2015 Research Report

UNIVERSITY OF CALGARY

Roger Jackson Centre for Health and Wellness Research

Human Performance Laboratory

Sport Medicine Centre

Roy Crowninshield was a young professor at the University of Iowa when I was a PhD student there, with the late Jim Hay. After about two years, Roy accepted a job as scientific director with Zimmer Orthopedics. About ten years later, I ran into Roy and asked him about his job and if he missed academia, and he said that he missed teaching students and sharing his wisdom and experience, because now, after some time in the real world, he had something to offer.

I think a similar maturation happened to the Human Performance Lab (HPL). When I arrived in 1985, the lab was small, research was in its infancy, and knowledge translation was essentially non-existent. Fast forward to today: there are 22 full time faculty members, with 104 graduate students and 36 postdoctoral trainees, publishing more than 150 peer-reviewed scientific papers in leading journals every year. The HPL has matured into a powerhouse of high calibre scientific research, a superb training facility for the next generation of scientists, and a scientific knowledge broker. We are at the point where we have something to say and can give back to the community. We can engage the public in our research, make our results publicly available, and disseminate them through public engagement initiatives.

So, when perusing this year's annual report, do not focus only on the scientific measures and achievements: publications, and international keynote and invited lectures. Spend some time in the "Public Engagement" section. HPL faculty members and trainees gave a number of lectures, workshops and public seminars ranging from Concussions in Sport to Childhood Obesity, from Exercise as Medicine to Injury Prevention, and from the role of Exercise in Cancer Rehabilitation to the benefits of Eating Chocolate. Our research focus on Healthy Living and Mobility into Old Age resonates with the public, and, I believe, we have the responsibility to translate our knowledge and scientific findings and to make them available through public forums and engagement initiatives.

One way of reducing people's "fear" of science and making science accessible to all, is to expose children to research. On April 27th, hosted an open house for more than 600 high school students. In the past year, we hosted grade 7 and 8 girls under the Operation Minerva Banner. In addition we invited the brightest High School students and exposed them actively in our research. But my favourite engagement activity this past year was the "Mini U". Under the Mini U programme, we opened the HPL for one day a week in July and August to students aged 8-13. These students were exposed to and actively participated in demonstrations of science. I'll never forget the laughter and screaming of 8 year olds when one of their peers performed a sport behind a screen, the corresponding performance was shown on a computer screen in the form of a moving stick figure, and they had to guess what sport their friend was performing: a simple way of demonstrating the power of 3-dimensional, instantaneous motion capture and analysis of human movement. We will continue to make our science, even the most complex research findings, accessible to all, and if given the opportunity, will make sure that the 8 year old Mini U participants understand what we are doing. We revel in showing them how much fun science can be. We are privileged in the HPL, and we know it, and one way of giving back to the community, is to share some of the fun we have doing science.

It has been another successful year. Thank you all for your support and encouragement, and my special thanks to the Faculty of Kinesiology and The University of Calgary, and all our supporters, friends and families for their continued and exceptional support of our lab.

Walter Herzog
Director

Highlights

Honor	Tish Doyle-Baker - The Last Lecture Series, The Leadership and Student Engagement Office, University of Calgary.
Honor	Walter Herzog - Inaugural Fellowship – International Society of Biomechanics
Honor	Darren Stefanyshyn - Inaugural Fellowship – International Society of Biomechanics
Appointed	Benno Nigg – Board member, Friedrich-Alexander University, Erlangen, Germany
Appointed	Carolyn Emery - Diamond Jubilee International Visiting Fellowship, University of Southampton (2015-2018)
Award	Jennifer Baltich - Vanier Canada Graduate Scholarship, Doctoral, Government of Canada
Award	Jennifer Baltich – Martyn Shorten Award for Innovation, Footwear Biomechanics Symposium 2015, Liverpool, UK
Award	Lauren Capozzi - Top 40 Under 40, Avenue Magazine, Calgary, Canada
Award	Kelly Anne Carter - Winner of the Ryley Jeffs Memorial Lecture Award, 2015 Dietitians of Canada
Award	Daniel Comaduran Marquez - Biomedical Engineering Academic Award, University of Calgary
Award	Carolyn Emery - Chair in Pediatric Rehabilitation – Alberta Children's Hospital Foundation
Award	Carolyn Emery - Peak Scholar Recognition Award – Eyes High University of Calgary
Award	Carolyn Emery - Distinguished Achievement Award Cummings School of Medicine
Award	Hendrik Enders - Izaak Walton Killam Pre-Doctoral Scholarship, University of Calgary
Award	Hendrik Enders – Edward "Ned" Frederick Young Investigator Award, Footwear Biomechanics Symposium 2015, Liverpool, UK
Award	Colin Firminger - Canadian Society for Biomechanics Podium Prize, Alberta Biomedical Engineering Conference, Banff, Canada
Award	Rafael Fortuna - J. B. Hyne Research Innovation Award, University of Calgary
Award	Walter Herzog - Biomedical Engineering Graduate Program, Outstanding Supervisor
Award	Walter Herzog - Kinesiology Outstanding Supervisor

Award	Stefan Hoerzer - Finalist (1 out of 3): 2015 Nike Award for Athletic Footwear Research, Footwear Biomechanics Symposium 2015, Liverpool, UK
Award	Stefan Hoerzer - Dr. Benno Nigg Distinguished Faculty Achievement Graduate Scholarship, University of Calgary
Award	Matt Jordan - Young Investigator Award for Sport Innovation Summit, Toronto, Canada
Award	Kelly Kaiser - David Winter Young Investigator Award, Oral Presentation, International Society of Biomechanics, Glasgow, Scotland
Award	Jessica Küpper - Canadian Society of Biomechanics Poster Presentation Prize, 16th Annual Alberta Biomedical Engineering Conference, Banff, Canada
Award	Ryan Madden - Young Investigator Award, 12th Footwear Biomechanics Symposium, Liverpool, U.K.
Award	Raylene Reimer - Researcher of the Month, Canadians for Health Research
Award	Tannin Schmidt - Killam Emerging Research Leader Award - Natural Sciences & Engineering Research Council of Canada, University of Calgary, 2015
Award	Kathryn Schneider - Champion of Vestibular Medicine Award, Vestibular Disorders Association
Ph.D.	Saleem Abubacker - Supervisor: Dr. Tannin Schmidt. Thesis: Molecular Basis of Articular Cartilage Boundary Lubrication: Role of PRG4 Structure & Multimerisation
Ph.D.	Lauren Capozzi - Supervisor: Dr. Nicole Culos-Reed. Thesis: Physical Activity and Nutrition in Head and Neck Oncology: Developing a Patient-Oriented, Clinic-Supported Program
Ph.D.	Michael Duvall - Supervisor: Dr. Walter Herzog, Thesis: Regulation of muscle force through titin
Ph.D.	Hendrik Enders - Supervisor: Dr. Benno Nigg, Thesis: Corticomuscular Contributions to the Control of Rhythmic Movement in Humans
Ph.D.	Heiliane Fontana- Co-Supervisor: Dr. Walter Herzog, Thesis: In vivo vastus lateralis force length and force-velocity relationships at the fascicle and muscle tendon unit level
Ph.D.	Rafael Fortuna - Supervisor: Dr. Walter Herzog, Thesis: Acute and chronic effects of Botulinum toxin type-A on the structure and function of the quadriceps femoris muscles of New Zealand white rabbits

M.Sc.	Lisa Campkin - Supervisor: Dr. Tish Doyle-Baker. Thesis: Exploring Physicians' Perspectives of Exercise Specialists in Primary Care Networks
M.Sc.	Sam Dorosz - Supervisor: Dr. Tannin Schmidt. Thesis: Effect of Synovial Fluid on Boundary Lubrication at a Meniscus – Cartilage Biointerface
M.Sc.	Paul Eliason - Supervisor: Dr. Carolyn Emery. Thesis: Effect of Previous Concussion on Sport-Specific Skills in Youth Ice Hockey Players
M.Sc.	Megan Hume - Supervisor: Dr. Raylene Reimer. Thesis: The Effects of Prebiotic Fibre Intake on Appetite and Body Mass Index z-score in Overweight and Obese children
M.Sc.	Kaleena Johnston - Supervisor: Dr. Walter Herzog. Thesis: An examination of sarcomere length non-uniformities in actively stretched muscle myofibrils
M.Sc.	Alissa Nicolucci - Supervisor: Dr. Raylene Reimer. Thesis: Effect of Prebiotic Fiber Intake on Adiposity and Inflammation in Overweight and Obese Children: Assessing the Role of the Gut Microbiota
M.Sc.	Jessica O'Connell - Supervisor: Dr. Brian MacIntosh. Thesis: Change in Proportion of Energy Supplied by Aerobic and Anaerobic Sources as an Explanation of the Slow Component of Oxygen Uptake
M.Sc.	Kevin Shin - Supervisor: Dr. Andrea Clark. Thesis: The Role of Integrin $\alpha 1\beta 1$ and Epidermal Growth Factor Receptor Signalling in Post-traumatic Osteoarthritis
M.Sc.	Carla van den Berg - Co-Supervisors: Dr. Tish Doyle-Baker. & Dr. Carolyn Emery. Thesis: The Influence of Previous Injury History on Health and Fitness Outcomes in Junior High School

General comments

Biomechanics

Walter Herzog

Our research interests remain focused on the areas of muscle properties and mechanisms of contraction, joint biomechanics and osteoarthritis, and applied musculoskeletal research. In the area of muscle mechanics we were able to measure the elongations of individual titin segments when myofibrils were stretched actively and passively, and found that segmental titin elongations differed between active and passive myofibril stretching, suggesting that titin becomes attached in some way upon muscle activation, thereby shortening its free spring length and its zero strain length.

In the area of joint biomechanics and osteoarthritis, we established excellent baseline data for the effects of diet-induced obesity on the onset and rate of progression of knee osteoarthritis and we are now in an excellent position to evaluate exercise and dietary intervention protocols in an attempt to reduce, stop or reverse metabolic osteoarthritis. In our applied musculoskeletal research, we are publishing first ever data on the forces exerted during spinal manipulation on children as young as 17 weeks. Furthermore, we published results on the energetic efficiency of entrained breathing in cross-country skiing and the relationship of pole length on efficiency in double pole cross-country ski sprinting.

Brent Edwards

Our research combines biomechanical experimentation with medical imaging and computational modeling to understand mechanisms of musculoskeletal injury and disease. Our primary work is focused on the etiology of bone fatigue and fragility fracture, and ongoing projects in the lab focus on four interrelated topics including: 1) the quantification of in vivo bone loading, 2) the influence this loading has on bone mechanobiology and mechanical fatigue, 3) the non-invasive, quantitative assessment of bone mechanical integrity, and 4) the development of treatments to improve bone quality and decrease fracture risk in aging and pathological populations.

Subject-specific computational modeling techniques are a central component of our research. We use these models to non-invasively assess the mechanical competence of bone and to quantify bone stress and strain during physical activity and rehabilitation. We our currently utilizing these models to provide new and important insights into the efficacy of mechanical vibration, bisphosphonate, and parathyroid hormone therapies for people with spinal cord injury.

Salvatore Federico

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. In the past years, we have worked on the modelling of the elastic properties of articular cartilage, as well as on the fluid-solid interactions occurring in the tissue.

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, both in the healthy and in the diseased tissue, may shed light on the causes of the initiation of degeneration, and suggest possible treatments to prevent disease.

Benno M. Nigg & Sandro Nigg

The year 2015 was successful for our group, highlighted with 19 refereed publications, seeing five of our group members hired for full time industry positions in the sporting goods sector, and further accomplishing key milestones of grant supported research projects.

One major highlight was a publication summarizing three new proposed paradigms, possibly relevant for research on sport shoes and surfaces: (1) functional groups, (2) the preferred movement path and (3) the comfort filter. These paradigms have been referenced in multiple media resources, including the New York Times, and have fostered discussion in industry and academic environments. We will continue this direction of research to further complement the general understanding of how subjects react to shoe interventions.

Another highlight was our research

focusing on the combination of EMG and EEG measurements, where we attempted to understand the connection between the signals from the brain and the signals from/in the muscle during physical activity. It is interesting that the connection is different depending on the level of an individual's fatigue.

Our attempt to syndicate on body sensor technology with coaching advice has expanded to basketball, soccer and running. Specifically, we have developed an instantaneous coaching feedback system for the basketball free-throw, where we combine the data from strategically placed inertial measurement units, and fuse that information with coaching feedback, with the objective of improving free throw technique of an athlete. We are currently performing a validation of the newly created system, and have developed similar feedback protocols for a soccer kick and a sprint start.

Finally, we continue to focus on health related research projects, where we attempt to improve the general mobility of patients with sensory deficits. Specifically, we are quantifying the effects of medical device interventions on gait variability, defined clinical measures, and quality of life variables for individuals with peripheral neuropathy and multiple sclerosis.

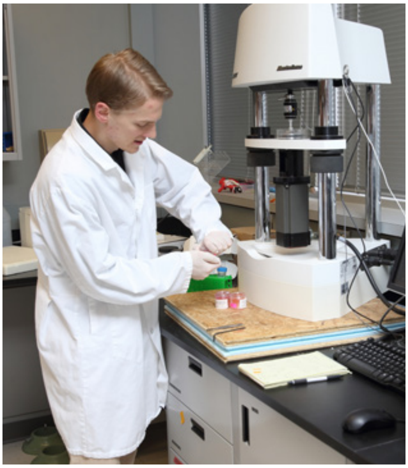
Janet Ronsky

Within the framework of advancing insights into relationships amongst joint structure, function and neuromotor control, our research focuses on: (i) understanding biomechanical and proprioception changes following joint injury and repair, (ii) applying novel high speed dynamic imaging and MRI to characterize mechanisms of early cartilage degeneration following knee injury, and (iii) developing non-invasive techniques for safe, accurate diagnosis and longitudinal monitoring of musculoskeletal diseases and risk factors. Our latest research combines high-speed dual-fluoroscopy imaging, magnetic resonance imaging, three-dimensional motion analysis, and computational modelling to quantify in-vivo deformations of knee cartilage with weight bearing. We successfully identified from preliminary data marked deformation magnitude differences between healthy and ACL deficient individuals (~0.3 mm CON; ~1.2 mm ACLD) for one minute of loading. This work is being extended to relate the regions of contact during locomotion, with cartilage thickness alternations associated with knee injuries.

Clinical trials with the low cost surface topography (ST) system continued to assess a Centroid of Volume index and explore machine learning tools for classifying normal and scoliotic torsos. The system was successfully installed at a second site (IWK Halifax). In collaboration with our orthotics partner, research on quantifying forces applied with a pectus carinatum brace continues. The ST system will be used to monitor protrusion and torso shape modifications with time.

Tannin Schmidt

Our research involves mechanistic based, multidisciplinary study of articular cartilage and ocular surface lubrication with biomechanical-biotribological, biophysical, and biochemical methods. For articular cartilage lubrication, relevant areas include the study of normal, injured, and diseased cartilage and synovial fluid, where composition and interactions of mechanically relevant biomolecules can be altered, as well as other tissues in the joint affected by injury and disease. For ocular surface lubrication, relevant areas include the study of lubricating macromolecules present at ocular surfaces and the role they play in maintaining ocular surface integrity.



Our current work involves examination and elucidation of the structure-function relationship governing the multiple biological properties of lubricating macromolecules present in synovial fluid, as well as at the ocular surface. The desired outcome of our research is to develop new cell or tissue based treatments and/or therapeutics that 1) stop, slow, and/or reverse the progressive degeneration of articular cartilage after a sports injury that leads to the well-established high occurrence of osteoarthritis in knee joints; and 2) provide effect relief for those who suffer from symptoms associated with dry eye disease.

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 2015 we continued to identify methods of matching sport equipment to individual athletes and submitted a provisional patent for matching players to hockey sticks

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 footwear in lower extremity joint loading and submitted a provisional patent on predicting an individual's response to wedged insoles.

Vincent von Tscharner

The current work deals with a) exploration of entropy measures to assess the complexity, and thus the neuromuscular control of movements, using measures of entropy, b) exploring how motor unit synchronization is used and might contribute to stability while moving, c) applying support vector machine based discrimination to unravel differences in multi muscle patterns of wavelet transformed EMG signals.

The work using entropic measures made significant progress and has now become a tool that finds a wide range of applications. It measures the regularity and complexity of complex biological signals and was applied to many topics. The impact of previous knee injury on force plate and field-based measures of balance resulted in detectable prolongation of the entropic half-life. We also observed substantial age related differences of entropic-half-life. We were able to show a relationship between sample entropy based entropic half-life and de-trended fluctuation analysis and thus contributed to the understanding of non-linear measures of complexity in science. The research of heart rate variability of electrocardiograms during sportive activities, based on entropic half-life, was no longer supported. Consequently the research direction was changed to more clinical applications. The breakthrough finding was that fuzzy entropy analysis can be used to diagnose congestive heart failures with a sensitivity and specificity that is similar to other currently used tests. It was therefore important to pursue the development of a heart rate monitor based on a measurement of currents instead of potentials.

Synchronization among synergistically working muscles can be viewed as an essential feature of neuromuscular control which leads to the stability of movements. We investigated the task-dependent intermuscular motor unit synchronization between medial and lateral vastii muscles during dynamic and isometric squats. A very high coherence between the EMGs of these two muscles indicated that the synchronization not only generates force at the same time but happens at the level of single motor units. These single motor units changed their synchronization when the task at hand changed. Current work now focuses on a better understanding how synchronization and clustering of motor units are used to control our muscles while moving.

Our work on functional groups led to a grouping of runners based on plantar pressure patterns. The effect of rounded heel profiles of the minimalist shoes was investigated. Furthermore, functional groups based on running kinematics were detected using Self-Organizing Maps and Support Vector Machines. This work is ongoing and we tackled the task of detecting differences in muscle coordination in recreational and skilled hockey players. In the medical field, my work led to the detection of multi-muscle activation strategies during walking in female post-operative total joint replacement patients. The wavelet analysis of EMG signals combined with support vector machines also allowed us to find alterations in lower limb multi-muscle activation patterns during stair climbing in female total knee arthroplasty patients. The combined methods seem to have great impact on osteoarthritis research.

Mind Sciences

S. Nicole Culos-Reed

Health & Exercise Psychology

Dr. Nicole Culos-Reed and her team at the Health & Wellness Lab develop evidence-based, sustainable wellness programming for cancer survivors (on or off treatment). The Lab's research primarily focuses on quality of life and physical activity for cancer survivors, to better understand physical activity determinants (facilitators and barriers) and outcomes (patient self-reported including psychosocial, as well as physiological), and translate findings into sustainable community resources. To support research and knowledge translation activities, the Health & Wellness Lab operates the Thrive Program and the Thrive Centre in the Faculty of Kinesiology at the University of Calgary.

The Thrive Centre, the first of its kind in Canada, provides a safe and emotionally supportive fitness facility for people affected by cancer. More than 500 cancer patients have taken part in the free program since it launched three and a half years ago. The Centre runs on a student volunteer model, with over 200 students specifically trained to work with cancer patients, donating more than 10,000 volunteer hours of service. The Lab has also published a manual of operations, as well as several other print resources on cancer and exercise, to help other universities across the country interested in starting their own cancer and exercise programming.

The Thrive Program aims to enhance survivor quality of life, and to examine the role of physical activity in cancer survivorship through the development of individual exercise assessments and exercise interventions designed for survivors. Other health and wellness programs offered by the Lab include Yoga Thrive (for both adult and pediatric patients); BEAUTY (funded by Wings of Hope), the "Enhance" exercise and nutrition intervention for head/neck cancer patients, and the TrueNTH Lifestyle Management Program for men with prostate cancer.

Current collaborations include City of Calgary Recreation, Calgary YMCA's, and Wellspring Calgary, for the dissemination of evidence-based physical activity programs for cancer survivors. National partnerships include cancer and exercise programming with collaborators at the University of Alberta, the University of Toronto and Princess Margaret Hospital, Dalhousie University and the University of British Columbia.

Joan Vickers

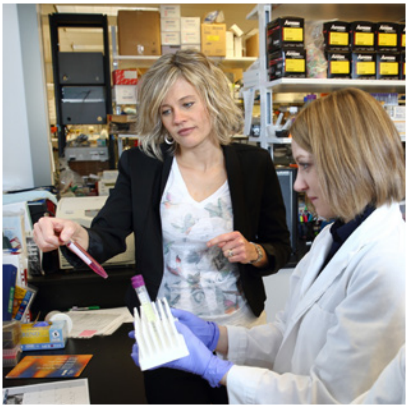
Neuro-Motor Psychology

My research program investigates the role of vision, cognition and decision making in the learning and control of complex motor skills. The major discoveries of my research program are the quiet eye and quiet eye training. The quiet eye (QE) is measured with a light, mobile eye tracker that is coupled to an external motor camera or cameras. Quiet eye (QE) studies now number over 120 in refereed journals, plus there are numerous web-based articles, videos, television specials and media presentations. The quiet eye is a characteristic of expertise and is defined by an early onset of a final fixation or tracking gaze maintained on a specific task location, prior to a specific phase of a movement, within 3 degrees of visual angle (or less) for a minimum of 100 ms. Theoretically, the QE represents the time needed to organize the neural networks underlying the precise control of movements. Once the quiet eye of elite performers is known, then quiet eye training can be carried out with novices and others who want to improve their performance. QE training studies have proven to be effective in enhancing motor performance and reducing anxiety in golf, basketball, surgical knot tying, children's throw and catch, volleyball, soccer and many other motor tasks.

Nutrition, Metabolism & 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. Our research spans basic science in rodent models aimed at determining how the foods we eat affect our gut microbiota and how this affects our disease risk, all the way through to applied human clinical studies evaluating the effectiveness of novel dietary interventions. In our basic science work this year we showed that being obese prior to pregnancy and then consuming a high fat, high sugar diet during pregnancy increases the risk of obesity in the offspring. Importantly, we also showed that this risk can be attenuated with a prebiotic fiber supplement. Our ongoing focus is to identify dietary factors that can be provided to pregnant women to reduce the risk of chronic disease transmission to their children. In 2015 we were also very involved in translating findings from our previous animal studies into two different clinical trials. We evaluated: 1) the effect of prebiotic fiber on liver health in patients with non-alcoholic fatty liver disease; and 2) the effect of prebiotic fiber supplement on body fat loss and appetite in children with pediatric obesity. Ultimately our goal is to design and evaluate new functional food products aimed at body weight management and optimal gut microbiota profiles.



Physiology / Biology

P. Tish K. Doyle-Baker

A.P.P.L.E. Research Group ((Applied Physiology and Prevention through Lifestyle and Exercise)

We are an interdisciplinary and collaborative lab that is devoted to research that has a direct translation to the public. Our framework surrounds the metrics associated with how energy expenditure and exercise influence health outcomes in the young and old, healthy and unhealthy, injury free and injured. This past year was spent developing, testing and evaluating individual and environmental factors associated with physical activity.

During the late spring we investigated heart rate variability in athletes utilizing wearable technology. Heart-rate variability (HRV) is the naturally occurring beat-to-beat changes in heart rate. HRV reflects autonomic nervous system (ANS) activity and serves as a tool to monitor human health and resiliency. It is also useful for exploring the dynamic interactions between physiological, mental and emotional processes. Our purpose was two-fold: 1) to track athlete's health and 2) to develop a program that could be used to reduced overall stress and fatigue. In sport, fatigue is not only the demise of the athlete's ability to reach peak performance but it also can increase the risk for serious injury.

In the summer we partnered with Active Living, using the same wearable technology used in the RECESS study (Recreation Exercise, Caloric Expenditure, Sitting and Sleep in 1st Year University Students) to develop a program that would measure step counts during summer camps. Summer camps are becoming increasingly popular for children and youth and have the potential to contribute to and meet the recommended daily physical activity guidelines (60 minutes of moderate-vigorous physical activity), however only a few studies have objectively physical activity during summer camps.

During the late fall we investigated changes in immune response in young men with varying body composition (utilizing DXA) and physical activity (questionnaire based) profiles. Limited research exists in the area of influenza vaccination yet we know that chronically high levels of leptin and inflammatory cytokines are associated with obesity and have been linked with an attenuated immune response. Future research in our lab will continue to investigate the efficacy and effectiveness of wearable technology and biomarkers of health and fitness levels in the young and old.

Wayne Giles

My laboratory uses cellular electrophysiological and biophysical techniques to explore the single cell and integrative functions of primary cells (myocytes, chondrocytes) and supporting cells (cardiac fibroblasts, synovial fibroblasts). We address fundamental questions concerning the physiology and pathophysiology of heart and articular joints. Within the past five years, by collaborating with colleagues at a number of different universities and in industry, it has been possible to carry out our cellular electrophysiological work using tissue or cells from human sources. There is therefore the possibility that underlying mechanisms of chronic conditions can be addressed. These include: atrial or supraventricular heart rhythm disturbances and both osteo- and rheumatoid arthritis. Most of our work is at the single cell level. This experimental work continues to be complemented by development of mathematical models of the fundamental physiological responses, with recent emphasis on intercellular communication and ATP as a communicating or paracrine molecule.

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: that fatigue is a consequence of the elegant regulation of excitation-contraction coupling in skeletal muscle, to prevent depletion of ATP. This highly redundant regulatory mechanism operates at several levels, including the membrane, the triad and the contractile proteins. Future work will evaluate the potential role of changes in calcium sensitivity at physiological temperature. Recent work has advanced our understanding of economy of running and how this relates to the energy cost of individual muscle contractions. This work deals with calculation of the moment arm for plantar-flexion and tendon energy storage and return during running. We are continuing the work on warm-up and postactivation potentiation. A substantial advancement in the understanding of the slow component of oxygen uptake has been made in my lab. It is apparent that the slow component does not represent a rising energy cost of the exercise, but a continued switch from anaerobic to aerobic energy supply. 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. My work uses a number of approaches to study the contractile properties of skeletal muscle, including in vitro single intact or skinned fibers and fiber bundles, in situ whole muscle and intact human subjects performing in vivo with isolated muscle or muscle group contractions or performing whole body exercise.

Guillaume Millet

Neuro-Muscular Fatigue Laboratory (NMFL)

Fatigue is one of the most common and distressing symptoms experienced by athletes and patients. The Neuromuscular Fatigue Laboratory (NMFL, http://www.ucalgary.ca/nmfl) research team aims to investigate the etiology of fatigue in clinical and athletic populations. We study extreme sports (ultra-endurance) as a model to explore the limits of human adaptive responses. In cancer survivors, we aim at developing an accurate measure of fatigue that uses central (motor cortical and motoneuronal excitability) and peripheral markers of neuromuscular function as well as biomechanical, biomarkers and sleep quality indexes to investigate the etiology of fatigue. Our ultimate goal is to alleviate this distressing symptom in order to improve the overall quality of life of patients. From a methodological perspective, we aim

to further contribute to the body of knowledge on the role of magnetic stimulation as an investigative tool.

We are also validating a new ergometer that allow us to revisit fatigue mechanisms for dynamic whole-body exercises at exhaustion in various conditions, e.g. after training, in elderly people, in hypoxia. Finally, we study the efficiency of training tools in athletes (speed skating, ultramarathon running) and in the aging population (vibrations).

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 is related the use of exercise training interventions as "medicine" to prevent or alleviate the detrimental effects of aging and disease on cardiovascular function. 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. Finally, a rat model is used for examining vascular responsiveness in different vessels throughout the vascular tree by means of an in vitro vessel myography technique

Jane Shearer

The central focus of the Shearer laboratory is metabolic physiology. Our mission statement is to 'Employ knowledge of metabolism to predict, prevent and treat chronic metabolic disease states'. Specific states of interest include obesity, cardiovascular disease and type 2 diabetes. Our genome to systems approach is unique and provides the opportunity to examine both whole body and tissue specific biochemical and metabolic regulation.

Sport Medicine

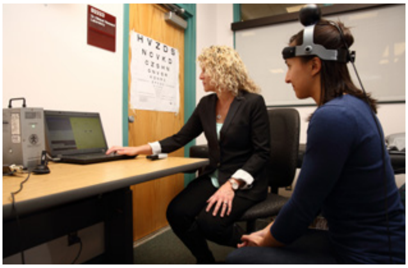
Carolyn Emery , Willem Meeuwisse & Kathryn Schneider

Sport Injury Prevention Research Centre

The Sport Injury Prevention Research Centre (SIPRC), Faculty of Kinesiology, University of Calgary is one of nine International Olympic Committee Research Centres for Injury and Illness Prevention in Sport (2009-2019). SIPRC focuses on the identification of risk factors and evaluation of prevention strategies in youth sport. The Alberta Program in Youth Sport and Recreational Injury Prevention (AB Program) was established in 2013 through Alberta Innovates Health Solutions Collaborative and Research Innovation Opportunity (AIHS CRIO 2013-2018) to facilitate ongoing research activities in the evaluation of injury prevention strategies provincially, nationally and internationally with a significant focus on trainee development and community stakeholder engagement. This research program has informed body checking policy change that has had a significant public health impact in reducing the risk and public health burden of concussion and injury in Pee Wee ice hockey (ages 11-12) nationally and non-elite levels of Bantam (ages 13-14) in local and provincial associations. In addition, we continue our research program in community sport and junior high schools to evaluate implementation strategies which will maximize adherence and optimize the preventative effect and public health impact of neuromuscular training warm-up programs. The overall goal of the AB Program is to reduce the risk of injury in youth sport and recreation in Alberta 20% by 2020. Research activities within this program also focus on projects evaluating injury prevention strategies in skiing and snowboarding.

Dr. Carolyn Emery, Dr. Willem

Meeuwisse, Dr. Kathryn Schneider and their research team are studying best practices to prevent, detect and manage youth sport-related concussions in a CIHR-funded 5-year longitudinal cohort study "Safe to Play". They are following over 1000 youth ice hockey players over 5 years (2013-2018) to examine neurological development using a variety of new diagnostic tools to identify specific impairments



associated with concussions. The study tools under evaluation include tests of balance, neck and vestibular function, vision, memory, neuromotor control, neuro-cognition, nutrition, coping, social interaction, and growth and development factors. This study will inform best practice in baseline assessment, concussion risk prediction, concussions diagnosis, treatment evaluation, and recovery management. In addition, we are evaluating rehabilitative techniques following concussion, including a focus on rest and exercise in recovery as well as cervico-vestibular rehabilitation, in reducing the recovery period following concussion. Further evaluation of the role of the neck and balance systems in concussion is facilitated by a Canadian Foundation for Innovation Grant (infrastructure and equipment) in sport concussion research program.

Ongoing research also includes an interdisciplinary research program to maximize health and minimize the long-term impact of injury and joint osteoarthritis (OA) in the child and adolescent population. In youth soccer, we have demonstrated significant health care cost savings in Alberta with the implementation of a youth soccer injury prevention neuromuscular training warm-up strategy. We have also completed two years of a longitudinal cohort study examining predictors of early post-traumatic joint OA in youth. In this program, it has been established that youth with an intra-articular knee injury history (3-10 years previously) have an increased risk of being overweight, less active and MRI defined OA compared to age, sex and sport matched controls. This cohort study will inform the development and evaluation of secondary prevention strategies aimed at reducing the risk and/or delaying the onset of OA.

Our work continues with the IOC and International Paralympic Committee (IPC) on the injury surveillance research programs at the Sochi 2014 Olympics and Paralympics with international collaborators. Our group is also playing a leadership role in the planning of the 5th International Consensus Conference on Concussion in Sport, being held in Berlin in October of 2016.

Preston Wiley, Nicholas Mohtadi & Victor Lun

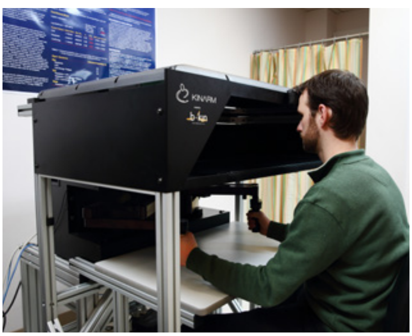
On March 5th, 2015 the Sport Medicine Centre (SMC), and indeed the entire community, was saddened and shocked with the news that Dr. Cy Frank passed away. Cy was the first surgeon/physician to be recruited by Roger Jackson to the SMC. Many testimonials have been recited and written about Cy. Suffice it to say, he was the SMC's ambassador in the Faculty of Medicine, the inspirational leader for excellence in research and clinical care. He was instrumental in the recruitment of most of the physicians and surgeons that worked at the Centre for the first 25 years. He will be dearly missed.

The previously reported randomized clinical trial comparing three techniques of anterior cruciate ligament (ACL) reconstructive surgery completed its 5-year follow-up on more than 300 patients in 2015. This is a testament to our research staff.

The Acute Knee Injury Clinic (AKIC) continues to provide service to the community. In 2015 the AKIC helped 2340 newly injured patients. The AKIC is the focus of a research project looking at the diagnostic capability of the web-based questionnaires. A 2-month audit performed in 2015 showed that the web-based questionnaire was capable of diagnosing 80% of ACL tears without even seeing the patient. An extensive research study was approved in 2015 to evaluate five years of patient data.

The soon to be opened Rotator Cuff, Shoulder Clinic was developed and trialed in 2015. So far, we have evaluated the current state of care for patients with rotator cuff tears in the shoulder in Alberta. Consensus statements have been developed with the help of a group of expert providers in Alberta. These statements will inform the recommended standard of care for patients with rotator cuff tears in the shoulder.

The Acute Sport Concussion Clinic (ASCC) opened in the fall of 2015 to provide direct access for patients who suffer a sport-related concussion. This clinic is the first of its kind in Calgary. The clinic will facilitate state of the art care for patients with sport-related concussions. In addition, the ASCC will facilitate the research efforts of the Sport Injury Prevention Research Centre. The clinic also includes a direct research connection with research looking at unique ways to both assess and mange patients with post-concussion symptoms.



Public Engagement

Lectures & Speakers

18th Annual Glen Edwards Day - Calgary, Alberta. October 30.

Victor Lun - *Conservative treatment options for knee and hip osteoarthritis.*

AIHS *Summer Science Teacher workshop* - Calgary, Alberta. July 21 - 23.

Carolyn Emery - *Injury prevention in youth sport and recreation: What is the evidence?*

Arthritis Awareness Night, U. *of Calgary* - Calgary, Alberta. October 8.

Yasir Al-Saffar - *Crack Mechanics in Early Osteoarthritis.*

Kelsey Collins - *Metabolic (Obesity-induced) Osteoarthritis.*

Walter Herzog - *Osteoarthritis and Cell Biomechanics.*

Eng Kuan Moo - *Chondrocyte Mechano Biology.*

Jaqueline Lourdes Rios - *Osteoarthritis, Exercise and Diet Intervention.*

Scott Sibole - *Articular Cartilage Structure and Function.*

Calgary Minor Soccer Association General Meeting - Calgary, Alberta. November 21.

Carolyn Emery - *Injury prevention in youth soccer.*

Kathryn Schneider - *Concussion in Sport.*

Canadian Obesity Network, Professional Speaker Series 2015 - Calgary, Alberta. April 8.

Tish Doyle-Baker - *The Nomadic Life of A Motorneuron, Not!*

Cancer Survivorship Symposium - Calgary, Alberta. March 28.

Nicole Culos-Reed - *Exercise and Cancer Survivorship: Truths, Myths and Logistics.*

CBI *Health Group* - Calgary, Alberta. April.

Nicole Culos-Reed - *Physical activity and cancer survivorship: Translating evidence into practice.*

Clinical Trial Educational Evening, U. *of Calgary* - Calgary, Alberta. February 25.

Raylene Reimer - *Achieving a healthy childhood body weight.*

CSEP *Professional Development Day* - Calgary, Alberta. June 20.

Brian MacIntosh - *Exercise is Medicine Canada: Where are we and where are we going?*

Engineering Associates Breakfast, U. *of Calgary* - Calgary, Alberta. September 18.

Tannin Schmidt - *Lubricin as the Natural Ocular Surface Boundary Lubricant: Translating an Idea into a Cure.*

Family Medicine Residents - Calgary, Alberta. September 24 & October 1.

Raylene Reimer - *Debunking popular diets.*

Fast & Female Symposium, Winsport - Calgary, Alberta. November 8.

Carolyn Emery - *Injury prevention in female youth sport.*

Kathryn Schneider - *Prevention of concussion in Females.*

Kathryn Schneider - *Concussion & Tertiary Prevention and Sports Injury Prevention.*

Fidelity Coach Education Presentation, Alberta Alpine - Calgary, Alberta. January 20.

Tish Doyle-Baker - *The Success of Play in Sport and Specifically Alpine Youth Racing: Is It Still There?*

National Association of Occupational Safety & Health - Edmonton, Alberta. May 8.

Tish Doyle-Baker - *The #1 strategy for successful aging begins with a threesome…a wholesome approach to successful aging.*

Prostate Cancer Centre - Calgary, Alberta. Recurring.

Nicole Culos-Reed - *Exercise and prostate cancer. Presentation for newly diagnosed prostate cancer survivors and support persons.*

Rundle College - Calgary, Alberta. November.

Christine Atkins - *Concussions in Schools: An Informational Session for Teachers and Administrators.*

Supreme Court Bench Judges' Day - Calgary, Alberta. August 17.

Tish Doyle-Baker - *How to make a healthier better Judge?*

Tom Baker Cancer Centre - Calgary, Alberta. Recurring.

Nicole Culos-Reed - *Exercising for your life: The role of exercise in cancer survivorship.*

Nicole Culos-Reed - *Physical activity and cancer.*

West Island College Undergraduate Achievement Awards - Calgary, Alberta. September 5.

Tish Doyle-Baker - *What can you do in 10 seconds?*

Wood Forum for Bone & Joint Health - Calgary & Edmonton, Alberta. October.

Tannin Schmidt - *Lubricin: A future treatment for knee injury.*

Carolyn Emery - *Injury prevention in youth sport and recreation.*

Workshops

TrueNTH Lifestyle Management - Workshops.

Nicole Culos-Reed - *City of Calgary Recreation Workshop.*
Calgary, Alberta. June.

Nicole Culos-Reed - *Western Canada Workshop.*
Calgary, Alberta. September.

Nicole-Culos-Reed – *Eastern Canada Workshop.*
Toronto, Ontario. October.

Information Booths & Organizational Contributions

Calgary Flames Health Training Camp - Calgary, Alberta. January 10.

Kelly Brett - *Organizing Committee Member*

Raylene Reimer - *Information Booth - Nutrition and healthy body weight.*

Family Health Magazine - Active Living Section

Victor Lun - *Editorial Board Member.*

PHAT *Fair. St. Elizabeth Seton School* - Calgary, Alberta. October 30.

Nicole Romanow - *Youth Injury Prevention.*

Telus Spark Spring Sparktacular - Calgary, Alberta. April.

Raylene Reimer - *What happens in the body when you eat chocolate?*

Media & Interviews

Barefoot vs. shod running. It's a dead heat - Benno Nigg.
The Globe and Mail, September 1. Alex Hutchinson. [Website].
Branching into the ophthalmic space - Tannin Schmidt.
EyeWorld. June. Matt Young and Gloria D. Gamat. [Website].
Concussion in youth ice hockey - Carolyn Emery.
Global TV - Calgary. December.
Choosing Shoes: Should Comfort Be Your Only Guide? - Benno Nigg.
Runner's World. August 19. Jonathan Beverly. [Website].
Choosing the Right Running Shoes" - Benno Nigg.
The New York Times. August 5. Gretchen Reynolds. [Website].
Entraînement: La physiologie du traileur - Guillaume Millet.
Sportips. January. Mathieu Piron. [Website].
Être performant : limites et possibilités du corps humain? - Guillaume Millet.
France Culture. October. [Website].
Fibre protects rats against junk food diet weight gain - Raylene Reimer.
CTV News, April 8.
Global News, April 8.
City TV Breakfast Television, April 8.
Les nouveaux coureurs des bois - Guillaume Millet.
Espaces. May. [Website].
Les weekends chocs - Guillaume Millet.
Jogging International. May. Véronique Bury.
Nutrition research in the Human Performance Lab - Raylene Reimer
Tagesanzeiger. Zurich, Switzerland. August 25. Von Hans Küng.
Nutritional supplements for weight management in children/adolescents - Raylene Reimer.
Nutritional Outlook. June 18. Maureen Kingsley.
Prebiotic fibre stops weight gain - Raylene Reimer.
Apple Magazine. June 3. Caitlin Crawshaw.
Prebiotic fiber reduces weight gain in rats - Raylene Reimer.
CBC Radio. Edmonton, Alberta. April 8. Mark Connolly.
Psychology of ultra marathoners - Guillaume Millet.
Quartz. July. Katherine Foley. [Website].
Quand le sport rend fou - Guillaume Millet.
Marianne. January. Daniel Bernard.
Quoi ma foulée? Qu'est-ce qu'elle a ma foulée? - Guillaume Millet.
Le Journal du Runner. April. Raphael Godet.

Researcher of the Month - Raylene Reimer

Canadians for Health Research. February. Heather Pengelley. [Website].

Study looks at slimming effects of fibre - Raylene Reimer

CBC Eyeopener. Calgary, Alberta. April 8, 2015. David Gray.

The Early Edition. Vancouver, British Columbia . April 10. Rick Cluff.

Daybreak. Kamloops, British Columbia. April 10. Shelley Joyce.

Daybreak. Prince George, British Columbia. April 10. Russel Bowers.

Information. Cape Breton, Nova Scotia. April 10. Steve Sutherland.

Morning. Windsor, Ontario. April 10. Tony Doucette.

What makes an ultraendurance athlete succeed? - Guillaume Millet.

The Globe and Mail. September 27. Alex Hutchinson. [Website].

Group Hosting & Tours

HYRS	24 students with the Heritage Youth Researchers Summer program visited the HPL in July of 2015. They visted eight different stations, presented by various groups in the HPL.
Operation Minerva	Kaleena Johnston - Twelve grade seven and eight girls spent the day working in various lab situations and hands on demos, all related to the topic of Muscle Mechanics. May 7, 2015.
Mini-U	Once a week, for eight weeks, the HPL hosted three groups of students attending Mini-U camps - in total about 1000 students. The students ranged in age from eight to thirteen. Four groups presented research to the participants. The participants visited the stations for about 25 minutes each.
Shad Valley	48 senior high school students selected for the Shad Valley program visited the HPl in July. They spent a half day rotating through eight stations involving various aspects or research conducted in the HPL.
Society of Tribologists and Lubricant Engineers	Tannin Schmidt - Hosted the Calgary Chapter meeting in the HPL where they saw research demonstrations and toured the lab. September, 2015.

Acknowledgements

Active Living & Outdoor Centre, University of Calgary
adidas AG
adidas International
Alberta Cancer Foundation
Alberta Center for Child, Family & Community Research
Alberta Children's Hospital
Alberta Children's Hospital Foundation
Alberta Children's Hospital Research Institute (ACHRI)
Alberta Health Services
Alberta Health Services - Bone and Joint Health Strategic Clinical Network
Alberta Innovates – Bio Solutions
Alberta Innovates – Health Solutions (AIHS)
Alberta Innovates – Osteoarthritis Team Grant
Alberta Innovates – Technology Futures
Alberta Innovation and Advanced Education
Alberta Institute for Bone and Joint Health
Alberta Pulse Growers Commission
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Ariat International
Arthritis Society
Banting Postdoctoral Fellowships
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Biomechanigg Sport & Health Research Inc.
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Canadian Academy of Sport & Exercise Medicine
Canadian Breast Cancer Foundation-Prairies/Nwt Region
Canadian Chiropractic Research Foundation
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Canadian Institutes of Health Research (CIHR)
CIHR – Canada Research Chair programme
CIHR - Institute for Musculoskeletal Health and Arthritis
Canadian Physiotherapy Association
Cancer Chic
City of Calgary Recreation
CAPES – Coordenação de Aperfeiçoamento de Pessoal de Nível Superior
College of Physician and Surgeons of Canada
Crohn's & Colitis Foundation of America
Cummings School of Medicine, The University of Calgary
Dairy Farmers of Canada
Da Vinci Foundation
Department of Pediatrics Innovation Awards
Engineered Air
Faculty of Health Professionals, Dalhousie University
FitFlop Footwear Research
Fraternal Order of Eagles (Alberta and Saskatchewan)
General Mills Inc.
Government of ALberta
Hotchkiss Brain Institute
Hunter Family Foundation
InovoBiologic Inc.
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International Olympic Committee Medical Commission (IOC-MC)
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Izaak Walton Killam Hospital, Halifax, NS
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Killam Fellowship – Canada Council for the Arts
Killam Foundation
Korea Footwear International
Lou Reed Foundation
Masai Barefoot Technology (MBT)
Mark's Work Wearhouse
McCaig Institute for Bone and Joint Health
MITACS
Mizuno
Movember Foundation
MSI Foundation
Natural Sciences and Engineering Research Council of Canada (NSERC)
NSERC - CREATE training programme
NSERC - CRD (Collaborative Research and Development Grant)
NSERC - Discovery Grant Program
Orpyx Medical Technologies
Own the Podium
Program for Undergraduate Research Experience (PURE), University of Calgary
Prostate Cancer Canada (PCC)
Pure North Inc.
Queen Elizabeth II Award
Reebok CCM Hockey
Salomon
Simpson Family Endowment
Sport Science Association of Alberta (SSAA)
Talisman
Taylor, Don and Ruth
TaylorMade adidas Golf
Tecterra
University of Calgary
University of Exeter, U.K.
True North Inc.
Vanier Scholarship Foundation
Vera A. Ross Graduate Scholarship
Vi Riddell Foundation
W. Brett Wilson Family Foundation
Western Economic Development Fund
Wings of Hope Breast Cancer Foundation
Y. M. C. A.
Zymetrix

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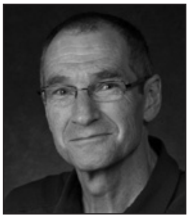

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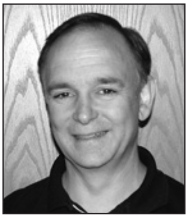

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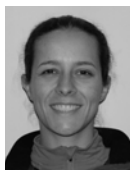
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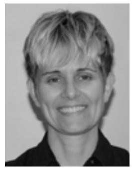

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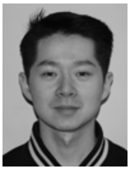

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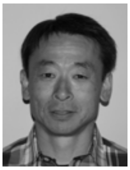

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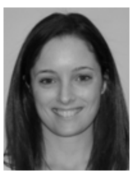
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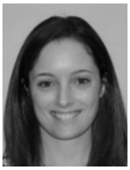
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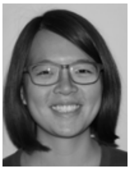
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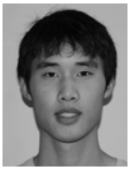
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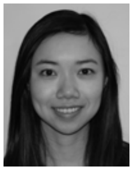
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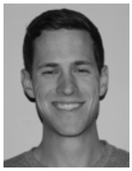
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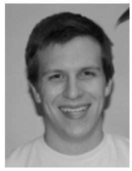
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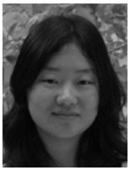
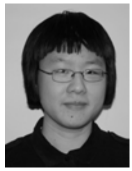

Eubanks, Breda
Kinesiology **


Firminger, Colin
Biomedi. Eng. *


Fortuna, Rafael
Kinesiology **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Gallinger, Tessa
Kinesiology *


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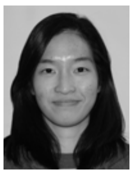
George, Mitchell
Kinesiology *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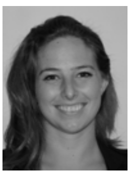
Kinesiology **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Johnston, Kaleena
Kinesiology *


Jordan, Matt
Med. Sci. **


Kenny, Sarah
Kinesiology **

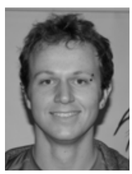

Killick, Anthony
Kinesiology *


Klancic, Teja
Kinesiology **


Kline, Adrienne
Biomedical Eng. **


Krolikowski, Maciek
Kinesiology *


Kruger, Renata
Kinesiology **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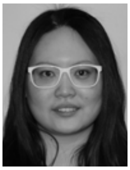
Kinesiology *

Members of the RJC


Lewinson, Ryan
Biomed. Eng.**


Lishchynsky, Justin
Kinesiology *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Lorenzen, Kristin
Kinesiology *


Loundagin, Lindsay
Kinesiology **


MacArthur, Sarah
Kinesiology *


MacDonald, Graham
Kinesiology **


MacDonald, Kerry
Kinesiology **


Martin-Alarcon, Leonardo
Biomed. Eng.**


Maturana, Felipe
Kinesiology *


Medysky, Mary
Kinesiology *


Mira, José
Kinesiology **


Mitra, Tatum
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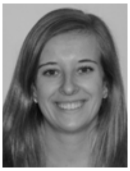
Mohr, Maurice
Kinesiology **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Nesbitt, Colleen
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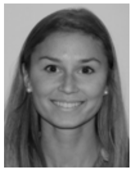
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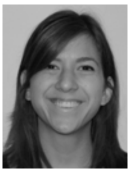
Kinesiology **


Newell, Christopher
Kinesiology *


O'Connell, Jessica
Kinesiology *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Paul, Heather
Kinesiology **


Powers, Krysta
Biomedical Eng. **


Rios, Jaqueline Lourdes
Kinesiology **


Samsom, Michael
Biomedical Eng. **


Sawchuk, Tyson
Kinesiology **


Shin, Kevin
Kinesiology *


Sibole, Scott
Kinesiology *


Soares, Rogerio
Kinesiology **


Stewart, Andrew
Kinesiology *


Stilling, Carlyn
Kinesiology *


Virtanen, Heidi
Kinesiology *


Weir, Jamie
Kinesiology *


Xu, Warren
Biomedical Eng. *

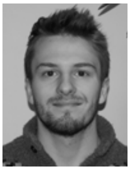

Zandiyeh, Payam
Mech. & Man. Eng.**

Visiting Students


Al-Saffar, Yasir


Aslanzadeh, Fatemeh

Members of the RJC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Blago, Antinio


Blosse, Baptiste


Boettcher, Kathrin


Cigoja, Sasa


Ellens, Susanne


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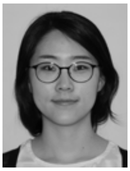
Felsner, Lina


Finnila, Mikko


Flores, Carla


Fontana, Heiliane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Stetter, Bernd


Krabbe, Lena


Leibold, Andreas


Manz, Sabina


Marhaba, Danny


Martin, Matthieu


Martinez, Aaron


McLay, Kaitlin


Menda, Esther


Mercuur, Cole


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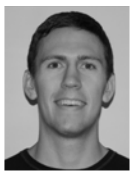
Muench, Mareike


Ojanen, Simo


Onasch, Franziska


Peyard, Arthur


Pontarolo, Luca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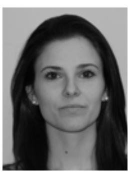
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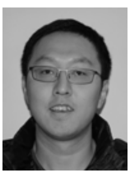
Yu, Jiabin


Zignoli, Andrea

Students and Interns

Ali, Jahaan
Ali, Ismat
Aurka, Sudeepta
Badgery, Kip
Been, Emily
Bischoff, Madison
Borthwick, Myles
Bowers, Sam
Charette, Heather
Chisholm, Dirk
Christie, Michael
Codd, Chevonne
Cook, Daniel
Coupal, Breann
Edwards, Tamlyn
Ehman, Emily
Fan, Selina
Flaaten, Nordan
Friese, Sven
Ghali, Brianna
Gault, MadKenzie
Gibney, Emma
Gilbertson, James
Graham, Lisa
Grainger, Madison
Hasselaar, Charley
Hawkings, Amy
Janzen, Leticia
Jones, Alexis
Kellner, Thomas
Kim, David
Kolstad, Ashly
Kuznestova, Svetlana
Lecoupe, Joshua
Loeppky, Chantel
Loos, Lisa
Maag, Chad
MacLeod, Regan
Martinez, German
Martis, Craig
McPhee, Bria
McSwiney, Tristan
Narsingan, Karim
Ngoc, Sandy
Oahtani, Ahmad
O'Reilly, Jennifer
Partridge, Emma
Riek, Paul
Smith, Ian
Smith, Benjamin
van Wissen, Mania
Waekerlin, Sonja
Wagner, Kelsey
Wallace, Sean
Wang, Denning
Wong, Brendon
Woo, Billy
Yong Kim, Si
Zhang, Thomas

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Books & Book Chapters

Doyle-Baker, P. K., (2015). Sportiva: Finding the sweet spot in your future career. In: Bloomer, R., et al. (Eds.), Exercise and Sport for the Curious. The Curious Academic Publishing.

Emery, C., Roy, T. O., Hagel, B. E., MacPherson, A., Nettleton, J. E., (2015). Injury prevention in youth sport. In: Caine, D., Purcell, L. (Eds.), Injury in Pediatric and Adolescent Sports: Epidemiology, Treatment and Prevention. Springer, pp. 205-232.

Federico, S., (2015). Porous materials with statistically oriented reinforcing fibres. In: Dorfmann, L., Ogden, R. W. (Eds.), Nonlinear Mechanics of Soft Fibrous Materials, International Centre for Mechanical Sciences (CISM), Courses and Lectures, Vol. 559. Springer, Berlin, Germany, pp. 49-120.

Herzog, W., Killick, A., Boldt, K., (2015). Energetic considerations in cross-country skiing. Sports Performance. Springer, Tokyo, Japan, pp. 247-260.

Herzog, W., (2015). Muscle contraction and sarcomere length non-uniformities. In: Charles M.Cuerrier, Andrew E.Pelling (Eds.), Cells, Forces, and the Microenvironment. Pan Stanford Publishing Pte. Ltd., pp. 211-223.

Jordan, M., Aargaard, P., Herzog, W., (2015). A return to skiing envelope of function for anterior cruciate ligament reconstructed elite alpine ski racers. In: Mueller, E. (Ed.), Science and Skiing VI. Meyer & Meyer Sport Ltd, Austria, pp. 187-195.

Luo, G., Stefanyshyn, D. J., (2015). Limb force generation as a limiting factor for maximum-effort acceleration performance. In: Nagami, T., Tsuchiya, J. (Eds.), Sports Performance. Springer, pp. 281-292.

Panchuk, D., Vine, S. J., Vickers, J., (2015). Eye tracking methods in sport expertise. In: Baker, J., Farrow, D. (Eds.), Handbook of Sport Expertise. Routledge / Taylor & Francis Group, London, UK, pp. 176-187.

Schneider, K. J., Emery, C., Babul-Wellar, S., (2015). Concussions. In: MacPherson, A., Pike, I. (Eds.), Canadian Injury Prevention Resource. Parachute, Toronto, ON, Canada, pp. 445-454.

Stefanyshyn, D. J., Wannop, J. W., (2015). Sports Surfaces and Performance. In: Dixon, S., Fleming, P., James, I., Carré, M. (Eds.), The Science and Engineering of Sport Surfaces. Routledge, London, pp. 98-110.

Wilson, M. R., Causer, J., Vickers, J., (2015). Aiming for excellence: the quiet eye as a characteristic of expertise. In: Baker, J., Farrow, D. (Eds.), Handbook of Sport Expertise. Routledge / Taylor & Francis Group, London, UK, pp. 22-37.

Technical reports

Baumann, J., Comadurán Márquez, D., Nigg, S. and Nigg, B. M. (2015). Study 5: Measuring Effects of Whole Body Vibrations Training on Balance in an Inactive Elderly Population. Research Report for Total Image Fitness.

Bauman, J., LeVangie, M., Nigg, S.R. and Nigg, B.M. (2015). Determination of Training and Washout Periods for the SurroGait Rx. Research Report for Orpyx Medical Technologies.

Buckeridge, E., LeVangie, M., Nigg, S. and Nigg, B. M. (2015). Phase II: Biomechanics of Hockey Specific Movements. Research Report for CCM Hockey.

Campkin LC, Doyle-Baker PK. (2015, July). Exercise counselling and use of exercise professionals by physicians: Findings from a scoping review. Research Update, 26(4).

Cigoja, S., LeVangie, M., Nigg, S., Gagnon, L.-H., Robert, M. and Nigg, B. M. (2015). A Case-Control Pilot Study on the Biomechanical Effects of Wearing a Sacroiliac Belt in Women, Research Report for Pelvic Floor Clinic.

Doyle-Baker PK. (2015, August). Health and Social Care. Profile: Shepherding Physical Activity: Applying Practice to Purpose. Research Report for AG Adjacent Government. http://www.adjacentgovernment.co.uk/lg-edition-007/profile-shepherding-physical-activity-applying-practice-purpose/20287/

Doyle-Baker Tish. (2015, Winter). Menopause: A Reminder to Take Care of Yourself. Fitness Informer, 22-25.

Doyle-Baker, PK. (2015, July). Changing behaviour is as easy as standing up. Wellness Works. Research Report for City of Calgary. pp. 12-13.

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Doyle-Baker, PK. (2015, November). The Rhythm and Reason for Heart Rate Monitoring in Sport. Research Report for Adjacent Government. http://www.adjacentgovernment.co.uk/lg-edition-008/profile-rhythm-reason-heart-rate-monitoring-sport/22300/

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Fletcher, J. F., Nigg, S. and Nigg, B. M. (2015). Monitoring Athlete Readiness Using Heart Rate Variability, Research Report for adidas.

Madden, R., Wannop, J.W., Carpino, G., Benker, R & Stefanyshyn, D.J. (2015). Evaluation of Sparta footwear classification tool. Research Report for Taylormade adidas Golf.

Mercuur, C., Mohr, M. and Nigg, S. (2015). The Physiological Effects of Martix Rhythm Therapy Summary of Pilot Studies.

Nigg, S.R., Nigg, B.M., Sawatsky, A. and Madden, R. (2015). Material Testing of the Toe Cap and Toe Bumper from Vulcanized Canvas Shoes. Research Report for Skechers – ITC Investigation.

Nigg, S., Tscharner, V. von, Baumann, J., Fletcher, J. F. and Nigg, B. M. (2015). Heart Rate Research Highlights for Studies Conducted in 2014. Executive Summary. adidas.

Reimer RA, Tunnicliffe JM (2015). Effect of Combined Inulin and Protein Intake on Adiposity and Energy Intake in Overweight and Obese Adults. Final report to General Mills Inc., Minneapolis, MN.

Sakaguchi, M., Wannop, J.W., Madden, R., & Stefanyshyn, D.J. (2015). Upper Body Apparel Review & Recommendations. Technical Report for Ariat International.

Smith, A., Sasa, C., Buckeridge, E., LeVangie, M., Nigg, S. and Nigg, B. M. (2015). Subjective Assessment of the CCM Jetspeed Ice Hockey Skates. Research Report for CCM Hockey.

Thomas, K. A., Trudeau, M. B., Tscharner, V. von, Nigg, S. and Nigg, B. M. (2015). Sensor Solution for Quantifying the Technique of the Basketball Free Throw: NSERC Update Report, adidas.

Trudeau, M. B., Bauer, M., Nigg, S., Tscharner, V. von and Nigg, B. M. (2015). Sensor Solution for Quantifying the Technique of a Soccer Kick: NSERC Update Report. adidas.

Trudeau, M. B., Thomas, K. A., Joseph, N. and Nigg, B. M. (2015). Sensor Solution for Quantifying the Technique of the Standing Sprint Start: NSERC Update Report. adidas.

Vienneau, J., Buckeridge, E., Nigg, S. and Nigg, B. M. (2015). Biomechanics of Sports Bras and their Relation to Comfort. Research Report for lululemon.

Vienneau, J., LeVangie, M., Nigg, S. and Nigg, B. M. (2015). Evaluation of the Subjective Ratings and Pressure Distribution of Three Variations of the FitFlop Sandal. Research Report for FitFlop.

Technical reports

Vienneau, J., Tomaras, E. K., Krabbe, L., Nigg, S. and Nigg, B. M. (2015). High Octane: Effect of Soccer Cleat Stiffness on Physiology and Performance Variables. Research Report for adidas Futures.

Wannop, J.W., Madden, R., Sakaguchi, M., Benker, R. & Stefanyshyn, D.J. (2015). Development of a sub-two hour marathon shoe: cushioning. Research Report for adidas Futures Team.

Wannop, J.W., Madden, R., Sakaguchi, M., Bowers, S. & Stefanyshyn, D.J. (2015). Toe-Spring and Forefoot Bending Stiffness in Basketball Footwear. Technical Report for adidas Futures Team.

Wannop, J.W., Madden, R., Sakaguchi, M. & Stefanyshyn, D.J. (2015). Better Way to Walk Footwear Evaluation. Technical Report for Marks Work Wearhouse.

Wannop, J.W., Madden, R., Sakaguchi, M. & Stefanyshyn, D.J. (2015). Jump Performance: Quickness & Height. Technical Report for adidas Futures Team.

Wannop, J.W., Madden, R., & Stefanyshyn, D.J. (2015). Performance Assessment of Nexxfield X-Gen with Reverse Technology Turf. Technical Report for Nexxfield Inc.

Wannop, J.W., Madden, R. & Stefanyshyn, D.J. (2015). Properties of football footwear. Research Report for Calgary Stampeders Football Club.

Wannop, J.W., Sakaguchi, M., Madden, R., & Stefanyshyn, D.J. (2015). Functional Needs of a Professional Team & Tie-Down Roper. Technical Report for Ariat International.

Keynote & invited lectures

Culos-Reed, S.N., Cuthbert, C.A. Translating research on exercise interventions for caregivers: A review using the RE-AIM framework. Society of Behavioral Medicine, San Antonio USA. April 22, 2015.

Emery, C.A. Injury prevention in youth sport. Conference of the World Rugby Science Network. Bath, UK. September 14-16, 2015. (Keynote).

Emery, C.A. Injury Prevention in Youth Sport: Influencing Practice and Policy. Youth Sport Safety Conference. Nashville, USA. July 16-17, 2015. (Keynote).

Emery, C.A. Injury Prevention in Youth Ice Hockey. Youth Sport Safety Conference. Nashville, USA. July 16-17,2015. (Keynote).

Emery, C.A. Tom Pashby Lecture - Injury prevention in youth sport and recreation. Get on with it! Canadian Academy for Sport and Exercise Medicine. Ottawa, Canada. February 12, 2015. (Keynote).

Emery, C.A. Injury Prevention in Youth Sport. University of Wisconsen- Madison. Madison, Wisconsin. July 14-15, 2015.

Emery, C.A. Preventing concussion and injury in youth ice hockey. University of Wisconsen - Madison. Madison, Wisconsin. July 14-15, 2015.

Emery, C.A. Preventing joint injury and subsequent osteoarthritis: A population health perspective. Arthritis Alliance of Canada Annual Meeting and Research Symposium. Kananaskis, Canada. October 2015.

Herzog, W. A new paradigm for muscle contraction. Chilean Chiropractic Research Society. Santiago, Chile. October 30, 2015.

Herzog, W. Mechanisms of muscle contraction: past, present and future. Brazilian Society of Biomechanics. Florianopolis, Brazil. May 6, 2015. (Keynote).

Herzog, W. Muscle Mechanics across structural levels. 53rd Meeting of the Society for Natural Philosophy. Calgary, Canada. August 20, 2015. (Keynote).

Herzog, W. Muscle series elasticity: does it really matter? University of Santa Catarina. Florianopolis, Brazil. May 5, 2015.

Herzog, W. Past, Present and Future of Human Movement Science. Chilean Society of Human Movement Science. Santiago, Chile. October 28, 2015.

Herzog, W. Stability and history-dependent properties of skeletal muscle contraction. 9th European Solid Mechanics Conference. Madrid, Spain. July 9, 2015.

Herzog, W. The biomechanics of spinal manipulation. Chilean Chiropractic Research Society. Santiago, Chile. October 30, 2015. (Keynote).

Herzog, W. The biomechanics of spinal manipulation. Congress of the Norwegian Chiropractic Association. Trondheim, Norway. October 23, 2015. (Keynote).

Herzog, W. The forgotten role of muscles in joint loading and osteoarthritis disease. The Korean Institute for Industrial Technology. Seoul, Korea. April 21, 2015.

Herzog, W. The role of muscles in joint health and osteoarthritis. Brazilian Society of Biomechanics. Florianopolis, Brazil. May 7, 2015. (Keynote).

Herzog, W. The stresses and strains experienced by the vertebral artery during spinal manipulation of the neck. Congress of the Norwegian

Chiropractic Association. Trondheim, Norway. October 23, 2015. (Keynote).

Herzog, W. Vertebral artery stresses and strains during chiropractic neck manipulation. Chilean Chiropractic Research Society. Santiago, Chile. October 31. 2015. (Keynote).

MacIntosh, B.R. Skeletal muscle energetics; implications for running economy. Brazilian Society for Biomechanics. Florianopolis, Brazil. May 8, 2015. (Keynote).

Meeuwisse, W.H. Roles and Responsibilities of Sports Medicine Professionals. IOC Diploma Program in Sports Medicine Workshop. Calgary, Canada. April 9-11, 2015.

Meeuwisse, W.H. The role of active rehabilitation - taking a targeted approach to therapy. Advanced Team Physician Course. Doha, Qatar. May 5-7. 2015.

Meeuwisse, W.H. Hands on with the SCAT3 - workshop participation. Advanced Team Physician Course. Doha, Qatar. May 5-7. 2015.

Meeuwisse, W.H. Cervical, ocular and vestibular components of concussion: implications for diagnosis and rehabilitation. 5th Annual Sport Medicine Conference: Concussion Diagnosis and Rehabilitation, The Sports Surgery Clinic, Dublin, Ireland. June 13, 2015.

Millet, G.Y. Central and peripheral fatigues induced by exercise. Winter Meeting of the French Society of Clinical Neurophysiology. Paris, France. January 26-27, 2015.

Millet, G.Y. Etudier la fatigue extrême de l'athlète permet-il de comprendre celle du patient? 16th International Congress of Association of Researchers in Physical and Sports Activities (ACAPS). Nantes, France. October 27, 2015. (Keynote).

Millet, G.Y. Interests and limitations of techniques used to investigate neuromuscular function. Internal seminar Institut des sciences du sport de l'Université de Lausanne. Lausanne, Switzerland. November 11, 2015.

Millet, G.Y. Limits for prolonged exercise – the interplay between peripheral and central events. Symposium Limitations for performance in an exercise duration and intensity perspective, University of Copenhagen, Germany. October 29, 2015.

Millet, G.Y. Neuromuscular responses and adaptations to endurance running and cycling. 16th International Symposium Combined Endurance and Strength Training for Physical Fitness and Sports Performance: From Science to practice. Jyväskylä, Finland. September 23-25, 2015.

Millet, G.Y. Performance and fatigue in ultramarathons. 6th International Congress Mountain, Sport, & Health. Rovereto, Italy. November 12, 2015.

Millet, G.Y. Physiology and biomechanics of ultra-endurance sports. Endurance Research Conference. University of Kent, UK. September 2-4, 2015. (Keynote).

Millet, G.Y, Place de l'entraînement de force dans les activités d'endurance. 4èmes journées Gilles Cometti. Dijon, France. November 13-14, 2015. (Keynote).

Mohtadi, N.G. Non-surgical Treatment of Rotator Cuff Tear. Combined Specialty Day, Arthroscopy Association of North America and American Orthopaedic Society for Sports Medicine, Las Vegas, Nevada, USA. March 28, 2015.

Mohtadi. N.G. Outcome Measure Development: "What Makes a Good Measure?" American Academy of Orthopaedic Surgeons, Las Vegas, Nevada. USA. March 25, 2015.

Mohtadi, N.G. Surgical/Non-surgical Decision Making in the Competitive Athlete; a Case Based Approach and Discussion. Canadian Orthopaedic Association. Vancouver, Canada. June, 2015.

Mohtadi, N.G. Stem Cells Are Ready for Clinical Use 'Against the Motion'". International Society for Hip Arthroscopy. Cambridge, England. September, 2015.

Murias, J.M. Making a case for increasing physical activity and cardiorespiratory fitness. Healthy Aging" symposium, CSEP annual meeting 2015. Hamilton, Canada. October 14-17, 2015.

Murias, J.M. Uso de tecnologías no invasivas para la estimación del suministro de oxígeno a los tejidos durante el ejercicio [Using non-invasive technologies to estimate O2 provision to the tissues during exercise]. II International Symposium in Physical Activity and Sport Sciences. Buenos Aires, Argentina. April 20, 2015.

Murias, J.M. Oxygen transport system from the lungs to the muscles. Department of Neurological and Movement Sciences, University of Verona. Verona, Italy. May 4-15, 2015.

Nigg, B.M. Running injuries and running shoes. Runner's World Forum, ISPO. Munich, Germany, February 4-5, 2015. (Keynote).

Nigg, B.M. The concept of the preferred movement path.adidas. Innovation Leadership Meeting. San Diego, USA, May 16-17, 2015. (Keynote).

Nigg, B.M. Running Injuries - a paradigm shift. Sportwissenschaftlicher Hochschultag, DSV. Mainz, Germany. September 30 – October 2, 2015. (Keynote).

Nigg, B.M. Die kleinen Muskeln im Sprunggelenk – Bedeutung für Training und Verletzungen. University College Physiotherapy. Landquart, Switzerland. September 25, 2015. (Keynote).

Reimer, R.A. Metabolic benefits of prebiotic fibre . International Symposium on Diabetes and Nutrition. Toronto, Canada. June 12, 2015.

Reimer, R.A. Shaping the gut microbiome: the role of diet and chronic disease development. Gairdner Symposium. Calgary, Canada. November 10, 2015. (Keynote).

Ronsky, J.L. Andriachhi, T., Lloyd, D., Kuntze, G. Pre-Radiographic OA: Biomechanics – Beyond the KAM. Common Outcome Measurements in Early Pre-radiographic Osteoarthritis Consensus Meeting. Seattle, USA, May 3, 2015.

Schneider, K.J. Cervical and Vestibular Rehabilitation in Concussion. Annual Sports Concussion Symposium, American Neuropsychological Society. Atlanta, Georgia, USA, May 2, 2015.

Schneider, K.J. Safe 2 Play: A 5 Year Prospective Cohort Study. International Initiative for Traumatic Brain Injury Meeting (InTBIR). Brussels, Belgium. October 13, 2015.

Schneider, K.J. Cervico-Vestibular Rehabilitation in Sport Concussion. Future Directions in Sport Concussion Research Symposium. Melbourne, Australia. August 22, 2015.

Schneider, K.J. Vestibular Therapy Approaches to Post Concussion Syndrome. American Academy of Neurology Sports Concussion Conference. Denver, Colorado, USA. July 25, 2015.

Schneider, K.J. Concussion: Its more than meets the eye. 2015 National Athletic Trainers' Association Clinical Symposia. St. Louis, MD, USA. June 24, 2015.

Stefanyshyn, D.J. Footwear Biomechanics – Where do we go from here? 12th Biennial Footwear Biomechanics Symposium. Liverpool, UK. July 8, 2015. (Keynote).

Vickers, J.N. Quiet Eye Training. Special Symposium. Presence in Performance: Strategies for Achieving Excellence in Sport, Dance and Everyday Life. Pomona College, Department of Dance and Theatre, Claremont, California, USA. January 23-24, 2015.

Vickers, J.N. The quiet eye: Origins and future directions. Senior Lecturer Invited Presentation, North American Society For the Psychology of Sport and Physical Activity. Portland, Oregon, USA. June 5, 2015.

Wiley, J.P. Concussion Recognition . Las Vegas International 7th Sports Medicine Conference. Las Vegas, USA. February, 2015.

Wiley, J.P. Approach to Leg Pain. Louisiana State University Family Medicine Residency Program, Lake Charles Memorial Hospital. Lake Charles, Louisiana, USA. June, 2015.

Wiley, J.P. Hamstring Injury. Lake Charles Memorial Hospital Sport Medicine Conference. Lake Charles, Louisiana, USA. June 13, 2015.

Wiley, J.P. Approach to Leg Pain. Louisiana State University Family Medicine Residency Program, Ochsner Medical Centre. New Orleans, USA. June, 2015.

Wiley, J.P. Concussion Recognition and the New Management Paradigm. 16th Biennial Congress of South African Sports Medicine Association. Johannesburg, South Africa. October 20-22, 2015.

Official Research Related Functions

Nicole Culos-Reed

Board Member, Cancer Chic, Calgary (Fall 2011 to present)
Alberta Centre for Active Living, Research Advisory Committee (2011 - present)
Society of Behavioral Medicine (SBM) member
International Society of Psycho-Oncology (IPOS) member
Canadian Association of Psycho-Oncology (CAPO) member
CAPO Board member
CAPO Research committee member
Society of Behavioral Medicine (SBM) – Conference Abstract Reviewer
CAPO – Conference Abstract Reviewer
Annie Charbonneau Cancer Institute (Formerly SACRI) – full member
ACHRI – full member
Round-Up Cancer Fundraiser, Organizing Committee

P. Tish Doyle-Baker

Editorial Board, International Journal of Kinesiology and Sport Science
Grant review Committee, SSHRC Insight Grants

Grant review Committee, Adverse Event Committee, CIHR Saskatchewan
Member: Alberta Public Health Association
Board of Directors, Grey Family Eua Claire YMCA Calgary, Alberta
Chair of the Board of Directors of West Island College
Vice President: Sport Science Association of Alberta
Co-Chair: Alberta Cancer Prevention Legacy Fund -Physical Activity group
Campus Alberta Quality Council: Chair of Review for Can. University College 4 year. degree Oral Presentations, Poster/Paper Competition Reviewer/Judge
The UA undergraduate Awards (International), Dublin Ireland.Cardiovascular Days- Libin Institute, U of Calgary. Alberta
Consultant to the Organizing Committee Member - Calgary Flames Health Training Camp. Calgary, Canada. January, 2015

Brent Edwards
Editorial Board member: Scientific Reports

Carolyn Emery
Royal Society of Canada (College of New Scholars)
Canadian Academy for Sport and Exercise Medicine – Chair Scientific Review Injury Prevention in Sport
Parachute External Scientific Advisory Board
Alberta Bone and Joint Health Strategic Clinical Network
Osteoarthritis Research Society International (OARSI) – Clinical Trial GuidelinesTaskforce (Team Lead - Injury Prevention)
Associate Editor: British Journal of Sport Medicine
Canadian Institute of Health Research (CIHR) Project Scheme
Alberta Child Family Community Research
Centers for Disease Control and Prevention (CDC) - Research to Evaluate the CDC Heads Up Concussion Initiative in Youth Sports.
Alberta Children's Hospital Scientific Advisory Board
Hockey Calgary (advisory)
Hockey Canada (advisory)
Alberta Innovates Health Solutions – Alberta Health Services Strategic/ Operational Clinical Network – Making Connections (Bone & Joint Health SCN Delegate)
Arthritis Alliance Canada Conference and Research Symposium, OA Session Planning Committee

Savatore Federico
Secretary, Canadian Society for Biomechanics
Scientific Committee Member and Vice Chair, Permanent International Session of Research Seminars (PISRS), University of Messina, Italy

Official research related functions

Wayne Giles

Editorial Board, American Journal of Physiology (1996 – present)
Editorial Board, Circulation Research (1994 – present)
Editorial Board, Journal of Molecular and Cellular Cardiology (2007 – present)
Editorial Board, Experimental Physiology (2008 – present)
Editorial Board, Journal of Physiology (2013 – 2015)
Section Head, Circulation/Cardiovascular Physiology, Current Opinion Reviews (2004 – Present)
Editor, The Faculty of 1000 (2006 – present)
Senior Member of Biophysical Society
Member, American Heart Association Council on Basic Science
Foreign Member of the Physiological Society
Member, The American Physiological Society
Scientific Advisory Board Member, Nora Eccles Harrison Foundation for Cardiovascular Research
Scientific Advisory Board Member, Snyder Institute for Chronic Diseases
Member, Brenda Stratford Foundation Board

Walter Herzog

Reviewer, Natural Sciences and Engineering Research Council
Member, Orthopaedic Research Society, American Academy of Orthopaedic Surgeons
Member, American Association for the Advancement of Science
International Board Member, Sportorthopädie Sporttraumatologie
Co-Editor in Chief Journal of Sport and Health Science
Editorial Board, Sports Orthopaedics and Sports Traumatology
Editorial Board, Molecular and Cellular Biomechanics
Associate Editor, Exercise and Sports Science Reviews
Associate Editor, IEEE Transactions in Neural Systems and Rehabilitation Engineering
Editorial Board, Journal of Biomechanics
Editorial Board, Journal of Electromyography and Kinesiology
Editorial Board, Journal of Manipulative and Physiological Therapeutics
Editorial Board, Journal of the Canadian Chiropractic Association
Editorial Board, Sportverletzung Sportschaden
Chair, Program Advisory Committee for NSERC CREATE SUPPORT
Chairperson, CIHR Movement & Exercise Grants Committee
Member, ASB Fellows Nomination Committee
Member, ISB-EDC Congress Travel Grant Committee
NAU Keck Foundation, Program Committee Member
Member, Biophysical Society
Member, Canadian Society for Biomechanics

Member, American Society of Biomechanics
Editorial Board, The Current Issues of Sport Science (CISS)
Editorial Board, Journal of Functional Morphology and Kinesiology
Editorial Board, Biomechanics and Modeling in Mechanobiology
Review Board Member, National Institutes of Health
Advisory Board, German Journal of Sport Sciences
Reviewer, Best Paper Prize for IJMS
Editorial Board, International Journal of Mechanical and Materials Engineering
Advisory Board, Sportwissenschaft Journal
Guest Editor, PLoS Computational Biology
Editorial Board, Muscles, Ligaments and Tendons Journal
Virtual Moderator/Chair, CIHR Foundation
Reviewer, Israel Science Foundation

Brian MacIntosh

Chair, National Advisory Council for Exercise is Medicine Canada (May, 2012 to present)
Judge: Bloomberg Prize for the Promotion of Active Health July 2015 to present

Guillaume Millet

Vice-Chair Research, Canadian Society for Exercise Physiology
Reviewer for Unity through Knowledge Fund, Croatia

Benno Nigg

Board Member, Center for Sport Science and Sport Medicine Berlin (CSSB)
Board member, Friedrich-Alexander University, Erlangen, Germany
Member, IOC Medical & Scientific Commission
Member, International Academy of Biology and Engineering Medicine
Member, Swiss Academy of Science

Raylene Reimer

Chairperson, CIHR Nutrition, Food and Health Grants Committee
Natural Sciences and Engineering Research Council Grant Reviewer
Member, The Obesity Society
Member, Canadian Nutrition Society
Member, American Society for Nutrition
Associate Editor, Applied Physiology, Nutrition and Metabolism
Strategic Clinical Network Research and Innovation Advisory Committee Member (Diabetes, Obesity and Nutrition)
Executive Member – Canadian Obesity Network Calgary Chapter
Judge – Canadian Nutrition Society PhD Dissertation Awards
Abstract Reviewer – Canadian Obesity Summit

Workshop Leader – Obesity Week Careers in Academia (Los Angeles, CA, November 2015)

Janet Ronsky

Review of Grant Applications: NSERC (Discovery, CHRP), CIHR
Member, NSERC EG1512, Executive Group Chair (2013 – 2016)
Member, NSERC COGS Executive (2013-2016)
Manning Innovation Awards, Selection Committee, Member
Technology, member, Editorial Board

Tannin Schmidt

Chief Scientific Officer, Lubris Biopharma (www.lubris.net)
Reviewer, CIHR Collaborative Health Research Projects
Reviewer, CIHR PhD Scholarships

Kathryn Schneider

5th International Consensus Conference on Concussion in Sport (Berlin, October 2016), Scientific Committee Member
5th International Consensus Conference on Concussion in Sport (Berlin, October 2016), Expert Panel Member
Calgary Minor Soccer Association, Sport Concussion Committee, June 2015-present.
International Concussion and Head Injury Research Foundation (ICHIRF) Scientific Committee Member, July 2015-present
Canadian Concussion Collaborative, Representative for the Canadian Physiotherapy Association, June 2015-present
Calgary Minor Soccer Association – Concussion Committee

Jane Shearer

Associate Editor – Applied Physiology, Nutrition and Metabolism

Darren Stefanyshyn

Member, Editorial Board, Sports Technology
Member, Editorial Board, European Journal of Sport Science
Associate Editor, Footwear Science

Preston Wiley

Reviewer, World Rugby Research Program
Member, World Rugby Medical, Science and Research Committee
Editorial Board Member: Clinical Journal of Sport Medicine
Editorial Board Member: The Physician and Sportsmedicine
Co-chair, Alberta Bone and Joint Strategic Clinical Network Knee Trauma Working Group: Acute Subcommittee


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