

## Glen Sather Sports Medicine Clinic Research Strategy 2015-2020

### **Vision:**

To be a centre of excellence in sport and exercise based musculoskeletal (MSK) and sports medicine care through innovative, clinically based, interdisciplinary, MSK and sports medicine outcomes-based research.

### **Mission:**

To directly impact the quality of lives of Albertans by informing best practice and policy in clinical and public health contexts through the building of interdisciplinary research capacity in clinically based MSK and sports medicine outcomes-based research, including in the priority areas of knowledge translation and clinician scientist and trainee development.

### **Background:**

Through the Glen Sather Sports Medicine Clinic (GSSMC) interdisciplinary environment, there is a significant opportunity to build research capacity in clinically based MSK and sports medicine care in an interdisciplinary environment that will foster growth of the strongest provincial research training program in the field. A key priority of such a clinically based research program is knowledge translation, including the ongoing development of key community partnerships, which will foster best practice and policy in clinical and public health contexts.

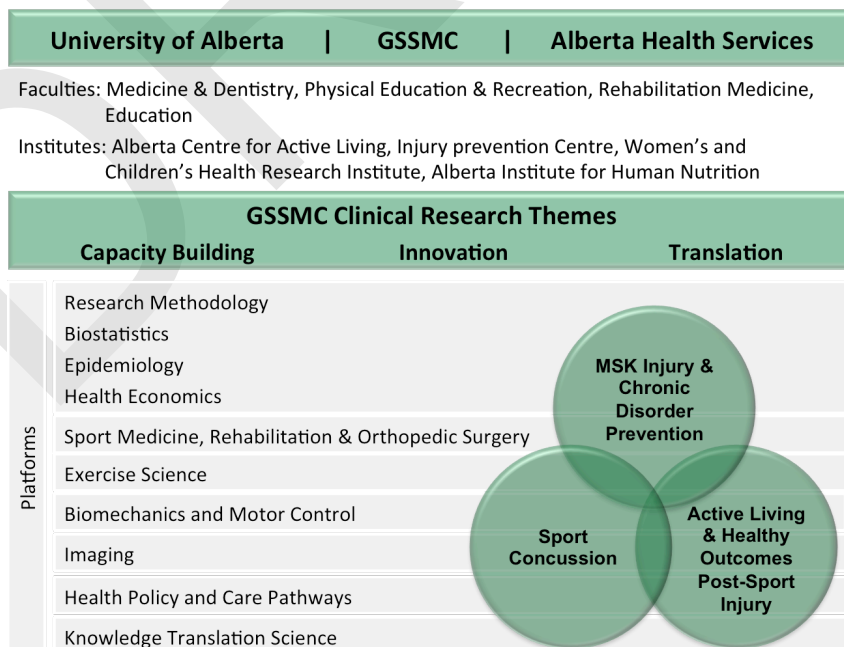
The GSSMC (inclusive of the Prevention and Return to Activity Centre; PRAC) and University of Alberta are ideally positioned to facilitate unique interdisciplinary opportunities in MSK and sports medicine care across multiple faculties, institutes/centres and strategic research themes related to health and wellness. Establishing research leadership in key strategic priority areas of strength and emerging strength in MSK and sports medicine care is critical to facilitate growth of research capacity in these fields at the GSSMC and University of Alberta. Strong and ongoing collaborations between multiple faculties (Medicine and Dentistry, Physical Education and Recreation, Rehabilitation Medicine, Education, Engineering, Agricultural, Life and Environmental Science) and institutes/centres at the University of Alberta (Alberta Centre for Active Living, Injury Prevention Centre, Women's and Children's Health Research Institute, Alberta Institute for Human Nutrition, High Performance Training and Research Centre), as well as our provincial academic (University of Calgary, Alberta Children's Hospital Research Institute) and community partners (Saville Centre, Alberta Health Services Bone and Joint Health Strategic Clinical Network), supports this opportunity to build research capacity in clinically based MSK and sports medicine care. Building on significant research strengths and a provincial track record in key priority areas the GSSMC can position itself to become a national leader in sport, exercise and MSK care.

**Goals:**

To become the leader in clinically based, interdisciplinary, MSK and sports medicine outcomes-based research in Western Canada and to compete nationally in areas of strength in sport and exercise based MSK and sports medicine care through achieving the following goals:

1. To inform practice and policy in MSK and sports medicine care through achieving research excellence in clinically relevant, innovative, translational and patient/family-centered research programs that integrate research and clinical/public health contexts to inform practice and policy in these fields.
2. Facilitate interdisciplinary collaboration in key priority areas of strength, and emerging strength, across clinic disciplines, faculties as well as research, academic and healthcare institutes (provincially / nationally) with leadership from the GSSMC and the faculties of Medicine and Dentistry, Physical Education and Recreation and Rehabilitation Medicine (University of Alberta).
3. Create a strong clinically based research environment that fosters the development of a leading research training (clinician scientist and academic) program in sport and exercise based MSK and sports medicine care that will contribute to a strong legacy of researchers nationally in these fields.
4. Build on opportunities for integrated knowledge translation (iKT), including strong community partnerships to maximize the impact of evidence-informed practice and policy in MSK and sport medicine care.

**Developing priority areas of strength and leadership in sport and exercise based MSK and sports medicine care at the University of Alberta:**



## 5-year Deliverables:

1. To deliver high impact, relevant, innovative and translational research in sport and exercise based MSK and sports medicine care the following deliverables will be targeted in the first 5-years:
  - i. Targeted academic, clinical and trainee recruitment of 'rising stars' with sport and exercise based MSK and sports medicine care research priorities currently within the Faculties of Medicine and Dentistry, Physical Education and Recreation, Rehabilitation Medicine and others at the University of Alberta to lead key research priorities and emerging priorities.
  - ii. Targeted identification of engagement and recruitment of leadership in key platforms identified to support priority areas including; methodological expertise (biostatistics, epidemiology, health economics), clinical expertise (sports medicine, rehabilitation, orthopaedic surgery, neuropsychology), exercise science, biomechanics and motor control, imaging, health policy and knowledge translation science.
  - iii. Increased external grant funding (e.g. tri-council, Alberta Innovates Health Solutions etc.) in sport and exercise based MSK and sports medicine care in identified areas of priority and emerging priority (as identified through ongoing consultations with key researchers, clinical and community stakeholders provincially and nationally).
  - iv. Increased productivity in sport and exercise based MSK and sports medicine care research through high impact peer-review publications and invited talks reaching community stakeholders as well as national and international audiences
  - v. Increase clinical and community partnerships including engaged knowledge brokers who will facilitate bridging the gap between research and clinical and public health communities including alignment with Alberta Health Services Strategic Clinical Networks provincially (Bone and Joint Health | Diabetes, Obesity and Nutrition), Alberta Bone and Joint Health Institute and patient engaged research.
  - vi. Targeted engagement in 7 provincial Strategic Patient Orientated Research (SPOR) platforms (patient engagement, data platform, methods support and development, pragmatic clinical trials, knowledge translation, career development, research services).
  - vii. Identification of knowledge translation examples where research has had a public health impact through evidence informed practice and policy development in areas of identified priority in MSK and sports medicine care.
2. To ensure a provincial and interdisciplinary scope of collaboration in clinically based, MSK and sports medicine care outcomes-based research the following deliverables will be targeted in the first 5-years:
  - i. Establish administrative and research coordination support to facilitate interdisciplinary, collaborative cross faculty and institute (e.g. University of Calgary Sport Medicine Clinic | Banff Sports Medicine Clinic) research and integrated knowledge translation opportunities in MSK and sports medicine care.
  - ii. Identify and engage key researchers, clinical and community stakeholders provincially with engagement in interdisciplinary clinical research or evidence-informed practice and policy related to sport and exercise based MSK and sports medicine care.

- iii. Host annual MSK and sports medicine care research meetings to share research findings and promote opportunities for clinical research collaboration including team grant and integrated knowledge translation grant opportunities.
  - iv. Establish ongoing opportunities for research collaborations, knowledge translation and education through monthly provincial videoconference seminars aligned with sport and exercise based MSK and sports medicine care research.
  - v. Pursue joint appointments provincially for academic faculty and post-doctoral scholars and provincial scope clinical research training opportunities in sport and exercise based MSK and sports medicine care.
3. To facilitate a strong trainee environment the following 5-year deliverables will be targeted:
- i. Identify and communicate key funding opportunities for graduate students, clinician and post-doctoral fellows in areas of research aligned with sport and exercise based MSK and sports medicine care.
  - ii. Develop a clinical trainee environment that will facilitate programme opportunities for interdisciplinary mentorship and collaboration relevant to sport and exercise based MSK and sports medicine care.
  - iii. Create opportunities for trainee and clinician research related activities (e.g. seminars, journal club, mentorship) related to sport and exercise based MSK and sports medicine care that span clinic disciplines, faculties, institutes and universities provincially.
  - iv. Establish a strong and interactive clinical trainee environment in the area of sport and exercise based MSK and sports medicine care through facilitating access to videoconferencing between clinics, faculties and institutions.
  - v. Targeted engagement in SPOR career development platform to maximize opportunities for trainees in sport and exercise based MSK and sports medicine care research.
4. To facilitate integrated knowledge translation (iKT) including strong community partnerships the following 5-year deliverables will be targeted:
- i. Establish leadership in knowledge translation science through recruitment and engagement of knowledge brokers across identified areas of clinical research strength and priority.
  - ii. Identify and engage clinical and community stakeholders provincially to facilitate integrated KT activities to inform evidence-informed practice and policy in sport and exercise based MSK and sports medicine care research.
  - iii. Targeted engagement in SPOR knowledge translation platform including patient engagement to identify research priorities and maximize the impact of sport and exercise based MSK and sports medicine care research
  - iv. Facilitate opportunities for knowledge translation through public and clinical engagement opportunities (e.g. public forums, websites, social media, clinical training, media).

## Priority Areas of Strength and Leadership in Sport and Exercise Based MSK and Sports Medicine Care Research at the Glen Sather Sport Medicine Clinic

The following three priority areas represent areas of strength and leadership in MSK and sports medicine care at the GSSMC and University of Alberta. Further, they are consistent with provincial (Alberta Health Research and Innovation Strategy; AHRIS) and national (Canadian Institutes of Health Research) areas of strategic priority (e.g. Wellness at every age: *child health, chronic disease, health promotion, injury prevention, acute care and rehabilitation, identifying origin of disease* and Innovative Health Service Delivery: *effectiveness and efficiency, innovative delivery models, chronic disease management support systems, personalized medicine*). Over the next 5 years (2015-2020) the GSSMC will prioritize clinical research in these three areas led by academic and clinical leads who have established track records in each of the three priority areas.

### 1. Musculoskeletal Injury and Chronic Disorder Prevention (e.g., Osteoarthritis)

Leadership: Academic lead (Dr. Jackie Whittaker), Clinical lead (TBD)

**Knee osteoarthritis** (OA) is one of the three most common chronic MSK disorders identified in the 2010 Global Burden of Disease Study and accounts for 21% of all years lived with disability. Knee OA is linked with increased rates of comorbidity (e.g. obesity and heart disease) ranks 5<sup>th</sup> amongst all forms of disability world-wide, affecting approximately 4 million Canadians (2010). In 2013-2014 knee OA ranked 5<sup>th</sup> amongst reasons for inpatient hospitalizations, while knee arthroplasty, the end stage treatment for this condition, was the 2<sup>nd</sup> most common inpatient surgery performed in Canada.

Although the cause of knee OA is multifactorial the two most established etiological factors are previous joint injury and obesity. Sport and recreation is the leading cause of injury in adolescents with 1 in 3 Alberta youth between the ages of 11 and 18 seeking medical attention for a sport and recreation related injury every year (of which knee injuries are the most common). In addition to a focus on primary prevention strategies (e.g. injury prevention program implementation), which can reduce the burden of knee soft tissue injury in sport and recreation by 40-80%, a focus on the development and evaluation of surgical selection and rehabilitation strategies to promote return to active living following injury and prevent long term consequences of injury is critical. Interventions targeting promotion of physical activity participation, reducing adiposity, improving functional outcomes, reducing post-traumatic osteoarthritis (PTOA) in children, adolescent and adult populations following soft tissue knee injury require development and evaluation.

The Alberta Health Services Bone and Joint Health Strategic Clinical Network has identified prevention of soft tissue knee injury and OA as a key translational priority provincially. Significant research strength and capacity in soft tissue knee injury has been built in alignment with, and support from, the Alberta Team OA (AIHS CRIO Team), the McCaig Institute for Bone and Joint Health, CIHR Open Operating Grants (Alberta Youth Prevention of Early OA or PrE-OA Study), the Alberta Children's Hospital Foundation (University of Calgary) and IOC Research Centre in Injury Prevention (University of Calgary) and Department of Athletics (University of Alberta.) This is an area of research strength that aligns with the GSSMC clinical research initiative at the University of Alberta. This includes engagement of multiple faculties and institutes at the University of Alberta and numerous principal investigators (J Whittaker, D Gross, L Woodhouse, J Jaremko, L Chui, C Prado, V Baracos, C Hui), clinicians (D Otto, C Hui, I Halworth, L Truong, C Le) and trainees across multiple disciplines aligned with research in soft tissue knee care. Expertise across multiple faculties and institutions includes; epidemiology, clinical science (athletic therapy, physical therapy, sport medicine, orthopaedics), imaging science, nutrition, biomechanics, motor control, engineering and implementation science.



## 2. Sport Concussion

Leadership: Academic lead (TBD), Clinical lead (TBD)

The increasing attention given to sports concussions has led to improved identification, assessment and management. Four international consensus meetings have been held since 2001, and their published guidelines have been widely supported and adopted by medical specialties, healthcare organisations and sports organisations. Baseline cognitive testing has become standard practice for a majority of high school, collegiate, semi-professional and professional sports organisations in high collision sports. These advances have brought important changes to the management of sports concussions, but several challenges remain (e.g., education of athletes, parents, coaches, athletic allied healthcare professionals, identifying the best injury outcomes for sport concussion, prognostic factors for prolonged recovery after concussion and biomechanical forces of concussion).

Many of these challenges align with the GSSMC clinical research initiative at the University of Alberta. This includes engagement of multiple faculties and institutes at the University of Alberta and numerous principal investigators (M Mrazik, K Fouad), clinicians (C Lebrun, T Defritas, M Wesner, C Issac) and trainees across multiple disciplines aligned with research in soft tissue knee care. Expertise across multiple faculties and institutions includes; clinical science (neuro-psychology, physical therapy, sport medicine), imaging science, biomechanics, engineering and implementation science.

## 3. Active Living and Health Outcomes Post-Sport Injury (return to physical activity, sport and work).

Leadership: Interim Academic lead (Jackie Whittaker until one can be identified), Clinical lead (TBD)

Only 33% of individuals return to pre-injury level of sport within one year of an Anterior Cruciate Ligament (ACL) reconstruction. Further, joint injury, reduced physical activity and non-optimal nutrition have been linked to knee PTOA and obesity. Accordingly, **Return to Physical Activity (RTPA) and Sport (RTS) after Soft Tissue Knee Injury** experienced in youth (< 18 years of age) may contribute to the development of these chronic comorbidities (knee OA and obesity) later in life. Given the global burden of OA and obesity, as well as functional deficits and negative psychological responses which may interfere with RTS and recommended levels of physical activity in the post-ACL reconstruction period, it is important to understand the impact of failure to RTPA and RTS (as well as the reasons for this) on PTOA and adiposity to inform the development OA and obesity prevention strategies that can be used to shift in focus from disease management to disease prevention which is vital for population health and healthcare sustainability.

This is an area of research strength that aligns with the GSSMC clinical research initiative at the University of Alberta. This includes engagement of multiple faculties and institutes at the University of Alberta and numerous principal investigators (JL Whittaker, D Gross, L Woodhouse, J Jaremko, L Chui, C Prado, V Baracos, C Hui), clinicians (D Otto, C Hui, I Halworth, L Truong, C Le) and trainees across multiple disciplines aligned with research in soft tissue knee care. Expertise across multiple faculties and institutions includes; epidemiology, clinical science (athletic therapy, physical therapy, sport medicine, orthopaedics), imaging science, nutrition, biomechanics, motor control, engineering and implementation science.

## Platforms

1. **Research Methodology** - Proposed Leadership:
  - Epidemiology (Jackie Whittaker)
  - RCTs (Luciana Macedo)
  - Biostatistics (TBD)
  - Health Economics (TBD)
  - Qualitative Methods (TBD)
2. **Sports Medicine, Rehabilitation, Orthopaedic Surgery** - Proposed Leadership:
  - Sports Medicine (TBD)
  - Rehabilitation - Ian Hallworth PT, MSc
  - Orthopaedic Surgery – Dr. Catherin Hui
3. **Exercise Science** - Proposed Leadership:
  - Exercise Science (TBD - Faculty of Physical Education and Recreation)
4. **Biomechanics and Motor Control** - Proposed Leadership:
  - Dr. Hossien Rouhani (Biomechanics Mechanical Engineering)
  - Motor Control (TBD)
5. **Imaging** - Proposed Leadership:
  - Dr. Jacob Jaremko MD (Radiology)
6. **Health Policy & Care Pathways** - Proposed Leadership:
  - Dr. Linda Woodhouse (Rehabilitation Medicine)
7. **Knowledge Translation** - Proposed Leadership:
  - Knowledge Translation Scientist (TBD)