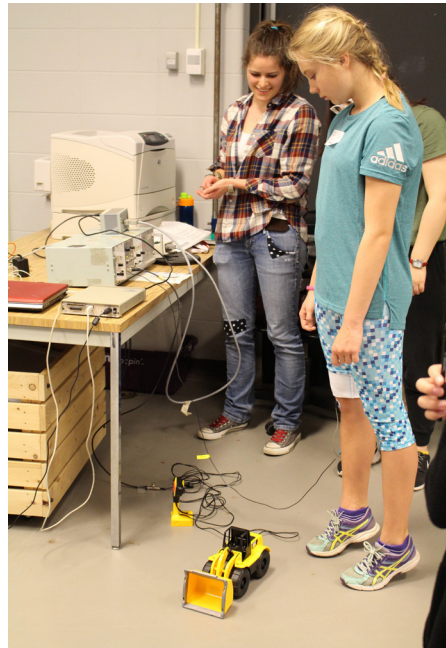
64 students enrolled in the sport medicine program visited 9 stations, presented by various groups in the HPL

St. Mary's High School — June 11

35 students enrolled in the sport medicine program visited 6 stations, presented by various groups in the HPL

Western Canada High School —

November 25
30 sport medicine students toured the University of Calgary and attended a lecture on injury prevention, concussion, and neuromuscular training warm-ups.



BLOG POSTS

[Free MOOC on concussion at the University of Calgary.](#)

— Kathryn Schneider, Pierre Fremont
British Journal of Sport Medicine (BJSM) Blog. July 24.

[Life is short: don't take your health for granted.](#)

— Patricia K. Doyle-Baker. January 24.

[The wisdom of students: future health leaders.](#)

— Patricia K. Doyle-Baker. January 8.

[Public Health Matters: Three decades later my career is still sweet.](#)

— Patricia K. Doyle-Baker. August 21.

OTHER KNOWLEDGE TRANSLATION ACTIVITIES

[Concussion Management: A Toolkit for Physiotherapists.](#)

— Kathryn Schneider, L. Loranger, Codi Isaac, Catherine Ross, Carol Miller
Physiotherapy Alberta College + Association. Revision of toolkit. May 2019.

[Discussing the AIM study \(Adiposity, Influenza and Men\). A common experience to the influenza vaccine: wouldn't it be nice!](#)

— Patricia K. Doyle-Baker
Open Access Government. May 15.

[Influenza vaccine response may be influenced by lifestyle factors in highly active young men.](#)

— Patricia K. Doyle-Baker, A Stewart
Canadian Society for Exercise Physiology, Knowledge Translation communiqué. August 21.

Keeping the message simple: Energy expenditure of restaurant servers.

— Patricia K. Doyle-Baker
Adjacent Government. February 7.

Patents & Licenses

Lens-attached tissue cell pressurization device.

Patent NO US 10,180,418 B2, issued January 2019.

Inventors: Han SK, Herzog W, Shin HJ

Pea fibre supplementation for obesity and metabolic syndrome.

License (through Innovate Calgary).

Inventors: Reimer RA, Vena J, Tunnicliffe J, Parnell J



Acknowledgements

Active & Safe Central (BC)
adidas International
Alberta Alpine Ski Association
(AASA)
Alberta Ballet School
Alberta Basketball
Alberta Bone and Joint Health
Institute
Alberta Bone and Joint Strategic
Clinical Network
Alberta Children's Hospital (ACH)
Alberta Children's Hospital
Foundation (ACHF)
Alberta Children's Hospital
Research Institute (ACHRI)
Alberta College and Association of
Chiropractors
Alberta Graduate Excellence
Scholarship
Alberta Health Services (AHS)
Alberta Heritage Foundation
Alberta High School Athletics
Association
Alberta Injury Prevention Centre
Alberta Innovates
Alberta Spine Foundation
Amgen Inc
Ariat International
Arthritis Research UK Centre
for Sport, Exercise and
Osteoarthritis
Arthritis Society
Banff Alpine Racers (BAR)
Basketball Canada
BC Agriculture Investment Fund
BC Hockey
BioRad Laboratories Inc
Brain Canada Foundation
Brenda Strafford Centre on Aging
Calgary Board of Education
Calgary Catholic Board of
Education

Calgary Health Trust
Calgary Minor Soccer Association
Calgary of Health Trust
Canada Foundation for Innovation
(CFI), John R. Evans Leaders
Fund (JELF)
Canada High School Sport
Canada Research Chair Program
(CIHR)
Canada Research Chair Program
(NSERC)
Canadian Academy of Sport and
Exercise Medicine (CASEM)
Canadian Athletic Therapy
Association
Canadian Cancer Society Research
Institute (CCSRI)
Canadian Chiropractic Research
Foundation
Canadian Institutes for Health
Research (CIHR)
Canadian Musculoskeletal
Rehabilitation Research
Consortium
Canadian Physiotherapy
Association
Canadian Soccer Association
Canadian Sport Institute Calgary
Canadian Traumatic Brain Injury
Research Consortium (CTRC)
CCM Hockey
CHILD-BRIGHT
Chinese Speed Skating Association
City of Calgary
City of Calgary Recreation
Clifford Kinley Trust
Coordenação de Aperfeiçoamento
de Pessoal de Nível Superior
(CAPES)
Cummings School of Medicine,
University of Calgary
Da Vinci Foundation



Acknowledgements

David Hart
Department for Women and Gender
Equality (WAGE)
Dr. Benno Nigg Research Chair
ERA-NET Neuron
Evelyn Wigham
Ever Active Schools
Faculty of Graduate Studies,
University of Calgary
Faculty of Kinesiology, University of
Calgary
Fieldturf
Fila
FitFlop Research Footwear
Fitter International Inc.
Football Canada
Foothills Soccer Club
Foundation of Research Support
of the State of São Paulo
(FAPESP)
Fox Head
Frederick Banting and Charles Best
Canada Graduate Scholarships
(CIHR)
General Electric
General Mills Inc
Government of Canada, Emerging
Leaders in the Americas
Program (ELAP)
Harvest Half Marathon Society
Heart and Stroke Foundation of
Canada
Henry M. Jackson Foundation for
the Advancement of Military
Medicine Inc
Highmark Innovations Inc
Hockey Alberta
Hockey Calgary
Hockey Canada
Hockey Edmonton
Hotchkiss Brain Institute,
University of Calgary (HBI)

Infinitt Nutrition
Integrated Concussion Research
Program (ICRP)
International Olympic Committee
(IOC)
International Olympic Committee
Medical and Scientific
Commission
International Paralympic
Committee
Japanese Society for the Promotion
of Science
Kids Brain Health Network
Kids Cancer Foundation of Alberta
Killam Foundation
Killam Research Fellowships –
Canada Council for the Arts
makeCalgary
Marco Vaz
Markin Undergraduate Student
Research Program (USRP) in
Health and Wellness, Allan
Markin
Maternal Newborn Child & Youth
Strategic Clinical NetworkTM
(MNCY SCNTM) Health
Outcomes Improvement
(HOI) Fund
McCaig Institute for Bone and Joint
Health, University of Calgary
McGill University
Michael Smith Foundation for
Health Research (MSFHR)
Mitacs
Mizuno
Momentum Health Mission
Movember Foundation
National Basketball Association
(NBA)
National Basketball Association
(NBA)/GE Healthcare,
Orthopedics and Sports

Acknowledgements

Medicine Collaboration
National Football League (NFL)
Natural Sciences and Engineering
Research Council of Canada
(NSERC)
NFL Scientific Advisory Board
NSERC Collaborative Research and
Training Experience (CREATE)
NSERC CREATE CONNECT!
Queen's University
O'Brien Institute of Public Health,
University of Calgary
Ontario Neurotrauma Foundation
Osteoarthritis Research Society
International (OARSI)
Own The Podium
Parachute
Patricia Pennock
PolicyWise for Children and
Families
Program for Undergraduate
Research Experience (PURE),
University of Calgary
Prostate Cancer Canada (PCC)
Public Health Agency of Canada
Reebok
Rugby Canada
Salomon
Scientific Council of City of
Tampere, Finland
Scientific and Technological
Research Council of Turkey
(TUBITAK)
Section of Orthopaedic Surgery,
Department of Surgery,
University of Calgary
Simpson Family Endowment
Sinneave Family Foundation
Skate Canada
Snyder Institute for Chronic

Diseases, University of Calgary
Soccer Canada
Social Science and Humanities
Research Council (SSHRC)
Speed Skating Canada
Sport Canada
Sport Injury Prevention Research
Centre (SIPRC), University of
Calgary
Sport Medicine Centre, University
of Calgary
Sport Science Association of Alberta
(SSAA)
Superfeet
Talisman
Taylor Institute for Teaching and
Learning, Teaching Scholars
Program, University of Calgary
TCR Sport Lab Calgary
Thrive Centre Leadership Team and
volunteers
Thrive Health Services
Tom Baker Cancer Centre
U SPORTS
Under Armour
United States Department of
Agriculture, National Institute
of Food and Agriculture
United States National Institutes
of Health, National Institute
for Deafness and other
Communication Disorders
University of Alberta
University of Calgary
University of Southampton
University of Toronto
US Army Medical Research
and Materiel Command
(USAMRMC), Department of
Defense (DoD)



Acknowledgements _____

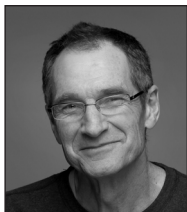
Vanier Canada Graduate
Scholarships (Vanier CGS)
Vera A. Ross Graduate Scholarship
VERT
Vi Riddell Foundation
Volleyball Canada
W. Brett Wilson
W. Garfield Weston Foundation, The
Wellspring Calgary
Wellspring Edmonton

Western University
WinSport
Workers' Compensation Board
Alberta (WCB)
World Rugby
XCO Tech Inc.
YMCA



Members

Academic Faculty



Herzog, Walter
Ph.D., U. of Iowa
Director, Professor
Biomechanics



Aboodarda, Jalal
Ph.D., U. of Malaya
Assistant Professor
Exercise Physiology



Black, Amanda
Ph.D., U. of Calgary
Assistant Professor
Sport Injury Prevention



Cluff, Tyler
Ph.D., McMaster U.
Assistant Professor
Motor Control & Learning



Doyle-Baker, P. Tish K.
Dr. PH, Ph.D., Loma Linda U.
Associate Professor
Clinical Ex. Physiology



Edwards, W. Brent
Ph.D., Iowa State U.
Assistant Professor
Biomechanics



Emery, Carolyn
BPT, Ph.D., U. of Alberta
Professor
Sport Injury Prevention



Ferber, Reed
Ph.D., U. of Oregon
Professor
Biomechanics



Holash, John
Ph.D., U. of Calgary
Instructor
Exercise Physiology



Kuo, Arthur
Ph.D., Stanford U.
Professor
Biomechanics



MacInnis, Martin
Ph.D., U. of British Columbia
Assistant Professor
Exercise Physiology



M^cIntosh, Brian R.
Ph.D., U. of Florida
Professor Emeritus
Muscle Physiology



Millet, Guillaume Y.
Ph.D., U. of Franche-Comté
Professor
Exercise Physiology



Murias, Juan M.
Ph.D., U. of Western Ont.
Assistant Professor
Exercise Physiology



Nigg, Benno M.
Dr. sc. nat., ETH Zürich
Professor Emeritus
Biomechanics



Pasanen, Kati
Ph.D.,
Assistant Professor
Sport Injury Prevention



Members

Academic Faculty



Peters, Ryan
Ph.D., U. of British Columbia
Assistant Professor
Motor Control & Learning



Reimer, Raylene
Ph.D., U. of Alberta
Professor
Nutrition



Ronsky, Janet L.
Ph.D., U. of Calgary
Professor
Biomechanics



Schmidt, Tannin A.
Ph.D., U. of California
Associate Professor
Bioengineering



Schneider, Kathryn
PHScPT, Ph.D., U. of Calgary
Assistant Professor
Sport Injury Prevention



Smirl, Jonathan
PHScPT, Ph.D., U. of Calgary
Assistant Professor
Sport Injury Prevention



Stefanyshyn, Darren J.
Ph.D., U. of Calgary
Professor
Biomechanics

Adjunct Faculty



Federico, Salvatore
Ph.D., U of Catania
Adj. Professor
Biomechanics



Griffiths, Robert
Ph.D., Monash U.
Adj. Professor
Biomechanics



Jordan, Matt
Ph.D., U. of Calgary
Adj. Assist. Professor
Biomechanics



Joumaa, Venus
Ph.D., U. of Compiegne
Adj. Assist. Professor
Biomechanics



Kuntze, Gregor
Ph.D., Loughborough U.
Adj. Assist. Professor
Sport Injury Prevention



Wannop, John
Ph.D., U. of Calgary
Adj. Assist. Professor
Biomechanics

Members

Post Doctoral Fellows



Abusara, Ziad
Ph.D., U. of Calgary



Benson, Lauren
Ph.D., U. of Wisconsin



Cashaback, Joshua
Ph.D., McMaster U.



Clermont, Christian
Ph.D., U. of Calgary



Darici, Osman
Ph.D., Istanbul
Technical University.



Iannetta, Danilo
Ph.D., U. of Calgary



Fortuna, Rafael
Ph.D., U. of Calgary



Haider, Ifaz
Ph.D., Carleton U.



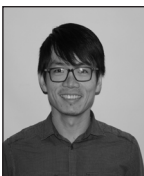
Honert, Eric
Ph.D., Vanderbilt
University



Komeili, Amin
Ph.D., U. of Alberta



Mayengbam, Shyam
Ph.D., U. of Manitoba



Moo, Eng Kuan
Ph.D., U. of Malaya



Noye Tuplin, Erin
Ph.D., Carleton U.



Owwoeye, Oluwatoyosi
Ph.D., U. of Lagos



Palacios, Luz
Ph.D., U. of Calgary



Piuccio, Tatiane
Ph.D., Federal U. of Santa
Catarina



Räisänen, Anu
Ph.D., U. of Tampere



Schroeder, Ryan
Ph.D., U. of Calgary and
Edith Cowan University



Smith, Ian
Ph.D., U. of Waterloo



Wang, Weilan
Ph.D., U. of Alberta



Members

Visiting Professors



Khetabi, Shahin
University of Kurdistan



Matteilo, Stela
University of Sao Paulo
Brazil



Palmer, Debbie
Edinburgh Napier
University
Scotland



Vaz, Marco
U. Federal Do Rio
Grande So Sul, Brazil



Watman, Chris
Auckland University
of Technology, New
Zealand

Staff



Cairo, Alexis
Research Assistant



Chaudhari, Stephen
Research Assistant



Chadder, Michaela
Research Assistant



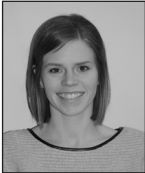
Childs, Tanya
Research Assistant



Connon, Hannah
Exercise Physiology
Technician



Cooke, Emily
Research Assistant



Cyr, Juliana
Administration



Dodge, Jenna
Research Assistant



Eller, Lindsay
Research Assistant



Esau, Shane
Research Assistant



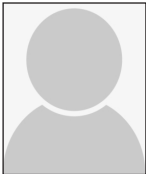
Holash, Barbara
Administration



Janzen, Leticia
Research Assistant



Jinha, Azim
Research Assistant



Jones, Elizabeth
Research Assistant



Kozak, Stacy
Research Assistant



Kowalchuk, Shaylyn
Research Assistant



Lee, Kristine
Research Assistant



Leonard, Tim
Research Technician



Lobos, Stacey
Research Assistant



Loos, Lisa
Research Assistant



Members



McNeil, Glenda
Lab Manager



Nguyen, Hoa
Research Assistant



Nigg, Sandro
Research Assistant



Peterson, Jennie
Research Assistant



Rothlander, Krystal
Research Assistant



Sandron, Elysa
Research Assistant



Sawatsky, Andrew
Research Assistant



Seerattan, Ruth
Research Assistant



Sick, Stacy
Research Assistant



Solomon, Michael
Research Assistant



Stano, Andrzej
Electronics



Thornley, Jordan
Exercise Physiology
Technician



van den Berg, Carla
Research Assistant



van Rassal, Cody
Research Assistant



Vienneau, Jordyn
Research Assistant



Vijayan, Vineetha
Research Assistant



Weir, Jamie
Exercise Physiology
Technician



Wong, Jeremy
Research Assistant



Young, Haley
Research Assistant



Members

TRAINEES

Alanen, Aki-Matti PhD	Chong, Emma BSc	Garcia Orrellana, Daniela BSc
Azevedo, Rafael PhD	Cigoja, Sasa PhD	Gorrell, Lindsay PhD
Baggaley, Michael PhD	Coates, Kyla PhD	Graham, Robby BSc
Banman, Christopher MSc	Copeland, Paige MSc	Grewal, Sagar BSc
Barrons, Zachary PhD	Crack, Laura MSc	Han, Seong-won PhD
Beever, Austin Beaver MSc	Critchley, Meghan PhD	Hashlamoun, Kotaybah PhD
Befus, Kimberley MSc	Debenham, Matthew PhD	Hildebrand, Karys BSc
Behling, Anja-Verena PhD	Eliason, Paul PhD	Hoitz, Fabian PhD
Bejar Saona, Jorge BSc	Esposito, Michael MSc	Inglis, Calaine PhD
Bhatiya, Urchit, BSc	Exner, Kyle BSc	Ingram, Cristina BSc
Black, Amanda	Ezzat, Allison PhD (UBC)	Jasinovic, Tin MD
Boldt, Kevin PhD	Firminger, Colin PhD	John, Rebecca
Bruce, Olivia PhD	Frankish, Barney PhD (La Trobe University)	Johnstone, Corson MSc
Burman, Joel MSc	Fu, Xiao Yu PhD (University of Michigan)	Kang, Manraj BSc
Cameron, Ben MD	Fuller, Colm PhD (University College Cork)	Khassestarash, PhD
Campeau, Lauren BSc	Fullerton, Madison MSc	Khawaja, Arsalan BSc
Carlisle, Elizabeth MSc	Gallinger, Tessa MSc	Klancic, Teja, PhD
Chin, Mathieu BSc		Kohrs, Caitlin MSc
Chleilat, Fatima PhD		Kolstad, Ash MSc
Cho, Nicole PhD		Kontro, Hilkka PhD

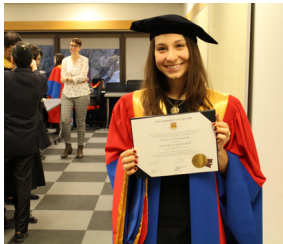
Members

Korodele, Abiola BSc	Meeuwisse, Derek BSc	Sampsell, Kara MSc
Kuervers, Emily BSc	Miller, Ryan MSc	Sandron, Elysa MSc
Lawson, Drew MSc	Miutz, Lauren PhD	Segal, Arshia BSc
Lee, Mattea BSc	Moore, Rob MD	Sekhon, Armaan BSc
Lemaire, Koen PhD (Free University Amsterdam)	Morris, Nathaniel MSc	Senevirathna, Angela PhD
Li, Meng MSc	Morrison, Heidi BSc	Shill, Isla MSc
Loundagin, Lindsay PhD	Nettleton, Jodi PhD	Sibole, Scott PhD
Lowry, Dana PhD	Newton, Janna BSc	Sidhu, Harsupreet BSc
MacCauley, Alanah BSc	Nyguen, Elaine BSc	Singh, Pratham MSc
MacDonald, Graham PhD	Onasch, Franziska PhD	Smail, Ollie MSc
MacDougall, Keenan MSc	Otoo, Baaba PhD	Smith, Donovan BSc
Macphail, Emily PhD	Page, Rebecca BSc	Soares, Rogerio PhD
Makasoff, Kevin BSc	Pankow Patrick MSc	Sobchuk, Kaitlyn BSc
Maldonado-Rodriguez, Naomi MSc	Pentz, Brandon MSc	Stilling, Carlyn MSc
Mattu, Anmol MSc	Poscente, Sophia MSc	Stokes, Rachel BSc
Maurus, Philipp PhD	Qahtani, Ahmad MSc	Taddei, Larrisa MSc
McCallum, Jocelyn MSc	Quinn, Colton	Tait, Tyler PhD
McCallum, Kyle PhD	Rios, Jaqueline Lourdes PhD	Tapsell, Liam MSc
	Robinson, Graham BSc	Tremblay, Catherine MSc
	Russell, Monica BSc	Tripp, Tom MSc
	Ryu, Hansol PhD	van der Zee, Tim PhD
	Sales, Kate MSc	



Members

van Rassel, Cody MSc	Wai, Janelle BSc	Yu, Bryan MSc
VanDerVeecken, Tessa MSc	Winegarden, Anneke MSc	Zhang, Jenny BHSc
Volkova, Valeriya MSc	Yeung, Natalie MSc	Zhuang, Andrea



VISITORS, INTERNS & SUMMER STUDENTS

Adam, Helen	Jackson, Kuira	Palmer, Debbie
Ajayi, Timi	Kammoun, Malek	Perewernycky, Nicholas
Alukic, Erna	Khetabi, Shahin	Pigott, Taylor
Bensamoun, Sabine	Krafft, Frieder	Shokohyar, Sheida
Bertagnolli, Craig	Lorrenz, Ashley	Stead, Tiffany
Forot, Jonas Tan, Justin Tan	Ma, Kyle	Subramaniam, Ashna
Frasson, Viviane Frasson	Macrie, Erin	Teetzel, Benjamin
Gebauer, Simon	Mattiello, Stela	Vaz, Marco Vaz
Graichen, Robert	Multani, Asmi	Vieira de Oliveira, Gustavo
Hannington, Maddie	Nasir, Muzammil	Whatman, Chris
Ilg, Jeff	Nasr, Victoria	Yeo, Sang-Hoon
	Nazeer, Sadhiq	
	Ostermaier, Florian	

Other Collaborators

Adeeb, Samer
Aaltonen, Sari
Alanko, Lauri
Alvares, Thiago
Andriacchi, Tom
Arden, Nigel
Arslan, Yunus
Asmussen, Michael
Aubry, Mark
Avela, Janne
Avramo, Sami
Babul, Shelina
Bahr, Roald
Bailey, Damian
Barlow, Karen
Batt, Mark
Belton, Kathy
Bennell, Kim
Benseler, Susanne
Bent, Leah
Bierma-Zeinstra, Sita
Blauwet, Cheri
Blouin, Jean-Sebastien
Bomhof, Marc
Borg, Patrik
Boyd, Lara
Boyd, Steven
Brassard, Patrice
Brett, Allan
Broglia, Steven
Brooks, Brian
Busonni, Marianni
Caird, Jeffrey
Chevignard, Mathilde
Clarsen, Ben
Condliffe, Elizabeth
Consolo, Giancarlo
Conway, Phil
Cook, Jill
Cowle, Stephanie
Crevecoeur, Frederic
Crossley, Kay
Dal Pupo, J.
Dalton, Brian
Davis, Gavin A.
de Brito Fontana,
Heiliane
Debert, Chantel

Demchuk, Andrew
Dennison, Christopher
Derman, Wayne
Diedrich, Andre
Diefenthaler, Fernando
Doschak, Michael
Dukelow, Sean
Dunn, Jeff
Dvorak, Jiri
Ellis, Michael
Emery, Carolyn
Engbretsen, Lars
Englund, Martin
Esposito, Fabio
Falvey, Eanna
Finch, Caroline
Fine, Nowell
Fischer, Lisa
Fortington, Lauren
Fletcher, Jared
Fremont, Pierre
Froyd, C.
Fukutani, Atsuki
Fussili, Pamela
Gagnon, Isabelle
Gasser, T. Christian
Gibala, Martin
Goodyear, Bradley
Goulet, Claude
Graham, Kerr
Gribble, Paul
Grillo, Alfio
Guermazi, Ali
Guskiewicz, Kevin
Haaspalo, Heidi
Hagel, Brent
Harris, Ashley
Heard, Mark
Heinonen, Ari
Hill, Michael
Hislop, Mike
Horisberger, Monika
Howard, Jason
Hulliger, Manuel
Hunter, David
Hutchison, Jamie
Imatani, Shoji
Kannus, Pekka

Katz-Leurer, Michal
Kauppi, Jukka-Pekka
Keir, Daniel
Kirton, Adam
Kissick, Jamie
Konttinen, Niilo
Korhonen, Rami
Kraus, Virginia
Krawetz, Roman
Krosshaug, Tron
Kuiala, Urho
Kulmala, Juha-Pekka
Kuo, Arthur
Lebel, Catherine
Lebrun, Connie
Lebrun, Constance
Leppanen, Mari
Leumann, Andre
Lloyd, David
Lohmander, Stephan
Losina, Elena
Lundby, Carsten
Luyten, Frank
Macaulay, AJ
MacDonald, Kerry
MacKay, Carly
Macpherson, Alison
Mah, Danielle
Makdissi, Michael
Manske, Sarah
Marshall, Deborah
Mathema, Prav
McCrea, Michael
McCrary, Paul
McFadyan, Brad
McGlory, Chris
Mercier, Catherine
Millet, Guillaume
Mish, Sandra
Mobasher, Ali
Mohtadi, Nicholas
Moller, Merete
Mountjoy, Margo
Mrazik, Martin
Mrklas, Kelly
Muendermann,
Annegret
Murphy, Robyn



Other Collaborators



Myklebust, Grethe
Nadeau, Luc
Nettel-Aguiree, Alberto
Nishikawa, Kiisa
Oikawa, Sara
Ojanen, Simo
Owen, Adrian
Palmer, Debbie
Pandy, Marcus
Parkkari, Jari
Patricios, Jon
Peat, George
Peltonen, Juha
Phillips, Aaron
Phillips, Stuart
Pike, Ian
Pingguan-Murphy, Belinda
Pogliaghi, Silvia
Power, Geoff
Proctor, David
Pruszyński, Andrew
Raj, Satish
Reed, Nick
Register-Mihalik, Johna
Risberg, May Arna
Rhodri, Lloyd
Ronsky, Janet
Roos, Ewa
Rouhi, Gholamreza

Roy, Brian
Runhaar, Jon
Russell, Kelly
Salimi, Sahar
Sanchze, Adelino
Schappacher, Gudrun
Schneider, Kathryn
Scott, Stephen H.
Seiberl, Wolfgang
Sethumadhavan, Swetha
Shier, Ian
Siebenmann, Christoph
Skelly, Lauren
Smirl, Jonathan
Snyder-Mackler, Lynn
Soligard, Torbjorn
Steffen, Kathrin
Stokes, Keith
Stokes, Maria
Strzalkowski, Nick
Taylor, Taryn
Thompson, Dylan
Turgeon, Alexis
Twilt, Marinka
Tzeng, Shieak
Valenti, Giovanna
Van Donkelaar, Paul
Vasankari, Tommi
Verhagen, Evert

Ville, Mattila
Viviers, Pierre
Walcott, Sam
Watt, Fiona
Webbron, Nick
Wellington, Cheryl
White, Mallory
Whittaker, Jackie
Wigglesworth, Anthony
Wilkes, Matthew
Wilson, James
Yeates, Keith
Zemek, Roger

- Aboodarda SJ, Fan S, Coates K, Millet GY. 2019. The short-term recovery of corticomotor responses in elbow flexors. *BMC Neurosci*, DOI: [10.1186/s12868-019-0492-x](https://doi.org/10.1186/s12868-019-0492-x)
- Aboodarda SJ, Iannetta D, Emami N, Varesco G, Murias JM, Millet GY. 2020. Effects of pre-induced fatigue vs. concurrent pain on exercise tolerance, neuromuscular performance and corticospinal responses of locomotor muscles. *J Physiol*, DOI: [10.1113/JP278943](https://doi.org/10.1113/JP278943)
- Abusara Z, Andrews SHJ, Von Kossel M, Herzog W. 2019. Publisher Correction: Menisci protect chondrocytes from load-induced injury (*Sci Rep*, (2018), 8, 1, (14150), 10.1038/s41598-018-32503-1). *Sci Rep*, DOI: [10.1038/s41598-019-40293-3](https://doi.org/10.1038/s41598-019-40293-3)
- Ahamed NU, Benson LC, Clermont CA, Pohl AJ, Ferber R. 2019. New considerations for collecting biomechanical data using wearable sensors: How does inclination influence the number of runs needed to determine a stable running gait pattern? *Sensors (Switzerland)*, DOI: [10.3390/s19112516](https://doi.org/10.3390/s19112516)
- Ahamed NU, Kobsar D, Benson LC, Clermont CA, Osis ST, Ferber R. 2019. Subject-specific and group-based running pattern classification using a single wearable sensor. *J Biomech*, DOI: [10.1016/j.jbiomech.2019.01.001](https://doi.org/10.1016/j.jbiomech.2019.01.001)
- Alhasadi, M.F.*, Epstein, M., Federico, S., 2019. Eshelby Force and Power for Uniform Bodies, *Acta Mechanica*, 230 (5), 1663-1684, DOI: 10.1007/s00707-018-2353-6
- Amosun SL, Doyle-Baker PK. 2019. What can sub-saharan Africa learn from Canada's investment in active healthy ageing? A narrative view. *Malawi Med J*, DOI: [10.4314/mmj.v3i1.16](https://doi.org/10.4314/mmj.v3i1.16)
- Ardern CL, Ekås G, Grindem H, Moksnes H, Anderson A, Chotel F, Cohen M, Forssblad M, Ganley TJ, Feller JA, Karlsson J, Kocher MS, LaPrade RF, McNamee M, Mandelbaum B, Micheli L, Mohtadi NGH, Reider B, Roe JP, Seil R, Siebold R, Silvers-Granelli HJ, Soligard T, Witvrouw E, Engebretsen L. 2019. 2018 International

- Olympic Committee consensus statement. Sports Ortho Trama, DOI: [10.1016/j.orthtr.2019.04.050](https://doi.org/10.1016/j.orthtr.2019.04.050)
- Asmussen, M.J., Kaltenbach, C., Hashlamoun, K.*, Shen, H., Federico, S., Nigg, B.M., 2019. Force Measurements during Running on Different Instrumented Treadmills, Journal of Biomechanics, 84, 263-268, DOI: [10.1016/j.jbiomech.2018.12.025](https://doi.org/10.1016/j.jbiomech.2018.12.025)
- Audet O, Hagel BE, Nettel-Aguirre A, Mitra T, Emery CA, Macpherson A, Lavoie MD, Goulet C. 2019. What are the risk factors for injuries and injury prevention strategies for skiers and snowboarders in terrain parks and half-pipes? A systematic review. Br J Sports Med, DOI: [10.1136/bjsports-2018-099166](https://doi.org/10.1136/bjsports-2018-099166)
- Baggaley M, Vernillo G, Martinez A, Horvais N, Giandolini M, Millet GY, Edwards WB. 2019. Step length and grade effects on energy absorption and impact attenuation in running. Eur J Sport Sci, DOI: [10.1080/17461391.2019.1664639](https://doi.org/10.1080/17461391.2019.1664639)
- Bailey DM, Brugniaux JV, Filipponi T, Marley CJ, Stacey B, Soria R, Rimoldi SF, Cerny D, Rexhaj E, Pratali L, Salmòn CS, Murillo Jáuregui C, Villena M, Smirl JD, Ogoh S, Pietri S, Scherrer U, Sartori C. 2019. Exaggerated systemic oxidative-inflammatory-nitrosative stress in chronic mountain sickness is associated with cognitive decline and depression. J Physiol, DOI: [10.1113/JP276898](https://doi.org/10.1113/JP276898)
- Barboza SD, Nauta J, Emery C, Van Mechelen W, Gouttebarga V, Verhagen E. 2019. A warm-up program to reduce injuries in youth field hockey players: A quasi-experiment. J Athl Train, DOI: [10.4085/1062-6050-79-18](https://doi.org/10.4085/1062-6050-79-18)
- Barrons ZB, Ura D, Bill K, Cooke ES, Wannop JW, Stefanyshyn D. 2019. Required traction during common rugby movements. Footwear Sci, DOI: [10.1080/19424280.2019.1606308](https://doi.org/10.1080/19424280.2019.1606308)
- Behling, A. V., Nigg, B. M. (2020). Relationships between the foot posture Index and static as well as dynamic rear foot

- and arch variables. *Journal of biomechanics*, 98, 109448.
- Behling, A.-V., Manz, S., von Tscharnern, V., Nigg, B. (2019). Pronation or foot movement – what is important. *Journal of Science and Medicine in Sport*.
- Benson LC, Ahamed NU, Kobsar D, Ferber R. 2019. New considerations for collecting biomechanical data using wearable sensors: Number of level runs to define a stable running pattern with a single IMU. *J Biomech*, DOI: [10.1016/j.jbiomech.2019.01.004](https://doi.org/10.1016/j.jbiomech.2019.01.004)
- Benson LC, Clermont CA, Watari R, Exley T, Ferber R. 2019. Automated accelerometer-based gait event detection during multiple running conditions. *Sensors (Switzerland)*, DOI: [10.3390/s19071483](https://doi.org/10.3390/s19071483)
- Bomhof MR, Parnell JA, Ramay HR, Crotty P, Rioux KP, Probert CS, Jayakumar S, Raman M, Reimer RA. 2019. Histological improvement of non-alcoholic steatohepatitis with a prebiotic: a pilot clinical trial. *Eur J Nutr*, DOI: [10.1007/s00394-018-1721-2](https://doi.org/10.1007/s00394-018-1721-2)
- Bruce OL, Firminger CR, Wannop JW, Stefanyshyn DJ, Edwards WB. 2019. Effects of basketball court construction and shoe stiffness on countermovement jump landings. *Footwear Sci*, DOI: [10.1080/19424280.2019.1668867](https://doi.org/10.1080/19424280.2019.1668867)
- Bulat M, Korkmaz Can N, Arslan YZ, Herzog W. 2019. Musculoskeletal simulation tools for understanding mechanisms of lower-limb sports injuries. *Curr Sports Med Rep*, DOI: [10.1249/JSR.0000000000000601](https://doi.org/10.1249/JSR.0000000000000601)
- Chan ZYS, MacPhail AJC, Au IPH, Zhang JH, Lam BMF, Ferber R, Cheung RTH. 2019. Walking with head-mounted virtual and augmented reality devices: Effects on position control and gait biomechanics. *PLoS ONE*, DOI: [10.1371/journal.pone.0225972](https://doi.org/10.1371/journal.pone.0225972)
- Chisholm DA, Black AM, Palacios-Derflingher L, Eliason PH, Schneider KJ, Emery CA, Hagel BE. 2019. Mouthguard use in youth ice hockey and the risk of concussion: Nested case-control study of 315 cases. *Br J Sports Med*, DOI:

- [10.1136/bjsports-2019-101011](https://doi.org/10.1136/bjsports-2019-101011)
- Chitsazan A, Herzog W, Rouhi G, Abbasi M. 2018. Alteration of strain distribution in distal tibia after triple arthrodesis: Experimental and finite element investigations. *J Med Biol Eng*, DOI: [10.1007/s40846-017-0330-5](https://doi.org/10.1007/s40846-017-0330-5)
- Christiansen D, MacInnis MJ, Zacharewicz E, Xu H, Frankish BP, Murphy RM. 2019. A fast, reliable and sample-sparing method to identify fibre types of single muscle fibres. *Sci Rep*, DOI: [10.1038/s41598-019-42168-z](https://doi.org/10.1038/s41598-019-42168-z)
- Cigoja S, Firminger CR, Asmussen MJ, Fletcher JR, Edwards WB, Nigg BM. 2019. Does increased midsole bending stiffness of sport shoes redistribute lower limb joint work during running? *J Sci Med Sport*, DOI: [10.1016/j.jsams.2019.06.015](https://doi.org/10.1016/j.jsams.2019.06.015)
- Clermont CA, Benson LC, Edwards WB, Hettinga BA, Ferber R. 2019. New considerations for wearable technology data: Changes in running biomechanics during a marathon. *J Appl Biomech*, DOI: [10.1123/jab.2018-0453](https://doi.org/10.1123/jab.2018-0453)
- Clermont CA, Benson LC, Osis ST, Kobsar D, Ferber R. 2019. Running patterns for male and female competitive and recreational runners based on accelerometer data. *J Sports Sci*, DOI: [10.1080/02640414.2018.1488518](https://doi.org/10.1080/02640414.2018.1488518)
- Clermont CA, Duffett-Leger L, Hettinga BA, Ferber R. 2020. Runners' perspectives on 'smart' wearable technology and its use for preventing injury. *Int J Hum Comput Interact*, DOI: [10.1080/10447318.2019.1597575](https://doi.org/10.1080/10447318.2019.1597575)
- Clermont CA, Phinyomark A, Osis ST, Ferber R. 2019. Classification of higher- and lower-mileage runners based on running kinematics. *J Sport Health Sci*, DOI: [10.1016/j.jshs.2017.08.003](https://doi.org/10.1016/j.jshs.2017.08.003)
- Collins KH, MacDonald GZ, Hart DA, Seerattan RA, Rios JL, Reimer RA, Herzog W. 2020. Impact of age on host responses to diet-induced obesity: Development of joint damage and metabolic set points. *J Sport Health Sci*, DOI: [10.1016/j.jshs.2019.06.004](https://doi.org/10.1016/j.jshs.2019.06.004)

- Crevecoeur F, Scott SH, Cluff T. 2019. Robust control in human reaching movements: A model-free strategy to compensate for unpredictable disturbances. *J Neurosci*, DOI: [10.1523/JNEUROSCI.0770-19.2019](https://doi.org/10.1523/JNEUROSCI.0770-19.2019)
- Cross KP, Cluff T, Takei T, Scott SH. 2019. Visual feedback processing of the limb involves two distinct phases. *J Neurosci*, DOI: [10.1523/JNEUROSCI.3112-18.2019](https://doi.org/10.1523/JNEUROSCI.3112-18.2019)
- Darici O, Temeltas H, Kuo AD. 2020. Anticipatory control of momentum for bipedal walking on uneven terrain. *Sci Rep*, DOI: [10.1038/s41598-019-57156-6](https://doi.org/10.1038/s41598-019-57156-6)
- de Oliveira GV, Soares RN, Volino-Souza M, Leitão R, Murias JM, Alvares TS. 2019. The effects of aging and cardiovascular risk factors on microvascular function assessed by near-infrared spectroscopy. *Microvasc Res*, DOI: [10.1016/j.mvr.2019.103911](https://doi.org/10.1016/j.mvr.2019.103911)
- Deleemans JM, Chleilat F, Reimer RA, Henning JW, Baydoun M, Piedalue KA, McLennan A, Carlson LE. 2019. The chemo-gut study: Investigating the long-term effects of chemotherapy on gut microbiota, metabolic, immune, psychological and cognitive parameters in young adult cancer survivors; Study protocol. *BMC Cancer*, DOI: [10.1186/s12885-019-6473-8](https://doi.org/10.1186/s12885-019-6473-8)
- Di Stefano S., Carfagna, M., Knodel, M.M., Hashlamoun, K.*, Federico, S., Grillo, A., 2019. Anelastic Reorganisation of Fibre-Reinforced Biological Tissues, *Computing and Visualization in Science*, 20 (3-6), 95-109, DOI: [10.1007/s00791-019-00313-1](https://doi.org/10.1007/s00791-019-00313-1)
- Diaz-Canestro C, Montero D. 2019. Sex dimorphism of VO₂max trainability: A systematic review and meta-analysis. *Sports Med*, DOI: [10.1007/s40279-019-01180-z](https://doi.org/10.1007/s40279-019-01180-z)
- Dierijck J, Kennefick M, Smirl J, Dalton BH, van Donkelaar P. 2020. Attention is required to coordinate reaching and postural stability during upper limb movements generated while standing. *J Mot Behav*, DOI: [10.1080/00222895.2019.1587351](https://doi.org/10.1080/00222895.2019.1587351)

- dos Santos AF, Nakagawa TH, Serrão FV, Ferber R. 2019. Patellofemoral joint stress measured across three different running techniques. *Gait Posture*, DOI: [10.1016/j.gaitpost.2018.11.002](https://doi.org/10.1016/j.gaitpost.2018.11.002)
- Dowd AJ, Kronlund L, Parmar C, Daun JT, Wytsma-Fisher K, Reimer RA, Millet GY, Culos-Reed SN. 2019. A 12-week pilot exercise program for inactive adults with celiac disease: Study protocol. *Glob Adv Health Med*, DOI: [10.1177/2164956119853777](https://doi.org/10.1177/2164956119853777)
- Doyle-Baker P, Wray HE. 2019. Exploring the occupational physical activity levels in young adult restaurant servers. *Int J Nutr*, DOI: [10.14302/issn.2379-7835.ijn-19-2968](https://doi.org/10.14302/issn.2379-7835.ijn-19-2968)
- Emery C, Palacios-Derflingher L, Black AM, Eliason P, Krolkowski M, Spencer N, Kozak S, Schneider KJ, Babul S, Mrazik M, Lebrun CM, Goulet C, Macpherson A, Hagel BE. 2019. Does disallowing body checking in non-elite 13- to 14-year-old ice hockey leagues reduce rates of injury and concussion? A cohort study in two Canadian provinces. *Br J Sports Med*, DOI: [10.1136/bjsports-2019-101092](https://doi.org/10.1136/bjsports-2019-101092)
- Emery CA, Black AM. 2019. Are rule changes the low-hanging fruit for concussion prevention in youth sport? *JAMA Pediatr*, DOI: [10.1001/jamapediatrics.2018.5498](https://doi.org/10.1001/jamapediatrics.2018.5498)
- Emery CA, Pasanen K. 2019. Current trends in sport injury prevention. *Best Pract Res Clin Rheumatol*, DOI: [10.1016/j.berh.2019.02.009](https://doi.org/10.1016/j.berh.2019.02.009)
- Emery CA, Van Den Berg C, Richmond SA, Palacios-Derflingher L, McKay CD, Doyle-Baker PK, McKinlay M, Toomey CM, Nettel-Aguirre A, Verhagen E, Belton K, MacPherson A, Hagel BE. 2019. Implementing a junior high school-based programme to reduce sports injuries through neuromuscular training (iSPRINT): A cluster randomised controlled trial (RCT). *Br J Sports Med*, DOI: [10.1136/bjsports-2019-101117](https://doi.org/10.1136/bjsports-2019-101117)
- Emery CA, Whittaker JL, Mahmoudian A, Lohmander LS,

- Roos EM, Bennell KL, Toomey CM, Reimer RA, Thompson D, Ronsky JL, Kuntze G, Lloyd DG, Andriacchi T, Englund M, Kraus VB, Losina E, Bierma-Zeinstra S, Runhaar J, Peat G, Luyten FP, Snyder-Mackler L, Risberg MA, Mobasheri A, Guermazi A, Hunter DJ, Arden NK. 2019. Establishing outcome measures in early knee osteoarthritis. *Nat Rev Rheumatol*, DOI: [10.1038/s41584-019-0237-3](https://doi.org/10.1038/s41584-019-0237-3)
- Esposito M, Wannop JW, Stefanyshyn D. 2019. Tendon and muscle fascicle length changes during running with compliant and stiff footwear cushioning. *Footwear Sci*, DOI: [10.1080/19424280.2019.1606080](https://doi.org/10.1080/19424280.2019.1606080)
- Eubank BH, Emery JCH, Lafave MR, Wiley JP, Sheps DM, Mohtadi NG. 2019. Exploring the business case for improving quality of care for patients with chronic rotator cuff tears. *Qual Manag Health Care*, DOI: [10.1097/QMH.0000000000000231](https://doi.org/10.1097/QMH.0000000000000231)
- Eubank BH, Lafave MR, Mohtadi NG, Sheps DM, Wiley JP. 2019. Validation of a tool to assess patient satisfaction, waiting times, healthcare utilization, and cost. *Prim Health Care Res Dev*, DOI: [10.1017/S1463423619000094](https://doi.org/10.1017/S1463423619000094)
- Federico, S., Alhasadi, M.F.*, Grillo, A., 2019. Eshelby's Inclusion Theory in the Light of Noether's Theorem, *Mathematics and Mechanics of Complex Systems*, 7 (3), 247-285, DOI: [10.2140/memocs.2019.7.247](https://doi.org/10.2140/memocs.2019.7.247)
- Federico, S., Consolo, G., Valenti, G., 2019. Tensor Representation of Magnetostriction for all Crystal Classes, *Mathematics and Mechanics of Solids*, 24 (9), 2814-2843, DOI: [10.1177/1081286518810741](https://doi.org/10.1177/1081286518810741)
- Firminger CR, Bruce OL, Wannop JW, Stefanyshyn DJ, Edwards WB. 2019. Effect of shoe and surface stiffness on lower limb tendon strain in jumping. *Med Sci Sports Exerc*, DOI: [10.1249/MSS.0000000000002004](https://doi.org/10.1249/MSS.0000000000002004)
- Fletcher JR, Asmussen MJ, Nigg SR, MacIntosh BR, Nigg BM. 2019. The effect of torsional shoe sole stiffness on knee moment and gross efficiency in cycling. *J Sports Sci*, DOI:

- [10.1080/02640414.2019.1565650](https://doi.org/10.1080/02640414.2019.1565650)
 Floría P, Sánchez-Sixto A, Ferber R, Harrison AJ. 2018. Effects of running experience on coordination and its variability in runners. *J Sports Sci*, DOI: [10.1080/02640414.2017.1300314](https://doi.org/10.1080/02640414.2017.1300314)
- Floría P, Sánchez-Sixto A, Harrison AJ, Ferber R. 2019. The effect of running speed on joint coupling coordination and its variability in recreational runners. *Hum Mov Sci*, DOI: [10.1016/j.humov.2019.05.020](https://doi.org/10.1016/j.humov.2019.05.020)
- Fortuna R, Goecking T, Seiberl W, Herzog W. 2019. Force depression following a stretch-shortening cycle depends on the amount of residual force enhancement established in the initial stretch phase. *Physiol Rep*, DOI: [10.14814/phy2.14188](https://doi.org/10.14814/phy2.14188)
- Fraser S, Wright AD, Van Donkelaar P, Smirl JD. 2019. Cross-sectional comparison of spiral versus block integrated curriculums in preparing medical students to diagnose and manage concussions. *BMC Med Educ*, DOI: [10.1186/s12909-018-1439-0](https://doi.org/10.1186/s12909-018-1439-0)
- Frémont P, Schneider K. 2019. New recommendations on sport-related concussions: Stronger methodology, practical messages, and remaining challenges. *Clin J Sport Med*, DOI: [10.1097/JSM.0000000000000556](https://doi.org/10.1097/JSM.0000000000000556)
- Fukutani A, Herzog W. 2018. Residual force enhancement is attenuated in a shortening magnitude-dependent manner. *Med Sci Sports Exerc*, DOI: [10.1249/MSS.0000000000001670](https://doi.org/10.1249/MSS.0000000000001670)
- Fukutani A, Herzog W. 2019. Current understanding of residual force enhancement: Cross-bridge component and non-cross-bridge component. *Int J Mol Sci*, DOI: [10.3390/ijms20215479](https://doi.org/10.3390/ijms20215479)
- Fukutani A, Herzog W. 2019. Influence of stretch magnitude on the stretch–shortening cycle in skinned muscle fibres. *J Exp Biol*, DOI: [10.1242/jeb.206557](https://doi.org/10.1242/jeb.206557)
- Fukutani A, Leonard T, Herzog W. 2019. Does stretching

- velocity affect residual force enhancement? J Biomech, DOI: [10.1016/j.jbiomech.2019.04.033](https://doi.org/10.1016/j.jbiomech.2019.04.033)
- Fukutani A, Sawatsky A, Leonard T, Herzog W. 2019. Contribution of the Achilles tendon to force potentiation in a stretch–shortening cycle. J Exp Biol, DOI: [10.1242/jeb.204032](https://doi.org/10.1242/jeb.204032)
- Geremia JM, Baroni BM, Bini RR, Lanferdini FJ, de Lima AR, Herzog W, Vaz MA. 2019. Triceps surae muscle architecture adaptations to eccentric training. Front Physiol, DOI: [10.3389/fphys.2019.01456](https://doi.org/10.3389/fphys.2019.01456)
- Ghali BM, Owoeye OBA, Stilling C, Palacios-Derflinger L, Jordan M, Pasanen K, Emery CA. 2019. Internal and external workload in youth basketball players who are symptomatic and asymptomatic for patellar tendinopathy. J Orthop Sports Phys Ther, DOI: [10.2519/jospt.2020.9094](https://doi.org/10.2519/jospt.2020.9094)
- Gorrell LM, Conway PJ, Herzog W. 2019. Reflex responses of neck, back, and limb muscles to high-velocity, low-amplitude manual cervical and upper thoracic spinal manipulation of asymptomatic individuals—A descriptive study. J Manipulative Physiol Ther, DOI: [10.1016/j.jmpt.2018.11.025](https://doi.org/10.1016/j.jmpt.2018.11.025)
- Greco-Otto P, Baggaley M, Edwards WB, Léguillette R. 2019. Water treadmill exercise reduces equine limb segmental accelerations and increases shock attenuation. BMC Vet Res, DOI: [10.1186/s12917-019-2075-6](https://doi.org/10.1186/s12917-019-2075-6)
- Grillo, A., Di Stefano, S., Federico, S., 2019. Growth and Remodelling from the Perspective of Noether’s Theorem, Mechanics Research Communications, 97, 89-95, DOI: [10.1016/j.mechrescom.2019.04.012](https://doi.org/10.1016/j.mechrescom.2019.04.012)
- Hagel BE, Macpherson A, Howard A, Fuselli P, Cloutier MS, Winters M, Richmond SA, Rothman L, Belton K, Buliung R, Emery CA, Faulkner G, Kennedy J, Ma T, Macarthur C, McCormack GR, Morrow G, Nettel-Aguirre A, Owens L, Pike I, Russell K, Torres J, Voaklander D, Embree T, Hubka T. 2019. The built environment and active transportation

- safety in children and youth: A study protocol. BMC Public Health, DOI: [10.1186/s12889-019-7024-6](https://doi.org/10.1186/s12889-019-7024-6)
- Haider IT, Baggaley M, Brent Edwards W. 2019. Subject-specific finite element models of the tibia with realistic boundary conditions predict bending deformations consistent with in vivo measurement. J Biomech Eng, DOI: [10.1115/1.4044034](https://doi.org/10.1115/1.4044034)
- Haider IT, Schneider PS, Edwards WB. 2019. The role of lower-limb geometry in the pathophysiology of atypical femoral fracture. Curr Osteoporos Rep, DOI: [10.1007/s11914-019-00525-x](https://doi.org/10.1007/s11914-019-00525-x)
- Haider IT, Simonian N, Saini AS, Leung FM, Edwards WB, Schnitzer TJ. 2019. Open-label clinical trial of alendronate after teriparatide therapy in people with spinal cord injury and low bone mineral density. Spinal Cord, DOI: [10.1038/s41393-019-0303-3](https://doi.org/10.1038/s41393-019-0303-3)
- Hamedzadeh, A. *, Grillo, A., Epstein, M., Federico, S., 2019. Remodelling of Biological Tissues with Fibre Recruitment and Reorientation in the Light of the Theory of Material Uniformity, Mechanics Research Communications, 96, 56-61, DOI: [10.1016/j.mechrescom.2019.02.001](https://doi.org/10.1016/j.mechrescom.2019.02.001)
- Han SW, Sawatsky A, de Brito Fontana H, Herzog W. 2019. Contribution of individual quadriceps muscles to knee joint mechanics. J Exp Biol, DOI: [10.1242/jeb.188292](https://doi.org/10.1242/jeb.188292)
- Hart DA, Herzog W, Reimer RA, Rios JL, Collins KH. 2019. Obesity: The impact on host systems affecting mobility and navigation through the environment. EMJ, 4(1):63-70.
- Herzog W. 2019. Editorial re: Could sport be part by Ring-Dimitriou et al. J Sport Health Sci, DOI: [10.1016/j.jshs.2019.04.001](https://doi.org/10.1016/j.jshs.2019.04.001)
- Herzog W. 2019. Passive force enhancement in striated muscle. J Appl Physiol (1985), DOI: [10.1152/japplphysiol.00676.2018](https://doi.org/10.1152/japplphysiol.00676.2018)
- Herzog W. 2019. The problem with skeletal muscle series elasticity. BMC Biomed Eng, DOI: [10.1186/s42490-019-](https://doi.org/10.1186/s42490-019-)

[0031-y](#)

- Hessel AL, Joumaa V, Eck S, Herzog W, Nishikawa KC. 2019. Optimal length, calcium sensitivity and twitch characteristics of skeletal muscles from mdm mice with a deletion in N2A titin. *J Exp Biol*, DOI: [10.1242/jeb.200840](#)
- Ho J, Nicolucci AC, Virtanen H, Schick A, Meddings J, Reimer RA, Huang C. 2019. Effect of prebiotic on microbiota, intestinal permeability, and glycemic control in children with type 1 diabetes. *J Clin Endocrinol Metab*, DOI: [10.1210/jc.2019-00481](#)
- Holash RJ, Macintosh BR. 2019. A stochastic simulation of skeletal muscle calcium transients in a structurally realistic sarcomere model using MCell. *PLoS Computational Biology*, DOI: [10.1371/journal.pcbi.1006712](#)
- Howard JJ, Huntley JS, Graham HK, Herzog WL. 2019. Intramuscular injection of collagenase clostridium histolyticum may decrease spastic muscle contracture for children with cerebral palsy. *Med Hypotheses*, DOI: [10.1016/j.mehy.2018.11.002](#)
- Iannetta D, De Almeida Azevedo R, Keir DA, Murias JM. 2019. Establishing the $\dot{V}O_2$ versus constant-work-rate relationship from ramp-incremental exercise: Simple strategies for an unsolved problem. *J Appl Physiol* (1985), DOI: [10.1152/jappphysiol.00508.2019](#)
- Iannetta D, Inglis EC, Soares RN, McLay KM, Pogliaghi S, Murias JM, holder Cs. 2019. Reliability of microvascular responsiveness measures derived from near-infrared spectroscopy across a variety of ischemic periods in young and older individuals. *Microvasc Res*, DOI: [10.1016/j.mvr.2018.10.001](#)
- Iannetta D, Murias JM, Keir DA. 2019. A simple method to quantify the $\dot{V}O_2$ mean response time of ramp-incremental exercise. *Med Sci Sports Exerc*, DOI: [10.1249/MSS.0000000000001880](#)
- Iannetta D, Passfield L, Qahtani A, MacInnis MJ, Murias



- JM. 2019. Interlimb differences in parameters of aerobic function and local profiles of deoxygenation during double-leg and counterweighted single-leg cycling. *Am J Physiol Regul Integr Comp Physiol*, DOI: [10.1152/ajpregu.00164.2019](https://doi.org/10.1152/ajpregu.00164.2019)
- Inglis EC, Iannetta D, Keir DA, Murias JM. 2019. Training-induced changes in the respiratory compensation point, deoxyhemoglobin break point, and maximal lactate steady state: Evidence of equivalence. *Int J Sports Physiol Perform*, DOI: [10.1123/ijsspp.2019-0046](https://doi.org/10.1123/ijsspp.2019-0046)
- Inglis EC, Iannetta D, Murias JM. 2019. Evaluating the NIRS-derived microvascular O₂ extraction “reserve” in groups varying in sex and training status using leg blood flow occlusions. *PLoS ONE*, DOI: [10.1371/journal.pone.0220192](https://doi.org/10.1371/journal.pone.0220192)
- Inglis EC, Iannetta D, Passfield L, Murias JM. 2019. Maximal lactate steady state versus the 20-minute functional threshold power test in well-trained individuals: “Watts” the big deal? *Int J Sports Physiol Perform*, DOI: [10.1123/ijsspp.2019-0214](https://doi.org/10.1123/ijsspp.2019-0214)
- Johnston K, Moo EK, Jinha A, Herzog W. 2019. On sarcomere length stability during isometric contractions before and after active stretching. *J Exp Biol*, DOI: [10.1242/jeb.209924](https://doi.org/10.1242/jeb.209924)
- Jordan MJ, Aagaard P, Herzog W. 2018. A comparison of lower limb stiffness and mechanical muscle function in ACL-reconstructed, elite, and adolescent alpine ski racers/ski cross athletes. *J Sport Health Sci*, DOI: [10.1016/j.jshs.2018.09.006](https://doi.org/10.1016/j.jshs.2018.09.006)
- Karabulut D, Dogru SC, Lin Y-C, Pandey MG, Herzog W, Arslan YZ. 2020. Direct validation of model-predicted muscle forces in the cat hindlimb during locomotion. *J Biomech Eng*, DOI: [10.1115/1.4045660](https://doi.org/10.1115/1.4045660)
- Keir DA, Pogliaghi S, Murias JM. 2019. Response. *Med Sci Sports Exerc*, DOI: [10.1249/MSS.0000000000001851](https://doi.org/10.1249/MSS.0000000000001851)

- Keir DA, Pogliaghi S, Murias JM. 2019. Response. *Med Sci Sports Exerc*, DOI: [10.1249/MSS.0000000000001820](https://doi.org/10.1249/MSS.0000000000001820)
- Kenny SJ, Palacios-Derflingher L, Shi Q, Whittaker JL, Emery CA. 2019. Association between previous injury and risk factors for future injury in preprofessional ballet and contemporary dancers. *Clin J Sport Med*, DOI: [10.1097/JSM.0000000000000513](https://doi.org/10.1097/JSM.0000000000000513)
- Kenny SJ, Palacios-Derflingher L, Whittaker JL, Emery CA. 2019. The Use of a Broad or Narrow Definition of injury in Dance Surveillance: Response to Letter to the Editor: Re: The Influence of Injury Definitions on Injury Burden in Pre-Professional Ballet and Contemporary Dancers. *J Orthop Sports Phys Ther*, DOI: [10.2519/jospt.2018.0201](https://doi.org/10.2519/jospt.2018.0201)
- Klancic T, Reimer RA. 2020. Gut microbiota and obesity: Impact of antibiotics and prebiotics and potential for musculoskeletal health. *J Sport Health Sci*, DOI: [10.1016/j.jshs.2019.04.004](https://doi.org/10.1016/j.jshs.2019.04.004)
- Kobsar D, Osis ST, Jacob C, Ferber R. 2019. Validity of a novel method to measure vertical oscillation during running using a depth camera. *J Biomech*, DOI: [10.1016/j.jbiomech.2019.01.006](https://doi.org/10.1016/j.jbiomech.2019.01.006)
- Kokts-Porietis RL, Minichiello NR, Doyle-Baker PK. 2020. the effect of the menstrual cycle on daily measures of heart rate variability in athletic women. *J Psychophysiol*, DOI: [10.1027/0269-8803/a000237](https://doi.org/10.1027/0269-8803/a000237)
- Komeili A, Abusara Z, Federico S, Herzog W. 2019. Effect of strain rate on transient local strain variations in articular cartilage. *J Mech Behav Biomed Mater*, DOI: [10.1016/j.jmbbm.2019.03.022](https://doi.org/10.1016/j.jmbbm.2019.03.022)
- Komeili A, Chau W, Herzog W. 2019. Effects of macro-cracks on the load bearing capacity of articular cartilage. *Biomech Model Mechanobiol*, DOI: [10.1007/s10237-019-01149-x](https://doi.org/10.1007/s10237-019-01149-x)
- Kowalsky DB, Rebula JR, Ojeda LV, Adamczyk PG, Kuo AD. 2019. Human walking in the real world: Interactions between terrain type, gait parameters, and energy

- expenditure. bioRxiv, DOI: [10.1101/2019.12.29.890434](https://doi.org/10.1101/2019.12.29.890434)
- Kroker A, Besler BA, Bhatla JL, Shtil M, Salat P, Mohtadi N, Walker RE, Manske SL, Boyd SK. 2019. Longitudinal effects of acute anterior cruciate ligament tears on peri-articular bone in human knees within the first year of injury. *J Orthop Res*, DOI: [10.1002/jor.24410](https://doi.org/10.1002/jor.24410)
- Krüger RL, Aboodarda SJ, Jaimes LM, MacIntosh BR, Samozino P, Millet GY. 2019. Fatigue and recovery measured with dynamic properties versus isometric force: Effects of exercise intensity. *J Exp Biol*, DOI: [10.1242/jeb.197483](https://doi.org/10.1242/jeb.197483)
- Krüger RL, Aboodarda SJ, Jaimes LM, Samozino P, Millet GY. 2019. Cycling performed on an innovative ergometer at different intensities–durations in men: Neuromuscular fatigue and recovery kinetics. *Appl Physiol Nutr Metab*, DOI: [10.1139/apnm-2018-0858](https://doi.org/10.1139/apnm-2018-0858)
- Kuntze G, Nesbitt C, Nettel-Aguirre A, Mkin SE, Scholz R, Brooks J, Twilt M, Toomey C, Mosher D, Ronsky JL, Benseler S, Emery CA. 2019. Gait adaptations in youth with juvenile idiopathic arthritis. *Arthritis Care Res (Hoboken)*, DOI: [10.1002/acr.23919](https://doi.org/10.1002/acr.23919)
- Labrecque L, Rahimaly K, Imhoff S, Paquette M, Le Blanc O, Malenfant S, Drapeau A, Smirl JD, Bailey DM, Brassard P. 2019. Dynamic cerebral autoregulation is attenuated in young fit women. *Physiol Rep*, DOI: [10.14814/phy2.13984](https://doi.org/10.14814/phy2.13984)
- Labrecque L, Smirl JD, Brassard P. 2019. Letter to the editor: On the need of considering cardiorespiratory fitness when examining the influence of sex on dynamic cerebral autoregulation. *Am J Physiol Heart Circ Physiol*, DOI: [10.1152/ajpheart.00152.2019](https://doi.org/10.1152/ajpheart.00152.2019)
- Larkin-Kaiser KA, Howard JJ, Leonard T, Joumaa V, Gauthier L, Logan K, Orlik B, El-Hawary R, Herzog W. 2019. Relationship of muscle morphology to hip displacement in cerebral palsy: A pilot study investigating changes intrinsic to the sarcomere. *J Orthop Surg Res*, DOI: [10.1186/s13018-](https://doi.org/10.1186/s13018-)

[019-1239-1](#)

- Laudon J, Whittaker JL, Ren G, Jaremko JL, Emery CA, Krawetz RJ. 2019. Serum cartilage oligomeric matrix protein (COMP) expression in individuals who sustained a youth sport-related intra-articular knee injury 3–10 years previously and uninjured matched controls. *Osteoarthritis Cartilage*, DOI: [10.1016/j.joca.2018.09.011](#)
- Leonard TR, Howard JJ, Larkin-Kaiser K, Joumaa V, Logan K, Orlik B, El-Hawary R, Gauthier L, Herzog W. 2019. Stiffness of hip adductor myofibrils is decreased in children with spastic cerebral palsy. *J Biomech*, DOI: [10.1016/j.jbiomech.2019.02.023](#)
- Leppänen M, Pasanen K, Clarsen B, Kannus P, Bahr R, Parkkari J, Haapasalo H, Vasankari T. Overuse injuries are prevalent in children's competitive football: a prospective study using the OSTRC Overuse Injury Questionnaire. *Br J Sports Med* 2019;53:165-171
- Leumann A, Leonard T, Nüesch C, Horisberger M, Mündermann A, Herzog W. 2019. The natural initiation and progression of osteoarthritis in the anterior cruciate ligament deficient feline knee. *Osteoarthritis Cartilage*, DOI: [10.1016/j.joca.2019.01.003](#)
- Lewinson RT, Stefanyshyn DJ. 2019. Effect of a commercially available footwear insole on biomechanical variables associated with common running injuries. *Clin J Sport Med*, DOI: [10.1097/JSM.0000000000000536](#)
- Lewis N, Gelinas JCM, Ainslie PN, Smirl JD, Agar G, Melzer B, Rolf JD, Eves ND. 2019. Cerebrovascular function in patients with chronic obstructive pulmonary disease: The impact of exercise training. *Am J Physiol Heart Circ Physiol*, DOI: [10.1152/ajpheart.00348.2018](#)
- Lishchynsky JT, Rutschmann TD, Toomey CM, Palacios-Derflinger L, Yeates KO, Emery CA, Schneider KJ. 2019. The association between moderate and vigorous physical activity and time to medical clearance to return to play

- following sport-related concussion in youth ice hockey players. *Front Neurol*, DOI: [10.3389/fneur.2019.00588](https://doi.org/10.3389/fneur.2019.00588)
- Lobos S, Cooke A, Simonett G, Ho C, Boyd SK, Edwards WB. 2019. Trabecular bone score at the distal femur and proximal tibia in individuals with spinal cord injury. *J Clin Densitom*, DOI: [10.1016/j.jocd.2018.04.002](https://doi.org/10.1016/j.jocd.2018.04.002)
- Logan LM, Semrau JA, Cluff T, Scott SH, Dukelow SP. 2019. Effort matching between arms depends on relative limb geometry and personal control. *J Neurophysiol*, DOI: [10.1152/jn.00346.2018](https://doi.org/10.1152/jn.00346.2018)
- Lundby C, Montero D. 2019. Did you know—why does maximal oxygen uptake increase in humans following endurance exercise training? *Acta Physiol (Oxf)*, DOI: [10.1111/apha.13371](https://doi.org/10.1111/apha.13371)
- MacInnis MJ, Skelly LE, Gibala MJ. 2019. CrossTalk proposal: Exercise training intensity is more important than volume to promote increases in human skeletal muscle mitochondrial content. *J Physiol*, DOI: [10.1113/JP277633](https://doi.org/10.1113/JP277633)
- Rebuttal from Martin MacInnis, Lauren Skelly and Martin Gibala. *J Physiol*, DOI: [10.1113/JP278328](https://doi.org/10.1113/JP278328)
- Last word from Martin MacInnis, Lauren Skelly, and Martin Gibala. *J Physiol*.
- MacInnis MJ, Skelly LE, Godkin FE, Martin BJ, Tripp TR, Tarnopolsky MA, Gibala MJ. 2019. Effect of short-term, high-intensity exercise training on human skeletal muscle citrate synthase maximal activity: single versus multiple bouts per session. *Appl Physiol Nutr Metab*, DOI: [10.1139/apnm-2019-0403](https://doi.org/10.1139/apnm-2019-0403)
- MacInnis MJ, Thomas ACQ, Phillips SM. 2019. The reliability of 4-minute and 20-minute time trials and their relationships to functional threshold power in trained cyclists. *Int J Sports Physiol Perform*, DOI: [10.1123/ijsspp.2018-0100](https://doi.org/10.1123/ijsspp.2018-0100)
- Madden RF, Erdman KA, Shearer J, Spriet LL, Ferber R, Kolstad AT, Bigg JL, Gamble ASD, Benson LC. 2019.

- Effects of caffeine on exertion, skill performance, and physicality in ice hockey. *Int J Sports Physiol Perform*, DOI: [10.1123/ijsp.2019-0130](https://doi.org/10.1123/ijsp.2019-0130)
- Maleki M, Hashlamoun K, Herzog W, Federico S. 2020. Effect of structural distortions on articular cartilage permeability under large deformations. *Biomech Model Mechanobiol*, DOI: [10.1007/s10237-019-01213-6](https://doi.org/10.1007/s10237-019-01213-6)
- Mang CS, Whitten TA, Cosh MS, Scott SH, Wiley JP, Debert CT, Dukelow SP, Benson BW. 2019. Robotic assessment of motor, sensory, and cognitive function in acute sport-related concussion and recovery. *J Neurotrauma*, DOI: [10.1089/neu.2017.5587](https://doi.org/10.1089/neu.2017.5587)
- Mannix R, Zemek R, Yeates KO, Arbogast K, Atabaki S, Badawy M, Beauchamp MH, Beer D, Bin S, Burstein B, Craig W, Corwin D, Doan Q, Ellis M, Freedman SB, Gagnon I, Gravel J, Leddy J, Lumba-Brown A, Master C, Mayer AR, Park G, Penque M, Rhine T, Russell K, Schneider K, Bell M, Wisniewski S. 2019. Practice patterns in pharmacological and non-pharmacological therapies for children with mild traumatic brain injury: A survey of 15 Canadian and United States centers. *J Neurotrauma*, DOI: [10.1089/neu.2018.6290](https://doi.org/10.1089/neu.2018.6290)
- Martinez, A., Lam, C.K.Y., von Tscharnen, V., Nigg, B.M. (2019). Soft tissue vibration dynamics after an unexpected impact. *Physiological Reports*, 7(2), e13990.
- Mattu AT, Iannetta D, MacInnis MJ, Doyle-Baker PK, Murias JM. 2020. Menstrual and oral contraceptive cycle phases do not affect submaximal and maximal exercise responses. *Scand J Med Sci Sports*, DOI: [10.1111/sms.13590](https://doi.org/10.1111/sms.13590)
- Mattu AT, MacInnis MJ, Doyle-Baker PK, Murias JM. 2020. Effects of the menstrual and oral contraceptive cycle phases on microvascular reperfusion. *Exp Physiol*, DOI: [10.1113/EP088135](https://doi.org/10.1113/EP088135)
- Mauracher, ME., Asmussen, MJ., Nigg S., Omu, O., Jarvis, SE. (2019) "Reliability and Validity of a Novel Dynamometer to

- Objectively Quantify Force.” *Muscle & Nerve*, 60, 56-61.
- Maurus, P., Asmussen, MJ., Cigoja, S., Nigg, SR., Nigg, BM. (2019) The Submaximal Lateral Shuffle Test: A Reliability and Sensitivity Analysis. *Journal of Sports Sciences*; 37(18): 2066-2074.
- Nigg, BM., Mohr M., Nigg S. (2019). Response to select comments on the proposed paradigm shifts in running. *Current Issues in Sport Science*. 4:001.
- Mayengbam S, Lambert JE, Parnell JA, Tunnicliffe JM, Nicolucci AC, Han J, Sturzenegger T, Shearer J, Mickiewicz B, Vogel HJ, Madsen KL, Reimer RA. 2019. Impact of dietary fiber supplementation on modulating microbiota-host-metabolic axes in obesity. *J Nutr Biochem*, DOI: [10.1016/j.jnutbio.2018.11.003](https://doi.org/10.1016/j.jnutbio.2018.11.003)
- Mayengbam S, Mickiewicz B, Trottier SK, Mu C, Wright DC, Reimer RA, Vogel HJ, Shearer J. 2019. Distinct gut microbiota and serum metabolites in response to weight loss induced by either dairy or exercise in a rodent model of obesity. *J Proteome Res*, DOI: [10.1021/acs.jproteome.9b00304](https://doi.org/10.1021/acs.jproteome.9b00304)
- Mayengbam S, Virtanen H, Hittel DS, Elliott C, Reimer RA, Vogel HJ, Shearer J. 2019. Metabolic consequences of discretionary fortified beverage consumption containing excessive vitamin B levels in adolescents. *PLoS ONE*, DOI: [10.1371/journal.pone.0209913](https://doi.org/10.1371/journal.pone.0209913)
- Michalski AS, Edwards WB, Boyd SK. 2019. The influence of reconstruction kernel on bone mineral and strength estimates using quantitative computed tomography and finite element analysis. *J Clin Densitom*, DOI: [10.1016/j.jocd.2017.09.001](https://doi.org/10.1016/j.jocd.2017.09.001)
- Mildren RL, Peters RM, Carpenter MG, Blouin JS, Timothy Inglis J. 2019. Soleus single motor units show stronger coherence with achilles tendon vibration across a broad bandwidth relative to medial gastrocnemius units while standing. *J Neurophysiol*, DOI: [10.1152/jn.00352.2019](https://doi.org/10.1152/jn.00352.2019)

- Mo S, Leung SHS, Chan ZYS, Sze LKY, Mok KM, Yung PSH, Ferber R, Cheung RTH. 2019. The biomechanical difference between running with traditional and 3D printed orthoses. *J Sports Sci*, DOI: [10.1080/02640414.2019.1626069](https://doi.org/10.1080/02640414.2019.1626069)
- Mohr M, von Tscharner V, Emery CA, Nigg BM. 2019. Classification of gait muscle activation patterns according to knee injury history using a support vector machine approach. *Hum Mov Sci*, DOI: [10.1016/j.humov.2019.05.006](https://doi.org/10.1016/j.humov.2019.05.006)
- Mohr M, von Tscharner V, Whittaker JL, Emery CA, Nigg BM. 2019. Quadriceps-hamstrings intermuscular coherence during single-leg squatting 3–12 years following a youth sport-related knee injury. *Hum Mov Sci*, DOI: [10.1016/j.humov.2019.04.012](https://doi.org/10.1016/j.humov.2019.04.012)
- Montero D, Diaz-Canestro C, Oberholzer L, Lundby C. 2019. The role of blood volume in cardiac dysfunction and reduced exercise tolerance in patients with diabetes. *Lancet Diabetes Endocrinol*, DOI: [10.1016/S2213-8587\(19\)30119-6](https://doi.org/10.1016/S2213-8587(19)30119-6)
- Montero D, Diaz-Canestro C. 2019. Body height is inversely associated with left ventricular end-diastolic pressure in heart failure with preserved ejection fraction. *Eur J Prev Cardiol*, DOI: [10.1177/2047487319873453](https://doi.org/10.1177/2047487319873453)
- Montero D, Diaz-Canestro C. 2019. Skeletal muscle O₂ diffusion and the limitation of aerobic capacity in heart failure: A clarification. *Front Cardiovasc Med*, DOI: [10.3389/fcvm.2019.00078](https://doi.org/10.3389/fcvm.2019.00078)
- Montero D, Haider T, Barthelmes J, Goetze JP, Cantatore S, Lundby C, Sudano I, Ruschitzka F, Flammer AJ. 2019. Age-dependent impairment of the erythropoietin response to reduced central venous pressure in HFpEF patients. *Physiol Rep*, DOI: [10.14814/phy2.14021](https://doi.org/10.14814/phy2.14021)
- Montero D, Haider T, Barthelmes J, Goetze JP, Cantatore S, Sudano I, Ruschitzka F, Flammer AJ. 2019.

- Hypovolemia and reduced hemoglobin mass in patients with heart failure and preserved ejection fraction. *Physiol Rep*, DOI: [10.14814/phy2.14222](https://doi.org/10.14814/phy2.14222)
- Montero D, Haider T, Flammer AJ. 2019. Erythropoietin response to anaemia in heart failure. *Eur J Prev Cardiol*, DOI: [10.1177/2047487318790823](https://doi.org/10.1177/2047487318790823)
- Montero D, Lundby C. 2019. Arterial oxygen content regulates plasma erythropoietin independent of arterial oxygen tension: A blinded crossover study. *Kidney Int*, DOI: [10.1016/j.kint.2018.09.015](https://doi.org/10.1016/j.kint.2018.09.015)
- Montero D, Lundby C. 2019. Regulation of red blood cell volume with exercise training. *Compr Physiol*, DOI: [10.1002/cphy.c180004](https://doi.org/10.1002/cphy.c180004)
- Montero D, Vicente-Salar N, Herranz M, Micol V, Walther G, Pérez-Martín A, Vinet A, Roche E. 2019. Glutathione-dependent enzyme activities of peripheral blood mononuclear cells decrease during the winter season compared with the summer in normal-weight and severely obese adolescents. *J Physiol Biochem*, DOI: [10.1007/s13105-019-00693-5](https://doi.org/10.1007/s13105-019-00693-5)
- Multani I, Manji J, Tang MJ, Herzog W, Howard JJ, Graham HK. 2019. Sarcopenia, cerebral palsy, and botulinum toxin type A. *JBJS Rev*, DOI: [10.2106/JBJS.RVW.18.00153](https://doi.org/10.2106/JBJS.RVW.18.00153)
- Mustonen AM, Käkälä R, Finnilä MAJ, Sawatsky A, Korhonen RK, Saarakkala S, Herzog W, Paakkonen T, Nieminen P. 2019. Anterior cruciate ligament transection alters the n-3/n-6 fatty acid balance in the lapine infrapatellar fat pad. *Lipids Health Dis*, DOI: [10.1186/s12944-019-1008-5](https://doi.org/10.1186/s12944-019-1008-5)
- Musumeci G, Szychlinska MA, Herzog W. 2019. The “Journal of Functional Morphology and Kinesiology” Journal club series: Highlights on recent papers in exercise and osteoarthritis. *J Funct Morphol Kinesiol*, DOI: [10.3390/jfmk4010007](https://doi.org/10.3390/jfmk4010007)
- Nettleton JE, Cho NA, Klancic T, Nicolucci AC, Shearer J, Borgland SL, Johnston LA, Ramay HR, Noye Tuplin E,

- Chleilat F, Thomson C, Mayengbam S, McCoy KD, Reimer RA. 2020. Maternal low-dose aspartame and stevia consumption with an obesogenic diet alters metabolism, gut microbiota and mesolimbic reward system in rat dams and their offspring. *Gut*, DOI: [10.1136/gutjnl-2018-317505](https://doi.org/10.1136/gutjnl-2018-317505)
- Nettleton JE, Klancic T, Schick A, Choo AC, Shearer J, Borgland SL, Chleilat F, Mayengbam S, Reimer RA. 2019. Low-dose stevia (Rebaudioside A) consumption perturbs gut microbiota and the mesolimbic dopamine reward system. *Nutrients*, DOI: [10.3390/nu11061248](https://doi.org/10.3390/nu11061248)
- Oikawa SY, MacInnis MJ, Tripp TR, McGlory C, Baker SK, Phillips SM. 2020. Lactalbumin, not collagen, augments muscle protein synthesis with aerobic exercise. *Med Sci Sports Exerc*, DOI: [10.1249/MSS.0000000000002253](https://doi.org/10.1249/MSS.0000000000002253)
- Park SK, Jeon HM, Lam WK, Stefanyshyn D, Ryu J. 2019. The effects of downhill slope on kinematics and kinetics of the lower extremity joints during running. *Gait Posture*, DOI: [10.1016/j.gaitpost.2018.11.007](https://doi.org/10.1016/j.gaitpost.2018.11.007)
- Park SK, Ryu S, Kim J, Yoon S, Ryu JS, Woo J, Gil H, Shin J, Stefanyshyn D. 2019. Tibial accelerations in two different age groups of runners. *Footwear Sci*, DOI: [10.1080/19424280.2019.1606103](https://doi.org/10.1080/19424280.2019.1606103)
- Patricia KD-B, Heather EW. 2019. Exploring the occupational physical activity levels in young adult restaurant servers. *Int J Nutr*, DOI: [10.14302/issn.2379-7835.ijn-19-2968](https://doi.org/10.14302/issn.2379-7835.ijn-19-2968)
- Paul HA, Collins KH, Nicolucci AC, Urbanski SJ, Hart DA, Vogel HJ, Reimer RA. 2019. Maternal prebiotic supplementation reduces fatty liver development in offspring through altered microbial and metabolomic profiles in rats. *FASEB J*, DOI: [10.1096/fj.201801551R](https://doi.org/10.1096/fj.201801551R)
- Rave G, Boullosa D, Doyle-Baker P, Saeidi A, Abderrahman A, Fortrat J-O, Zouhal H. 2019. Heart rate variability is correlated with perceived physical fitness in elite soccer players. *J Hum Kinet*, DOI: [10.2478/hukin-2019-0103](https://doi.org/10.2478/hukin-2019-0103)
- Register-Mihalik JK, Guskiewicz KM, Marshall SW,

- McCulloch KL, Mihalik JP, Mrazik M, Murphy I, Naidu D, Ranapurwala SI, Schneider K, Gildner P, McCrear M, Active Rehab Study Consortium I. 2019. Methodology and implementation of a randomized controlled trial (RCT) for early post-concussion rehabilitation: The active rehab study. *Front Neurol*, DOI: [10.3389/fneur.2019.01176](https://doi.org/10.3389/fneur.2019.01176)
- Reimer RA. 2019. Establishing the role of diet in the microbiota–disease axis. *Nat Rev Gastroenterol Hepatol*, DOI: [10.1038/s41575-018-0093-7](https://doi.org/10.1038/s41575-018-0093-7)
- Ren G, Whittaker JL, Leonard C, De Rantere D, Pang DSJ, Salo P, Fritzler M, Kapoor M, de Koning APJ, Jaremko JL, Emery CA, Krawetz RJ. 2019. CCL22 is a biomarker of cartilage injury and plays a functional role in chondrocyte apoptosis. *Cytokine*, DOI: [10.1016/j.cyto.2018.11.030](https://doi.org/10.1016/j.cyto.2018.11.030)
- Richmond SA, Black AM, Jacob J, Babul S, Pike I. 2019. ‘Active & Safe Central’: Development of an online resource for the prevention of injury in sport and recreational activity. *Inj Prev*, DOI: [10.1136/injuryprev-2019-043164](https://doi.org/10.1136/injuryprev-2019-043164)
- Rios JL, Bomhof MR, Reimer RA, Hart DA, Collins KH, Herzog W. 2019. Protective effect of prebiotic and exercise intervention on knee health in a rat model of diet-induced obesity. *Sci Rep*, DOI: [10.1038/s41598-019-40601-x](https://doi.org/10.1038/s41598-019-40601-x)
- Rios JL, Ko L, Joumaa V, Liu S, Diefenthaler F, Sawatsky A, Hart DA, Reimer RA, Herzog W. 2019. The mechanical and biochemical properties of tail tendon in a rat model of obesity: Effect of moderate exercise and prebiotic fibre supplementation. *J Biomech*, DOI: [10.1016/j.jbiomech.2019.03.031](https://doi.org/10.1016/j.jbiomech.2019.03.031)
- Rivara FP, Tennyson R, Mills B, Browd SR, Emery CA, Gioia G, Giza CC, Herring S, Janz KF, Labella C, Valovich McLeod T, Meehan W, Patricios J. 2020. Consensus

- statement on sports-related concussions in youth sports using a modified delphi approach. *JAMA Pediatrics*, DOI: [10.1001/jamapediatrics.2019.4006](https://doi.org/10.1001/jamapediatrics.2019.4006)
- Ronkainen AP, Tanska P, Fick JM, Herzog W, Korhonen RK. 2019. Interrelationship of cartilage composition and chondrocyte mechanics after a partial meniscectomy in the rabbit knee joint – experimental and numerical analysis. *J Biomech*, DOI: [10.1016/j.jbiomech.2018.11.024](https://doi.org/10.1016/j.jbiomech.2018.11.024)
- Ryu HX, Kuo AD. 2019. An optimality principle for locomotor central pattern generators. *bioRxiv*, DOI: [10.1101/2019.12.30.890152](https://doi.org/10.1101/2019.12.30.890152)
- Salberg S, Weerwardhena H, Collins R, Reimer RA, Mychasiuk R. 2019. The behavioural and pathophysiological effects of the ketogenic diet on mild traumatic brain injury in adolescent rats. *Behav Brain Res*, DOI: [10.1016/j.bbr.2019.112225](https://doi.org/10.1016/j.bbr.2019.112225)
- Samantha Cooke E, Wannop JW, Barrons ZB, Burkhardt K, Park SK, Stefanyshyn D. 2019. Influence of foot arch properties on running performance. *Footwear Sci*, DOI: [10.1080/19424280.2019.1606068](https://doi.org/10.1080/19424280.2019.1606068)
- Sant' Ana J, Franchini E, Murias JM, Diefenthaler F. 2019. Validity of a taekwondo-specific test to measure VO₂peak and the heart rate deflection point. *J Strength Cond Res*, DOI: [10.1519/JSC.0000000000002153](https://doi.org/10.1519/JSC.0000000000002153)
- Schneider KJ, Emery CA, Black A, Yeates KO, Debert CT, Lun V, Meeuwisse WH. 2019. Adapting the dynamic, recursive model of sport injury to concussion: An individualized approach to concussion prevention, detection, assessment, and treatment. *J Orthop Sports Phys Ther*, DOI: [10.2519/jospt.2019.8926](https://doi.org/10.2519/jospt.2019.8926)
- Schneider KJ, Meeuwisse WH, Palacios-Derflinger L, Emery CA. 2018. Changes in measures of cervical spine function, vestibulo-ocular reflex, dynamic balance, and divided attention following sport-related concussion in elite youth ice hockey players. *J Orthop Sports Phys Ther*, DOI:

- [10.2519/jospt.2018.8258](https://doi.org/10.2519/jospt.2018.8258)
- Schneider KJ. 2019. Concussion - Part I: The need for a multifaceted assessment. *Musculoskelet Sci Pract*, DOI: [10.1016/j.msksp.2019.05.007](https://doi.org/10.1016/j.msksp.2019.05.007)
- Schneider KJ. 2019. Concussion Part II: Rehabilitation – The need for a multifaceted approach. *Musculoskelet Sci Pract*, DOI: [10.1016/j.msksp.2019.01.006](https://doi.org/10.1016/j.msksp.2019.01.006)
- Sivertsen EA, Foss Haug KB, Kristianslund E, Krosshaug T, Trosleid A-M, Parkkari J, Lehtimäki T, Mononen N, Pasanen K, Bahr R. No association between risk of anterior cruciate ligament rupture and selected candidate collagen gene variants in female elite athletes in high risk team sports. *AJSM* 2019;47:52-58.
- Smirl JD, Jones KE, Copeland P, Khatra O, Taylor EH, Van Donkelaar P, on behalf of the Canadian Traumatic brain injury Research C. 2019. Characterizing symptoms of traumatic brain injury in survivors of intimate partner violence. *Brain Inj*, DOI: [10.1080/02699052.2019.1658129](https://doi.org/10.1080/02699052.2019.1658129)
- Smith AM, Alford PA, Aubry M, Benson B, Black A, Brooks A, Burke C, D'Arcy R, Dodick D, Eaves M, Eickhoff C, Erredge K, Farrell K, Finnoff J, Fraser DD, Giza C, Greenwald RM, Hoshizaki B, Huston J, Jorgensen J, Joyner M, Krause D, LaVoi N, Leaf M, Leddy J, Margarucci K, Margulies S, Mihalik J, Munce T, Oeur A, Prideaux C, Roberts WO, Shen F, Soma D, Tabrum M, Stuart MB, Wethe J, Whitehead JR, Wiese-Bjornstal D, Stuart MJ. 2019. Proceedings from the Ice Hockey Summit III: Action On Concussion. *Curr Sports Med Rep*, DOI: [10.1249/JSR.0000000000000557](https://doi.org/10.1249/JSR.0000000000000557)
- Soares RN, Colosio AL, Murias JM, Pogliaghi S. 2019. Noninvasive and in vivo assessment of upper and lower limb skeletal muscle oxidative metabolism activity and microvascular responses to glucose ingestion in humans. *Appl Physiol Nutr Metab*, DOI: [10.1139/apnm-2018-0866](https://doi.org/10.1139/apnm-2018-0866)
- Soares RN, de Oliveira GV, Alvares TS, Murias JM. 2020. The

- effects of the analysis strategy on the correlation between the NIRS reperfusion measures and the FMD response. *Microvasc Res*, DOI: [10.1016/j.mvr.2019.103922](https://doi.org/10.1016/j.mvr.2019.103922)
- Soares RN, Murias JM, Saccone F, Puga L, Moreno G, Resnik M, De Roia GF. 2019. Effects of a rehabilitation program on microvascular function of CHD patients assessed by near-infrared spectroscopy. *Physiol Rep*, DOI: [10.14814/phy2.14145](https://doi.org/10.14814/phy2.14145)
- Soares RN, Proctor DN, de Oliveira GV, Alvares TS, Murias JM. 2019. Acute application of a transdermal nitroglycerin patch protects against prolonged forearm ischemia-induced microvascular dysfunction. *Microcirculation*, DOI: [10.1111/micc.12599](https://doi.org/10.1111/micc.12599)
- Soares RN, Somani YB, Al-Qahtani AM, Proctor DN, Murias JM. 2019. Near-infrared spectroscopy detects transient decrements and recovery of microvascular responsiveness following prolonged forearm ischemia. *Microvasc Res*, DOI: [10.1016/j.mvr.2019.04.009](https://doi.org/10.1016/j.mvr.2019.04.009)
- Soares RN, Somani YB, Proctor DN, Murias JM. 2019. The association between near-infrared spectroscopy-derived and flow-mediated dilation assessment of vascular responsiveness in the arm. *Microvasc Res*, DOI: [10.1016/j.mvr.2018.11.005](https://doi.org/10.1016/j.mvr.2018.11.005)
- Thomas JM, Edwards WB, Derrick TR. 2020. Joint contact forces with changes in running stride length and midsole stiffness. *J Sci Sport Exerc*, DOI: [10.1007/s42978-019-00027-3](https://doi.org/10.1007/s42978-019-00027-3)
- Townsend LK, Gandhi S, Shamshoum H, Trottier SK, Mutch DM, Reimer RA, Shearer J, LeBlanc PJ, Wright DC. 2020. Exercise and dairy protein have distinct effects on indices of liver and systemic lipid metabolism. *Obesity (Silver Spring)*, DOI: [10.1002/oby.22621](https://doi.org/10.1002/oby.22621)
- Vernillo G, Aguiar M, Savoldelli A, Martinez A, Giandolini M, Horvais N, Edwards WB, Millet GY. 2019. Regular changes in foot strike pattern during prolonged downhill

- running do not influence neuromuscular, energetics, or biomechanical parameters. *Eur J Sport Sci*, DOI: [10.1080/17461391.2019.1645212](https://doi.org/10.1080/17461391.2019.1645212)
- Vieira de Oliveira G, Soares RN, Volino-Souza M, Murias JM, Alvares TS. 2019. The association between near-infrared spectroscopy assessment of microvascular reactivity and flow-mediated dilation is disrupted in individuals at high risk for cardiovascular disease. *Microcirculation*, DOI: [10.1111/micc.12556](https://doi.org/10.1111/micc.12556)
- Walker A, Doyle-Baker P. 2019. Promoting and strengthening public health through undergraduate education. *Can J Public Health*, DOI: [10.17269/s41997-019-00217-0](https://doi.org/10.17269/s41997-019-00217-0)
- Wannop JW, Foreman T, Madden R, Stefanyshyn D. 2019. Influence of the composition of artificial turf on rotational traction and athlete biomechanics. *J Sports Sci*, DOI: [10.1080/02640414.2019.1598923](https://doi.org/10.1080/02640414.2019.1598923)
- Wannop JW, Nigg S, Edwards WB. 2019. From Canmore to Kananaskis: where has the last 20 years in Footwear Sci brought us? *Footwear Sci*, DOI: [10.1080/19424280.2019.1606348](https://doi.org/10.1080/19424280.2019.1606348)
- Wannop JW, Stefanyshyn DJ, Anderson RB, Coughlin MJ, Kent R. 2019. Development of a footwear sizing system in the National Football League. *Sports Health*, DOI: [10.1177/1941738118789402](https://doi.org/10.1177/1941738118789402)
- Watari R, Osis S, Ferber R. 2018. Use of baseline pelvic acceleration during running for classifying response to muscle strengthening treatment in patellofemoral pain: A preliminary study. *Clin Biomech*, DOI: [10.1016/j.clinbiomech.2018.06.010](https://doi.org/10.1016/j.clinbiomech.2018.06.010)
- Watari R, Osis ST, Phinyomark A, Ferber R. 2018. Runners with patellofemoral pain demonstrate sub-groups of pelvic acceleration profiles using hierarchical cluster analysis: An exploratory cross-sectional study. *BMC Musculoskelet Disord*, DOI: [10.1186/s12891-018-2045-3](https://doi.org/10.1186/s12891-018-2045-3)
- Whatman C, Toomey C, Emery C. 2019. Visual rating of

- movement quality in individuals with and without a history of intra-articular knee injury. *Physiother Theory Pract*, DOI: [10.1080/09593985.2019.1703229](https://doi.org/10.1080/09593985.2019.1703229)
- Whittaker JL, Toomey CM, Nettel-Aguirre A, Jaremko JL, Doyle-Baker PK, Woodhouse LJ, Emery CA. 2019. Health-related outcomes after a youth sport-related knee injury. *Med Sci Sports Exerc*, DOI: [10.1249/MSS.0000000000001787](https://doi.org/10.1249/MSS.0000000000001787)
- Wilkes M, Macinnis MJ, Hawkes LA, Massey H, Eglin C, Tipton MJ. 2018. The physiology of paragliding flight at moderate and extreme altitudes. *High Alt Med Biol*, DOI: [10.1089/ham.2017.0127](https://doi.org/10.1089/ham.2017.0127)
- Xia Y, Darling EM, Herzog W. 2018. Functional properties of chondrocytes and articular cartilage using optical imaging to scanning probe microscopy. *J Orthop Res*, DOI: [10.1002/jor.23757](https://doi.org/10.1002/jor.23757)
- Xu C, Reifman J, Baggaley M, Edwards WB, Unnikrishnan G. 2020. Individual differences in women during walking affect tibial response to load carriage: the importance of individualized musculoskeletal finite-element models. *IEEE Trans Biomed Eng*, DOI: [10.1109/tbme.2019.2917415](https://doi.org/10.1109/tbme.2019.2917415)
- Yasui Y, Hart DA, Sugita N, Chijimatsu R, Koizumi K, Ando W, Moriguchi Y, Shimomura K, Myoui A, Yoshikawa H, Nakamura N. 2018. Time-Dependent Recovery of Human Synovial Membrane Mesenchymal Stem Cell Function After High-Dose Steroid Therapy: Case Report and Laboratory Study. *Am J Sports Med*, DOI: <https://doi.org/10.1177/0363546517741307>
- Zimmermann HB, MacIntosh BR, Dal Pupo J. 2019. Does post-activation potentiation (PAP) increase voluntary performance? *Appl Physiol Nutr Metab*, DOI: [10.1139/apnm-2019-0406](https://doi.org/10.1139/apnm-2019-0406)

Technical Reports

- Behling, A.-V., von Tscharner, V., Giandolini, M. & Nigg, B.
Strategies to reduce soft-tissue vibrations in running.
Industry report for Salomon.
- Buettner, M., Nigg, S., Nigg, B. Consulting Work Related to Dr.
Scholl's Custom 3D Printed Inserts. Industry report for Dr.
Scholl.
- Büttner, M., Hoitz, F., Nigg, B. Classification of Human
Movements with Artificial Neural Networks. An Industry
report for Biomechanigg.
- Cigoja, S., Nigg, SR., Nigg, BM. (2019) Varus Score. adidas AG
- Cigoja, S., von Tscharner, V., Nigg, SR., Nigg, BM. (2019)
Athlete Assessment: Soccer – Final Report. adidas AG
- Dorrek, R., Behling, A.-V., Nigg, S., & Nigg, B. Soft-Tissue
Vibrations in Over Ground Running. Internal report for
Biomechanigg.
- Dorrek, R., Kloock, L., Nigg, S., Nigg, B. Third Party
Competitor Evaluation for two Wellie Boots. Industry
report for FitFlop.
- Dourthe, B., Nigg, S., Nigg, B. Highlights of the Fourteenth
Footwear Biomechanics Symposium. Industry report for
Dr. Scholl.
- Honert, E., Krafft, F., Von Tscharner, V., Nigg, SR., Nigg,
BM. Kinematic and Kinetic Deviation: An evaluation and
proposal of existing and new deviation metrics. Industry
report for Brooks.
- Honert, E., Nigg, SR., Nigg, BM. Double Blind Third Party
competitor Evaluation. Industry Report for adidas.
- Kloock, L., Behling, A.-V., Nigg, S., Nigg, B. Effect of Footwear
on Grouping of Midfoot and Rearfoot Pronators. Internal
report for Biomechanigg.
- Kowalchuk S, Esposito M, Wannop JW, Stefanyshyn D, 2019.
Influence of FieldTurf ONE on Rotational and Linear
Traction. Prepared for FieldTurf.
- Krafft, F., Honert, E., Von Tscharner, V., Nigg, SR., Nigg, BM.
Electromyography based Deviation Metrics in Runners.

Technical Reports

- Industry Report for Brooks.
- Manz, S., Nigg, S., Nigg, BM. Athlete Assessment Running: Grouping Approaches. Industry report for adidas.
- Manz, S., Vienneau, J., Nigg, S., Nigg, BM. Clog sandal: A subjective and biomechanical evaluation. Industry report for FitFlop.
- Manz, S., Von Tscharnner, V., Nigg, SR., Nigg, BM. Athlete Assessment Running: Phase 2. Industry report for adidas.
- Manz, S., Vienneau, J., Hoitz, F., Nigg, S., Nigg, BM. Third party competitor evaluation. Industry report for CCM.
- Ratka, D., Cigoja, S., Asmussen, MJ., Fletcher, JR., Nigg, SR., Nigg, BM. (2019) Does increased midsole bending stiffness decrease the redistribution of positive lower limb joint work during an exhaustive run? Biomechanigg Sport & Health Research Inc.
- Subramaniam, A., Solomon, M., Nigg, S., Nigg, BM Clog Sandal II: Subjective Evaluation Summary. Industry report for FitFlop.
- Vienneau, J., Nigg, S., Nigg, BM. Platform shoe: A subjective and biomechanical evaluation. Industry report for FitFlop.
- Vienneau, J., Nigg, S., Nigg, BM. Wellie boot: A subjective and biomechanical evaluation. Industry report for FitFlop.
- Wannop JW, Barrons Z, Bill K, Singh P, Stefanyshyn DJ, 2019. Evaluation of a Skating Technique Training System. Prepared for J. Webb & R. Stone.
- Wannop JW, Barrons Z, Esposito M, Park SK, Stefanyshyn D, 2019. Traction of Tennis Shoes. Prepared for Fila.
- Wannop JW, Barrons ZB, Stefanyshyn D, 2019. Development of a Rugby Specific Traction Map. Prepared for Under Armour.
- Wannop JW, Clermont CA, Perewernycky N, Stefanyshyn D, 2019. Evaluation of Basketball Shoes. Prepared for CBC Marketplace.

Technical Reports ---

Wannop JW, Cooke E, Burkhardt K, Bill K, Hartley D, Stefanyshyn D, 2019. Influence of Midsole Cushioning Density Heel Drop and Shoe Preference on Running Biomechanics and Performance. Prepared for adidas Future Team.

Wannop JW, Esposito M, Cooke E, Burkhardt K, Stefanyshyn D, 2019. Carbon and Cushioning: Influence on Athlete Biomechanics. Prepared for adidas Future Team.

Wannop JW, Kowalchuk S, Esposito M, Stefanyshyn D, 2019. Optimizing Artificial Turf: Surface Stiffness. Prepared for FieldTurf

Books & Book Chapters

Bridel W, Ventresca M, Kelly D, Viliunas K, Schneider K. 2019. "I Kinda' Lost My Sense of Who I Was": Foregrounding Youths' Experiences in Critical Conversations about Sport-Related Concussions. In, Sociocultural Examinations of Sports Concussions. Routledge.

Keynote & Invited Lectures

- Edwards WB. Biomecánica de la Fractura Atípica. Summit de Osteoporosis, Puerto Vallarta, Mexico. March.
- Edwards WB. Mechanisms of Atypical Femoral Fracture. International Bone Academy, Amsterdam, Netherlands. March.
- Emery C. Canadian high school rugby injury surveillance and evaluation. Injury Prevention Research Symposium, Bath UK. March.
- Emery C. Concussion in youth sport: moving upstream towards prevention. Sports Medicine National Congress, Oslo, Norway. November. (Keynote)
- Emery C. What's New in Concussion Research. See the Line Community Symposium 2019, London ON. August 15. (Keynote)
- Federico S. Biomeccanico per Caso: un'Avventura nella (Bio) Meccanica del Continuo. Università Campus Biomedico, Roma, Italy. June 14.
- Federico S. Damage and Remodelling in Recruitment-Based Models for Biological Tissues. Korea Institute of Industrial Technology, Seoul, South Korea. December 9
- Federico S. Biomechanicist by Chance: an Adventure in Continuum Biomechanics. Korea National Sport University, Seoul, South Korea. December 10.
- Federico S. Dielectric Elastomer Transducers: an Introduction. Department of Energy Conversion Science, Kyoto University, Japan. December 16.
- Herzog W. Cross-country skiing as a model for human movement analysis. 8th International Congress on Science and Skiing, Vuokatti, Finland. March 14. (Keynote)
- Herzog W. Effects of botulinum toxin Type-A on skeletal muscle. Combined AACPDM 73rd Annual and IAACD 2nd Triannual Meeting, Anaheim CA, USA. September 19.
- Herzog W. Of muscle force magnitude, direction and synergies in sports. International Society of Biomechanics in Sports, Oxford, Ohio, USA. July 22. (Keynote)



Herzog W. Reflections on muscle contraction: the evolution of a new paradigm for muscle contraction. 17th International Conference on Biomedical Engineering, Singapore.

December 11. (Plenary)

Herzog W. Rhythm in biomechanics: from randomness to rhythm to synchrony. Multidisciplinary Symposium of 2018 Killam Prize Winners, Montreal QC. December 5.

Joumaa V. Towards a better understanding of muscle contraction. 4th Rocky Mountain Muscle Symposium (rMMs), Canmore AB. July 28.

Kuo AD. The leg bone doesn't connect with the arm bone (in optimal control of movement). BIRS Optimal Neuroethology of Movement and Motor Control (19w5235), Banff AB. May 20.

MacIntosh BR. Intensity of Exercise Prescription: What is moderate to vigorous exercise? 2019 Exercise is Medicine National Student Research and Medical Conference, Calgary AB. June 27.

Murias JM. Exercise prescription for cardiovascular health: how close (or how far) are we from getting it right? Canadian Association of Cardiovascular Prevention & Rehabilitation (CACPR) Fall Conference 2019, Montreal QC. October 25.

Pasanen K. Preventing Lower Extremity Injuries in Youth Team Sports. Norwegian Sports Medicine Congress, Lillehammer, Norway, November 23.

Pasanen K. Training load and player monitoring in youth team sports – insights for sport injury prevention. FSPA Congress, Helsinki, Finland June 8.

Pasanen K & van den Berg C. Keeping them in the game – an evidence based injury prevention warm-up for your athletes. CATA 2019 National Conference, Calgary, June 1.

Pasanen K. Primary Prevention of Joint Injury in Sport. 2019 OARSI World Congress on Osteoarthritis. Pre-Congress Workshop 'Approaches to Preventing Post-Traumatic OA

- in Sport and the Military. Toronto, ON, Canada May 2.
- Pasanen K. Upscaling NMT programmes in youth sport. Movement quality for injury prevention and performance in youth football – workshop. Manchester Institute of health and performance, Manchester, UK. February 21.
- Reimer RA. Health benefits of synbiotics. International Scientific Association for Probiotics and Prebiotics (ISAPP) Consensus Meeting 2019, Antwerp, Belgium. May 13.
- Reimer RA. Prebiotics and gut microbiota: how they work together to affect metabolic health. Food & Nutrition Conference & Expo (FNCE) 2019, Philadelphia PA, USA. October 26. (Keynote)
- Schneider K. Cervical spine involvement and headaches following concussion. Sport Physiotherapy Canada Annual Concussion Symposium 2019, Calgary AB. January 19. (Keynote)
- Schneider K. Prevention of concussion in ice hockey. 3rd Annual Injury Prevention Symposium, Vail CO, USA. May 2.
- Schneider K. The Sport Concussion Assessment Tool 5 (SCAT5): Practical implications for clinicians. Norwegian Sports Medicine Congress, Lillehammer, Norway. November 22.
- Schneider K. Sport-Related Concussion: An Update on the Evidence. 2019 Connect + Learn Physiotherapy Alberta Conference, Canmore AB. October 19.
- Schneider K. An update on concussion in sport: Evidence and implementation into the Canadian Context. Sport Physiotherapy Canada Annual Concussion Symposium 2019, Calgary AB. January 19. (Keynote)
- Schneider K. An update on the evidence and top 10 of 2019. SPC Concussion Symposium 2019, Vancouver BC. Oct 3, 2019. (Keynote)
- Wannop, B. Running Shoe Design and Biomechanics. 2019 Canadian Academy of Sport and Exercise Medicine, Calgary, AB. September 14.

Official Research Related Functions _____

AMANDA BLACK

BOARD MEMBER

Canadian Athletic Therapy Association Education Committee

Pediatric Research in Sport Medicine Society Education Committee

GRANT REVIEWER

Partnership for Research in Innovation in the Health System (PRIHS), Alberta Innovates, Internal Peer Reviewer

MEMBERSHIP

Hotchkiss Brain Institute

Alberta Children's Hospital Research Institute

Canadian Athletic Therapy Association

Pediatric Research in Sport Medicine Society

American College of Sports Medicine

TYLER CLUFF

CONFERENCE REVIEWER

Motor Learning and Motor Control (MCML) Conference, Society for Neuroscience Satellite Meeting. Chicago, IL. October 2019.

International Society of Biomechanics Conference, Calgary, AB. February 2019.

GRANT REVIEWER

University Research Grants Committee (URGC), University of Calgary

Markin USRP Competition, University of Calgary

MEMBERSHIP

Society for Neuroscience

TISH DOYLE-BAKER

COMMITTEE MEMBER

Alberta Prevents Website Project Alberta, Ca Prevention Legacy Fund Project, Co-Lead

CONFERENCE ORGANIZATION

Walk 21 Conference Committee

Exercise Perspectives in Exercise, Health, and Fitness Conference Committee

CONFERENCE REVIEWER

Official Research Related Functions _____

European College of Sport Science
EDITORIAL/ADVISORY BOARD MEMBER
International Journal of Kinesiology and Sport Science
Annals of Applied Sport Science

GRANT REVIEWER
CIHR Foundation Grant Program
Markin Undergraduate Student Research Program,
University of Calgary
Graduate Award Competition, University of Calgary

MEMBERSHIP
Alberta Centre for Active Living
Alberta Children's Hospital Research Institute (ACHRI)
American College of Sports Medicine
Canadian Society of Exercise Physiology
European College of Sport Science
O'Brien Institute for Public Health

BRENT EDWARDS

CONFERENCE ORGANIZATION
XXVII Congress of International Society of Biomechanics
held in conjunction with the 43rd Annual Meeting of the
American Society of Biomechanics, Calgary, AB. July 31
- August 4, 2019. Special Symposia and Invited Speakers
Chair.
14th Footwear Biomechanics Symposium, Kananaskis, AB.
July 28-30, 2019. Scientific Program Chair.

EDITOR
Footwear Science, Supp 1, Proceedings of the 14th
Footwear Biomechanics Symposium, Kananaskis, AB. July
2019. Guest Editor

EXECUTIVE BOARD MEMBER
International Society of Biomechanics, Secretary General
Advisory/Editorial Board Member
Scientific Reports
JBMR Plus

GRANT REVIEWER
The Institute of Translational Health Sciences (ITHS) Pilot
Awards, External Reviewer
NSERC Discovery Grants, External Reviewer

MEMBERSHIP
American College of Sports Medicine



Official Research Related Functions _____

American Society of Biomechanics
American Society of Bone and Mineral Research
Canadian Society of Biomechanics
International Society of Biomechanics
Orthopaedic Research Society

CAROLYN EMERY

COMMITTEE MEMBER

Massive Open Online Course (MOOC) in Concussion
Leadership Committee
Osteoarthritis Research Society International: Sport,
Exercise, Physical Activity and Osteoarthritis Prevention
Discussion Group, Co-lead
Osteoarthritis Research Society International Scientific
Committee
Parachute Canada Concussion Awareness Advisory
Committee
Chair in Pediatric Rehabilitation and Director Vi Riddell
Pediatric Rehabilitation Program, Alberta Children's
Hospital

EDITOR

British Journal of Sport Medicine, Deputy Editor

GRANT REVIEWER

Canadian Institutes of Health Research College of
Reviewers, Project Grant Review, Social & Developmental
Aspects of Children's & Youth's Health Committee
Partnership for Research and Innovation in the Health
System (PRIHS), Cumming School of Medicine Grant
Review
CIHR Population Health Project Medicine Grant Review
Panel

MEMBERSHIP

Royal Society of Canada, College of New Scholars
Canadian Academy of Health Sciences
Osteoarthritis Research Society International
Hotchkiss Brain Institute, University of Calgary
Centre for Hip Health and Mobility, University of British
Columbia
O'Brien Institute of Public Health, University of Calgary
McCaig Institute for Bone and Joint Health, University of
Calgary

Official Research Related Functions _____

Alberta Children's Hospital Research Institute for Child Health, University of Calgary
American College of Physiotherapists
Alberta Physiotherapy Association
Canadian Physiotherapy Association, Sport Physiotherapy Division
Canadian Physiotherapy Association, Research Division
Canadian Physiotherapy Association, Orthopaedic Division
Canadian Physiotherapy Association, Pediatric Division

SALVATORE FEDERICO

COMMITTEE MEMBER

Past President, Canadian Society for Biomechanics (2019-2020 term)
Selection Committee Member, Society for Natural Philosophy
Evaluation Group Member, Mechanical Engineering, Natural Sciences and Engineering Research Council of Canada (2019-2023 term)

EDITORIAL/ADVISORY BOARD MEMBER

Atti dell'Accademia Peloritana dei Pericolanti, Classe di Scienze
Mathematics and Mechanics of Solids Matematiche, Fisiche e Naturali

REED FERBER

EDITORIAL/ADVISORY BOARD MEMBER

Prosthetics and Orthotics International
Journal of Sport Rehabilitation
Journal of Athletic Training

SCIENTIFIC ADVISORY BOARD MEMBER

Biotricity Inc., Redwood City, CA
Fitbit Inc., San Francisco, CA

WALTER HERZOG

CONFERENCE ORGANIZATION

XXVII Congress of International Society of Biomechanics held in conjunction with the 43rd Annual Meeting of the American Society of Biomechanics, Calgary, AB. July 31 - August 4, 2019. Conference Chair, 2016-2019.



Official Research Related Functions

Rocky Mountain Muscle Symposium, Canmore, AB.
Conference Chair.

International Society in Science and Sports, Vuokatti,
Finland. March 2019. Young Investigator Award
Committee Member.

European Society of Biomechanics Congress, Warsaw,
Poland. Scientific Committee Member.

EDITOR

Journal of Sport and Health Science, Co-Editor in Chief
Exercise and Sports Science Reviews, Associate Editor
IEEE Transactions in Neural Systems and Rehabilitation
Engineering, Associate Editor

EDITORIAL/ADVISORY BOARD MEMBER

Chiropractic & Manual Therapies

The Current Issues of Sport Science (CISS)

Journal of Functional Morphology and Kinesiology

Biomechanics and Modeling in Mechanobiology

BMC Biomedical Engineering

International Journal of Mechanical and Materials
Engineering

Muscles, Ligaments and Tendons Journal

Sports Orthopaedics and Sports Traumatology

Molecular and Cellular Biomechanics

Journal of Biomechanics

Journal of Electromyography and Kinesiology

Journal of Manipulative and Physiological Therapeutics

Journal of the Canadian Chiropractic Association

Sportverletzung Sportschaden

Motor Control Group, International Society of

Biomechanics, Vice-Chair

Nike Sports Research

German Journal of Sport Sciences

Sportwissenschaft Journal

Sportorthopädie Sporttraumatologie, International Board
Member

GRANT REVIEWER

NSERC (1990-present)

CIHR Foundation Grant Program

CIHR Movement and Exercise Peer-review Panel

JOHN HOLASH

COMMITTEE MEMBER

New Learning Technology Platform Panel for Yuja
Learning Technologies Advisory Committee

ARTHUR KUO

COMMITTEE MEMBER

Movement and Exercise Review Committee, CIHR.
November 2019.

CONFERENCE ORGANIZATION

Dynamic Walking Conference Series (2006-ongoing).
Founder and Steering Committee Chair.

XXVII Congress of International Society of Biomechanics
held in conjunction with the 43rd Annual Meeting of the
American Society of Biomechanics, Calgary, AB. July 31 -
August 4, 2019. Organizing Committee.

BIRS Optimal Neuroethology Workshop. April 2019. Co-
organizer.

GRANT REVIEWER

NSERC CREATE Review, Ad-hoc. January 2019.

MARTIN MACINNIS

COMMITTEE MEMBER

Canadian Society for Exercise Physiology (CSEP)
Knowledge Translation Committee

GRANT REVIEWER

NSERC Discovery Grants

Markin Undergraduate Student Research Program,
University of Calgary

NSERC Postgraduate Scholarships (Doctoral), University
of Calgary

Graduate Award Competition, University of Calgary

MEMBERSHIP

Canadian Society for Exercise Physiology
American Physiology Society

BRIAN MACINTOSH

EDITOR

Journal of Muscle Research and Cellular Motility; Special

Official Research Related Functions _____

Edition on Muscle Energetics, Guest Editor
GRANT REVIEWER

NSERC, Peer Review Panel Member

MEMBERSHIP

Canadian Society for Exercise Physiology

American College of Sports Medicine

American Physiological Society

European College of Sport Science

JUAN MURIAS

EDITOR

PlosOne

GRANT REVIEWER

NSERC Discovery Grant, External Reviewer

Canada Foundation for Innovation (CFI), John R. Evans

Leaders Fund, External Reviewer

BENNO NIGG

CONFERENCE ORGANIZATION

XXVII Congress of International Society of Biomechanics
held in conjunction with the 43rd Annual Meeting of the
American Society of Biomechanics, Calgary, AB. July 31 -
August 4, 2019. Organizing Committee.

EDITORIAL/ADVISORY BOARD MEMBER

Brazilian Journal of Biomechanics, (2000-ongoing)

Orthopädische Zeitschriften, (2005-ongoing)

Footwear Science, (2008-ongoing)

International Scholarly Research Notices (ISRN)

Biomedical Engineering, (2012-ongoing)

KATI PASANEN

COMMITTEE MEMBER

FSPA Congress "Injury Prevention Works - Mission
Possible", Finnish Sports Physiotherapists Association,
Session Chair

Finnish Strength and Conditioning Coaches Association,
InBoard of Directors

EDITORIAL/ADVISORY BOARD MEMBER

Healthy Dancer program, Finnish National Ballet

Finnish Coaches Association

MEMBERSHIP

International Society of Biomechanics
European Society of Biomechanics
Osteoarthritis Research Society International
Canadian Association of University Teachers
Finnish Sports Physiotherapists Association
Finnish Association of Physiotherapists
HEPA Europe Injury Prevention Group
Finnish Strength and Conditioning Coaches Association
Finnish Coaches Association
Society of Sport Science

RAYLENE REIMER

COMMITTEE MEMBER

Canadian Nutrition Society Awards Committee
Canadian Nutrition Society, University of Calgary Faculty
Advisor
Working Group Member: Canadian Museum of Nature
Microbiome Exhibit
Data Monitoring Committee: FMT in Major Depression

EDITORIAL/ADVISORY BOARD MEMBER

Applied Physiology, Nutrition and Metabolism, Associate
Editor
BioRad Laboratories Inc., Research Consultant
General Mills Inc. Research Consultant
InovoBiologic Inc. Research Consultant
Beneo GmbH, Research Consultant

GRANT REVIEWER

CIHR Cpllege of Reviewers
CIHR Banting Postdoctoral Fellowships Selection
Committee

MEMBERSHIP

College of Dieticians of Alberta
The Obesity Study
Canadian Nutrition Society
American Society for Nutritional Sciences
Obesity Canada
Obesity Canada, Calgary Chapter

KATHRYN SCHNEIDER

CONFERENCE ORGANIZATION

6th International Consensus Conference on Concussion
in Sport, Scientific Committee
Sport Physiotherapy Canadian Concussion Symposium,
Co-Organizer

EDITORIAL/ADVISORY BOARD MEMBER

Medical Sub-Committee of the Canadian Committee of
Combative Sports Association
Federal Working Group on Concussion in Sport,
Surveillance Initiative Co-Lead with Dr. Charles Tater
Alberta Rehabilitation Research Counsel
Parachute Canada Expert Advisory Group on Concussion
Federal Working Group on Concussion in Sport,
Canadian Concussion Collaborative Representative
Canadian Concussion Collaborative, Representative for
the Canadian Physiotherapy Association

GRANT REVIEWER

CFI SUPPORT Research Infrastructure Programs
Committee
SSHRC Insight Grant

MEMBERSHIP

Hotchkiss Brain Institute
Alberta Children's Hospital Research Institute
Canadian Physiotherapy Association, Orthopaedic
Division
Canadian Physiotherapy Association, Sports
Physiotherapy Division
Canadian Physiotherapy Association, Neurological
Division
Canadian Physiotherapy Association, Paediatric Division
Canadian Academy of Manipulative Therapists
Physiotherapy Alberta College + Association
Vestibular Disorders Association

JONATHAN SMIRL

COMMITTEE MEMBER

International Cerebral Autoregulation Research Network
Steering Committee

CONFERENCE ORGANIZATION

Cerebral Autoregulation Research Network Annual
Meeting, Leuven, Belgium
Canadian Society for Exercise Physiology (CSEP)

GRANT REVIEWER

Mitacs

MEMBERSHIP

Cerebral Autoregulation Network (CARNet)
Canadian Traumatic Brain Injury Research Consortium
(CTRC)
American Physiological Society (APS)
The Physiological Society (Phys Soc)
Canadian Society for Exercise Physiologists (CSEP)

DARREN STEFANYSHYN

COMMITTEES

NFL Engineering Committee

CONFERENCE ORGANIZATION

IXXVII Congress of International Society of Biomechanics
held in conjunction with the 43rd Annual Meeting of the
American Society of Biomechanics, Calgary, AB. July 31 -
August 4, 2019. Organizing Committee.

EDITOR

Footwear Science, Associate Editor
Editorial/Advisory Board Member
European Journal of Sport Science



MS

N

CT

10 μm