



# ANNUAL REPORT

## 2018 - 2019



**Banff Sport Medicine**  
**FOUNDATION**

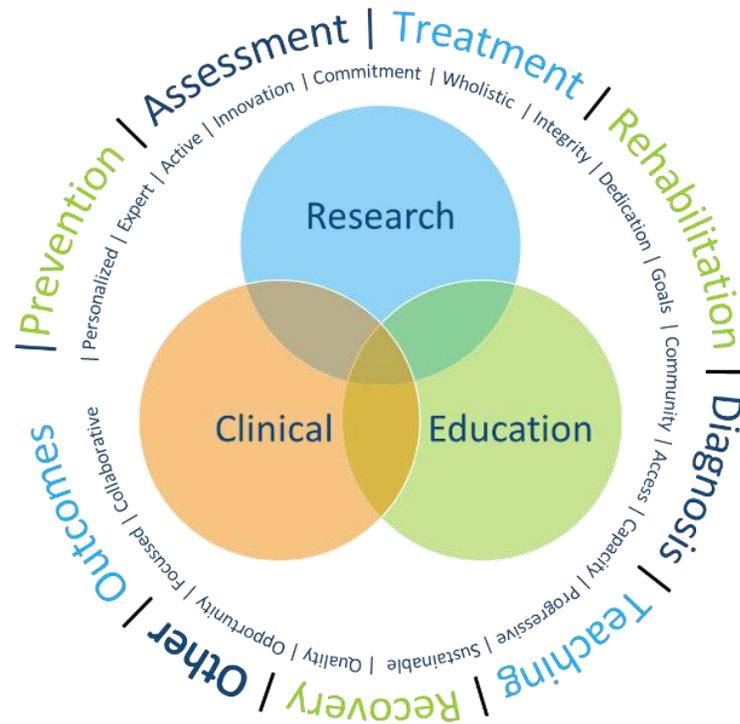
Better Stronger Motion

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## OUR MISSION

To advance research, prevention, treatment and rehabilitation of musculoskeletal and sport injuries among people of all ages and abilities. This is achieved through the synergistic interaction of three core components: Research, Education and Clinical care.



## OUR VISION

World-class sport medicine and arthroscopy clinical care, research and education.

## MESSAGE FROM THE CHAIR

Dr. S. Mark Heard, MD, PhD, FRCSC, Dip Sport Med.  
Orthopaedic Surgeon, Clinical Associate Professor



This inaugural year for the Banff Sport Medicine Foundation (BSMF) has been a challenging one of implementing the tenets of the Foundation and enacting programs under the Foundation umbrella. Great care has been taken to separate the clinical practice of Banff Sport Medicine (BSM) from the programs, research and education mandates under the charitable purposes of BSMF.

We established several key partnerships that have assisted us to move forward as a Foundation, as well as solidifying existing ones. The guidance and assistance from Rice & Company, has been vital. I want to thank Tyler and the Rice & Co crew for their expertise and assistance. Furthermore, the insight, advice and experience of board members, Kevin Nugent and John Clarkson, has been invaluable. The Foundation is truly indebted to their dedication and hard work as volunteers of this organization.

We continue to work diligently to advance research, education and community outreach in sport medicine and musculoskeletal (MSK) health. BSMF was honoured to make a significant contribution to the multi-centre trial “Stability I”; a project that won the prestigious O’Donaghue award at the American Academy of Sports Medicine (AAOSM) meeting in Boston, USA in March 2019, and the Jan Guilquist Award for Best Scientific Paper at the ISAKOS meeting in Cancun, Mexico in May 2019. The leadership and hard work of Sarah Kerslake, BSMF Research Director, cannot be understated. Many thanks to the rest of the BSMF team of Jeremy Tynedal and Dr. Julie Anne Frayn. This group is the backbone of the Foundation and do far more than just pure research; managing everything from the website, finances, educational programs and rehabilitation protocols to name only a few of their expanded duties. A special credit to Dr. Julie Anne Frayn who has also been working hard to promote and expand our educational programs.

Dr. Laurie Hiemstra continues to lead the research program from the physicians’ side. She is internationally known for her work with the patellofemoral joint, as well as Gender Diversity in Orthopaedics, and Women In Leadership. Another highlight of this past year was BSMF hosting the “International Patellofemoral Study Group” in Banff. Surgeons came from all over the world to attend this conference. Again, special thanks to Dr. Hiemstra and Sarah Kerslake for the massive amount of work put into this conference.

The clinical contribution and work on manuscripts from all of our surgeons and past Fellows exemplifies the collegial and team atmosphere of our group that makes us one of the most productive sport medicine research centres in Canada. We are proud to have 14 publications to our credit as a team this year. Although the transition to a foundational model has been challenging, we see many opportunities to grow and mature with world class research and program delivery that will benefit not only the local community but the global Arthroscopy and Sport Medicine community as well.

# In Memorium



Clara Mentzelopoulos

9 March 1990 - 27 December 2018



In Memory of Clara Mentzelopoulos, one of our research assistants, who tragically passed away. This loss shook the team to its core. Clara was a young woman of remarkable character. She was vibrant, caring and a great team-player, and she is sadly missed by all of us.

*“Twenty years from now you will be more disappointed by the things you didn’t do than by the ones you did. So throw off the bowlines, sail away from the safe harbor. Catch the trade winds in your sails. Explore. Dream. Discover.”*

~ Mark Twain

# MESSAGE FROM THE DIRECTOR OF RESEARCH

Dr. Laurie A. Hiemstra, MD, PhD, FRCSC  
Orthopaedic Surgeon, Assistant Professor



The year 2019 represents the first full year of operating as the BSMF, transitioning from the Banff Sport Medicine Research Group. Despite the substantial amount of work this has entailed, we have continued to advance our research program adding 14 publications to our achievements. In addition, numerous abstracts have been presented at orthopaedic and sport medicine meetings around the world. Several new randomized clinical trials are in the final preparation stages and will commence recruitment during the next year.

BSMF hosted Orthopaedic Fellow, Dr Jessica Page, from July 2018 to June 2019. She had a successful year clinically and was recognized for her presentation of a paper on "Quality of life, Function of patients with Meniscectomy or Meniscal Repair" at the Canadian Orthopedic Association Annual Meeting, as well as at the 2019 U of C Orthopaedic Fellows Symposium. She is also working on a manuscript on this topic. Upon completion of her year with us, Dr Page has taken up a position in Lethbridge, Alberta and we wish her well in her future endeavours.

The rapid implementation and translation of our research findings to clinical practice is a core philosophy. We continue to share our knowledge with fellows and by hosting several residents from across Canada. The surgeons at Banff Sport Medicine have continued to teach surgical techniques at meetings and labs around the world. In September, we were proud to host the International Patellofemoral Study Group Meeting in Banff with 60 international experts gathering to discuss the intricacies of the patellofemoral joint.

The BSMF is funded through generous donors, and specific research projects are funded through grants and industry partners. Our goal is to conduct well-designed clinical trials that answer specific questions about the treatments that we provide. We strive to find the evidence that will guide both operative and non-operative management. Our goal is to improve outcomes for patients with knee and shoulder injuries so that they can maintain an active lifestyle.

## MESSAGE FROM THE DIRECTOR OF EDUCATION



Michaela Kopka, MD, FRCSC, DipSportMed  
Orthopaedic Surgeon

The Education pillar of BSMF consists of two key components: Community Outreach and Medical Education. Under each umbrella, BSMF strives to provide the most up-to-date and relevant education experiences. The inaugural year of 2019 saw great growth in each of these areas.

With respect to Medical Education, BSMF took over the Orthopaedic Sport Medicine Fellowship previously run for over 10 years by Banff Sport Medicine. This year-long program provides advanced training to a certified orthopaedic surgeon in complex reconstructive surgical techniques to treat injuries about the knee and shoulder. Additionally, BSMF hosted a number of visiting physiotherapists, medical students, and residents with the aim of broadening their exposure to cutting-edge sport medicine practices. Further medical professional education activities included our renowned faculty presenting at international sport medicine conferences and leading workshops on a variety of sport medicine topics.

BSMF Community Outreach initiatives target the active residents in our region and aim to provide insight on important issues within sport medicine. In 2019, BSMF and local physiotherapist Fabienne Moser presented an evidence-based seminar to the Canmore Gymnastics Club focusing on the recognition and prevention of overuse injuries in gymnastics. BSMF also participated in the Canmore Thrive Festival by conducting instructional sessions on the prevention and rehabilitation of knee injuries.

As BSMF continues to grow, so too will our Education initiatives. Our plans for 2020 include expanding our injury prevention seminars to include teachers and coaches of local schools and club sport teams. We hope to increase enrollment of our elective students and residents, and further expand our leadership roles at medical conferences and events. There are many great ventures ahead for BSMF as we strive to broaden the knowledge base and ultimately improve care of individuals with sport related injuries.

## OUR STORY ~ WHY WE EXIST

Founded in 1992 by Orthopaedic Surgeon, Dr Mark Heard, the BSM clinic has been dedicated to treating and preventing musculoskeletal (MSK) injuries to the bones and joints.

The surgeons at the Banff Sport Medicine Clinic assessed over 1500 acute knee injuries in 2018 and completed over 600 knee ligament reconstructions.

Due to decades of experience, advancements in treatment techniques, and years of accumulated research, the BSM Clinic is known as one of the best places to seek MSK injury treatment in Canada.

Now with four Orthopaedic Surgeons, and three Sport Medicine Physicians our team has completed many thousands of MSK treatments. Through this experience, we have compiled a level of research and critical understanding of injury causes, prevention, risks, diagnosis, treatment and rehabilitation that few organizations can match worldwide. Our team's innovative and dedicated approach to collecting data, following our patients, and integrating this information back into rehabilitation and post-operative care, has directly improved

patient outcomes and health care delivery.

In our region, the population is very active, pursuing outdoor activities such as hiking, mountain biking, rock climbing and trail running. The three local ski areas regularly host 8,000 daily skier visits, and there are another seven ski resorts within our region, as well as the world's largest heli-skiing and cat-skiing industry, and numerous back-country lodges.

Unfortunately, these activities can sometimes lead to injury, especially to the knees and shoulders. Mobility is critical for all of us -- as sports enthusiasts, as people living active lives, and as we age. Losing the ability to take part in these activities that bring so much enjoyment can be life changing. Injuries cause pain, decreased mobility, and result in a reduced quality of life.



Injured joints such as knees and shoulders often don't regain their original function without appropriate treatment. After an initial injury, the joint is more prone to a second injury, which further reduces the likelihood of returning to sport and recreation activities. For this reason, it is important that patients have access to correct early diagnosis of injuries, and the highest standard of treatment and care, to give them the best chance of returning to the activities that they love.



Recovery from an MSK injury often takes many months or even years, including numerous clinic visits and hours of rehabilitation. This long recovery negatively impacts a patient's quality of life, and when not managed correctly from the beginning, results in additional costs to our health care system as well as worse outcomes for the patient.

Based on the knowledge gained from providing over 25-years of assessment, treatment and post-operative care, the committed surgeons at BSM saw a need to develop a new method for delivering health care while simultaneously continuing to improve patient outcomes, especially as our population ages.

In 2018, the BSM surgeons, along with other like-minded individuals, established BSMF to help people with bone and joint injuries get back into motion and doing what they love through the integration of three core components: **education**, **research** and **clinical care**.

Along with our Mission and Vision, our **goal** is to promote core health care in sport medicine and orthopaedics by:

- Conducting research into the prevention, treatment and rehabilitation of MSK and sport injuries
- Providing training to medical students, orthopaedic surgery residents and surgical Fellows
- Advancing education by providing educational programming to the general public on the prevention and early treatment of MSK injuries

MSK disorders are the second leading cause of disability worldwide, affecting up to 1/3 of the world's population<sup>1</sup>

<sup>1</sup>Global Burden of Disease Study (2016)



*Pictured from left to right:  
Dr Mark Heard, Dr Laurie Hiemstra,  
Dr Mireille Marquis, Dr Michaela Kopka, Dr Greg Buchko*

# CONGRATULATIONS TO THE STAbiLiTY STUDY GROUP!

BSMF Chairman and Orthopaedic Surgeon Dr. Mark Heard, was the presenting author of the Standard ACL Reconstruction versus ACL Reconstruction + Lateral extra-articular tenodesis (STAbiLiTY) study research that received the prestigious Jan I. Gillquist Scientific Research Award at the 2019 International Society of Arthroscopy, Knee Surgery & Orthopaedic Sports Medicine (ISAKOS) Congress.

The Stability team were one of four finalists selected based on the quality of their research and presentation, which was entitled:

*“Anterior Cruciate Ligament Reconstruction with or without a Lateral Extra-Articular Tenodesis: Analysis of Complications from the ISAKOS-sponsored Stability Study”*



This paper forms part of the larger Stability study that sought to answer the following questions: 1) In the high-risk ACL patient, does the addition of a lateral extra-articular tenodesis (LET) decrease the rate of re-rupture or clinical failure of a hamstring ACL?; and 2) Are complications associated with this additional procedure sufficiently frequent or severe to deter a surgeon from performing an LET?

The results of this international multicenter randomized clinical trial showed that performing an LET decreased the relative risk of ACL graft rupture by 66%. In addition, the complications associated with LET were not substantial and should

not dissuade the surgeon from performing this additional technique at the time of ACL reconstruction.

This award was the result of the contributions of the entire Stability team of researchers who participated in this 600-patient study led by Dr. Alan Getgood at Fowler Kennedy Sport Medicine in London. BSMF recruited 24% of the patients included in this study. Other centres included Fraser Health Authority, University of Calgary, McMaster University, Queens University, and Pan Am Clinic in Canada, as well as centres in Coventry, U.K., and Antwerp, Belgium.

Re-rupture rates, or rupture of the opposite ACL up to 2 years after surgery have been reported to be as high as 22% and 24%, respectively.

# PATIENT TESTIMONIAL

## ERNIE'S STORY

### Knee osteoarthritis

For an active person in their 60s, suffering from osteoarthritis (OA) of the knee made once enjoyable activities painful and difficult.

*"I couldn't even push with my left leg on my bike."*

Ernie isn't alone. OA is the most common form of arthritis, and affects nearly one in six Canadians.

It occurs when the cartilage cushioning the joints of the body wears down, causing varying degrees of pain, stiffness and swelling. According to Health Canada, most Canadians will be affected by OA by the age of 70.

While there is no cure for OA, there are several treatments that include arthroscopic surgery and non-operative treatments like injections.

After consulting Banff Sport Medicine Orthopaedic Surgeon, Dr. Laurie Hiemstra, the decision was made for Ernie to undergo a surgery known as a high tibial osteotomy (HTO). This operation involves cutting the tibia (shin) bone to realign the knee joint to take most of the body weight off the arthritic part of the knee.



*"Laurie took care and comfort after the surgery to the next level.*

*It was great and obviously she did a great job with the surgery as my outcome is 100%."*

It didn't take long for Ernie to get back to what he loves doing. Two months after surgery, he was able to return to light skating. Fast-forward a few more months, and Ernie is back playing hockey, golf, biking, and skiing - all without pain.

# PATIENT TESTIMONIAL

## GREG'S STORY

### Latarjet shoulder surgery and avalanche trauma

*"I have had two separate issues that Banff Sport Medicine has helped with. For 14 years I had a dislocating shoulder, one that easily popped out. I had to stop rock climbing and focus on other sports. Arthroscopic surgery had been attempted with no success. Dr. Heard performed a Latarjet surgery on my shoulder. I rehabbed it and have since returned to climbing, not pushing it as hard as I had in my twenties but climbing with confidence that my shoulder will not pop out."*

Greg's experience with Banff Sport Medicine was not limited to his shoulder surgery as he goes on to explain, *"I also severely broke my tib/fib (lower leg bones) in an avalanche in Pakistan. It took me 6 days to travel home and I underwent surgery with Dr. Heard. I understand it was a very shattered bone and was a complex surgery. Regardless, it is now 5 years later and I run 50 km on trails, summit mountains, and ski as much as possible. This would not have been possible without the high quality of skill and care."*



*"I can easily say that I am able to enjoy mountain adventures due to the incredible skills and care of Banff Sport Medicine. As a professional athlete, they understood my needs and answered them perfectly, allowing me to continue to push boundaries and explore remote places."*

*" When I broke my leg in an avalanche in Pakistan, I knew that it would be worth traveling back 6 days to Banff and getting surgery at the Banff Mineral Springs. The quality of care and level of surgeons has allowed me to continue being an adventurer, summiting mountains and shredding big lines." ~ Greg Hill*



# FELLOWSHIP TESTIMONIAL

## An Orthopaedic Sport Medicine Fellowship in the Heart of the Rocky Mountains

As an Orthopaedic Arthroscopy and Sport Medicine Fellow in Banff, I had the privilege and delight to reside in the heart of the Rocky Mountains, in one of the most picturesque towns in the world, as well as to train under some exceptionally skilled and approachable surgeons. My year in Banff was truly remarkable! The Sport Medicine and Arthroscopic Reconstruction of the Knee and Shoulder Fellowship in Banff, promotes a unique opportunity for one-on-one training with extremely skilled and high volume surgeons. While spending four months with each surgeon, I learned many different treatment approaches, techniques, and tips and tricks that led to the surgeon I am today.

The Banff Sport Medicine Foundation group is dedicated to producing high impact research and actively involves Orthopaedic Surgery Fellows in their work. With large volumes of cases, functional testing facilities, a brilliant research team, and a vision to produce quality research, I gained practical and academic research skills that continue to be beneficial today.

During my Fellowship I also had the unique opportunities to work with the Canadian Alpine Ski Team participating in on-hill training scenarios, and with the Canadian Finals Rodeo providing medical coverage at the national bull riding championship. As a Newfoundlander, I always thought fishermen were the toughest patients but cowboys would certainly give deckhands a run for their money!





*“Within days of starting my fellowship in Banff, I knew I was now a part of something truly special; a family so to speak. The collegiality within the Banff Mineral Springs Hospital is evident as soon as you enter the doors. The staff of the hospital, regardless of their role or department, know each other and work together to provide the best care possible for the people of Banff and the millions of tourists who visit annually. My year in Banff was the perfect mix of working hard and playing hard. Skiing, hiking, and learning in the beautiful Rocky Mountains makes for a year that I’ll forever cherish, but it’s the people in the Banff Sport Medicine Foundation group, who have now become lifelong friends, that I’m especially grateful for. Thanks for making me part of the BSMF family!”*

Allison Tucker, MD, MSc, FRCSC  
Fellowship Program (2016-17): Sport Medicine and Arthroscopic  
Reconstruction of the Knee and Shoulder  
Education: FRCSC Orthopaedic Surgery and MSc in Anatomical  
Sciences - Queen’s University



# RESEARCH & EDUCATION HIGHLIGHTS

## International Patellofemoral Study Group (IPSG) meeting

In September, BSMF was proud to host the International Patellofemoral Study Group (IPSG) Meeting in Banff with 60 international experts gathering to discuss the intricacies of the patellofemoral joint. The IPSG provides members with a forum to advance understanding of the patellofemoral joint and is a multidisciplinary group of orthopaedic surgeons, physical therapists and scientists.

Over three days, topics discussed included the anatomy of the patellofemoral (PF) joint and major ligaments, strategies to restore knee function, treatments for anterior knee pain, PF arthroplasty, and physical examination and imaging techniques. Day three focused on research workshops on instability of the PF joint and ways to assess it.

BSMFs Dr. Hiemstra and Sarah Kerslake, along with Dr Brendan Sheehan from St John Orthopaedics, NB, organized and led one of these workshops entitled the “Characterization and Correlation to Pathoanatomy of the J-sign in Lateral Patellofemoral Instability”.

Conference participants also discussed developing a consensus on the treatment of anterior knee pain. BSMF would like to thank all participants for their tremendous contributions to this important health topic.



*Pictured above:  
The IPSG group atop Banff's Sulphur Mountain.*

*Pictured left:  
Dr Laurie Hiemstra and Sarah Kerslake, BSMF Research Director.*

## Orthopaedic Fellowship:

### Sport Medicine and Arthroscopic Reconstruction of the Knee and Shoulder

BSMF welcomed Dr. Jessica Page in July 2018 as our Orthopaedic Surgery Fellow for the 2018/2019 academic year. While in Banff, Dr. Page trained in advanced arthroscopic reconstruction of the knee and shoulder, with an emphasis on primary and revision ACL reconstructions but also treatment of recurrent patellar instability, tibial and femoral osteotomies, osteochondral allograft transplantation, and shoulder stabilization surgeries including Bankart repair, Laterjet, remplissage, and rotator cuff repair. As a community hospital facility, she also provided some basic trauma coverage.

Dr. Page's research during her Fellowship focussed on the influence of meniscal pathology on ACL surgery outcomes. Dr. Page received an honourable mention in the Best Clinical Research Paper award by the Arthroscopy Association of Canada (AAC) for her research project, "Quality Of Life and Functional Outcomes For Anterior Cruciate Ligament Reconstruction Patients With Meniscal Injury".

During her Fellowship, Dr. Page also had the opportunity to be the attending physician for Canadian Finals Rodeo and traveled to Chile with Alpine Canada for a preseason training camp.

Dr. Page has now commenced her practice in Lethbridge AB, and we wish her all the very best for her career!



## 2019 Arthroscopy Association of Canada (AAC) Residents' Course

The Inaugural AAC Residents' Course was held January 2019 in Toronto and was chaired by Dr. Laurie Hiemstra from BSMF and Dr. Cathy Coady from Dalhousie University.

The course started with a two-hour session featuring cases, mini lectures and videos on ACL graft choice, the role of the anterolateral ligament, patellar instability, meniscal root repair, PCL reconstruction and the approach to the multi-ligament knee, followed by an evening of networking and socializing.

The second day of the course featured five lab stations set up with model knees for residents to practice on, including a knot tying station. Under the guidance of attending surgeons, the residents approached surgical techniques for arthroscopy, meniscal repair, ACL, MPFL and PCL. A knee examination session was the final topic, covering clinical assessment of patellar instability and ACL injuries.



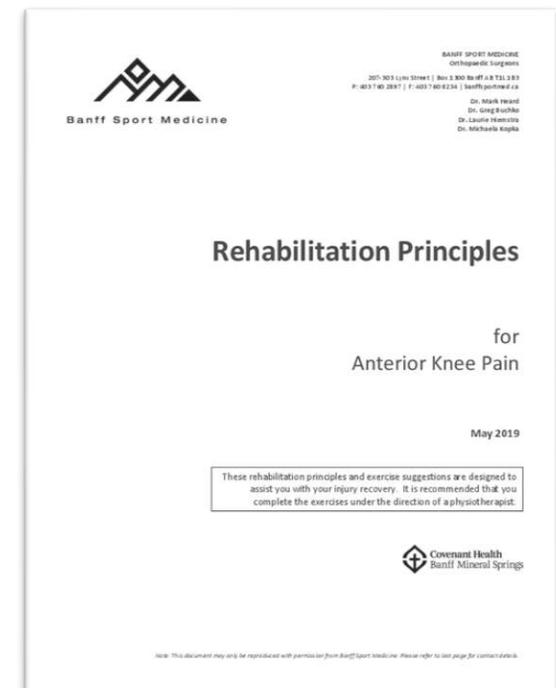
## Research Placement



The BSMF Research Group welcomes applications on an on-going basis from medical, allied health and other tertiary students to complete supervised research placements. This summer, we welcomed George Reed, a student at Western University completing a Bachelor of Medical Sciences (BMSc). During George's placement, he was involved in projects investigating inter-rater reliability between surgeons, clinical and patient reported outcomes of ACL reconstruction, as well as observing functional testing clinics and new patient assessments. George also enjoyed the opportunity to observe some orthopaedic surgeries, including one day alongside his father, our Sport Medicine Physician, Dr. Andy Reed, who was the attending Surgical Assist Physician!

## Patient Education

BSMF develops education material and pre- and post-operative rehabilitation procedures to improve MSK patient outcomes and health. This year, BSMF developed "Rehabilitation Principles for Anterior Knee Pain", which contains illustrated exercise suggestions designed to help patients recovering from anterior knee pain. Evidence-based updates were also completed for the post-operative MPFL reconstruction and Multi-ligament reconstruction protocols. All protocols can be accessed on the BSM clinic website at: [banffsportmed.ca](http://banffsportmed.ca).



## Injury Prevention Education & Outreach Program

Our new Injury Prevention Education & Outreach Program started this year with funding from The Calgary Foundation to develop and present an evidence-based injury prevention presentation for local gymnastics coaches.

Preliminary statistics gathered from the BSM surveillance records revealed that gymnastics is one of four high-risk sports in the Bow Valley with skiing, soccer and basketball also being identified as higher-risk for injuries. The need to actively engage in injury prevention was also identified by the lead gymnastics coaches as there were no local injury prevention education programs being delivered. Recently, significant changes to the Junior Olympian gymnastics program have created an increased level of intensity for both coaches and athletes. Developing and delivering an injury prevention program in keeping with this changed curriculum early in the gymnastics season would be the best opportunity to realize change.

Local gymnastics coach and physiotherapist, Fabienne Moser, and BSMF's Sarah Kerlsake, developed and delivered this program to the head coaches and coaching team of the Canmore Illusions gymnastics club (CIGC) as well as to the CIGC Board. Funds were also sourced to support Fabienne's attendance at the Harvard Medical School Sports Medicine Program in May 2019. The Harvard Program was presented by world-leading experts and included injury prevention topics and a workshop day dedicated solely to gymnastics sports medicine. Learnings from the Harvard program were integrated into the BSMF gymnastics injury prevention program as well as into Fabienne's own practice as a physiotherapist and gymnastics coach. This program can now be expanded to other healthcare providers to bridge the gap in knowledge that exists between coaches and healthcare providers.

With additional funding from the Banff Canmore Community Foundation, The Town of Canmore and The Town of Banff, this program will be expanded in 2020 to include other high-risk sports such as skiing, and pivoting sports such as soccer and basketball.



## SOCIAL MEDIA OUTREACH



BSMF continues to grow its reach through the @BanffSportMed Twitter account. Established in September 2018, this social media channel now has 186 Followers with an average of 4,602 impressions, 1.7% engagement, and 51 profile visits every month. BSMF has also recently established a Facebook profile, @BanffSportMedicineFoundation, to continue growing its community reach.

The goal of BSMF's social media outreach is to advance education on the prevention and early treatment of MSK injury, to promote new and innovative research, and to promote our education and outreach programs.

@BanffSportMed

Twitter Account Average

Monthly Stats

11 new follows

4,602 impressions

1.7% engagement

51 profile visits

## LOGO & BRAND DEVELOPMENT



BSMF worked with Carmella Consulting to develop a logo and brand identity. A brand identity reflects an organization's mission and value proposition and ideally makes an organization instantly recognizable. Through discovery meetings with Carmella, six different logo concepts were considered that reflected BSMF's location in the Rocky Mountains and its profile as a centre of excellence for orthopaedic and sport medicine research and education. One concept was chosen to develop further, with the final logo designed to represent a mountain range ending with an abstract representation of a person in forward motion. A styleguide was also developed to provide guidelines to BSMF staff on how to use the logo as well as additional design elements that can be used to create a compelling, unique and distinctive brand.



Our BSMF team would like to thank Carmella for a positive and rewarding partnership on this important step in our development.

## SPORT COVERAGE

Each year, BSMF physicians and Fellows are involved with providing coverage for events such as FIS World Cup Ski and Snowboard, and the Canadian Finals Rodeo. They also work directly as team physicians for Canadian Pro Rodeo, Alpine Canada, and Canada Snowboard.



*Pictured Right:  
Dr Mark Heard with the Canadian Ski Cross team  
at the World Cup in Sunny Valley, Russia.*



*Pictured Left:  
Canadian Finals Rodeo jacket gifted to Dr Jessica Page as thanks for her support.*

# COMMUNITY PRESENTATIONS & OUTREACH

**University of Calgary Orthopaedic Resident Academic Day** - Femur/knee anatomy lab and fracture rounds. Calgary, AB.

**Canadian Sport Institute Think Tank** - Development of return to sport guidelines for high velocity snow sport athletes. Whistler, BC.

**Banff and Canmore Emergency Physicians** - Emergency management of common orthopaedic injuries. Canmore, AB.

**University of Calgary Fracture Management Course for Rural Family MDs** - Reduction techniques and casting of common upper and lower extremity fractures. Banff, AB.

**Jasper & Hinton Family MDs and allied health practitioners** - Managing knee OA in the young and active patient. Jasper & Hinton, AB.

**Thrive Health & Wellness Festival** – “Knees-4-Skis” workshop on ACL injury prevention in the ski industry. Canmore, AB.

**Golden & Revelstoke Family MDs and allied health practitioners** – Assessment and management of acute and chronic knee injury. Golden & Revelstoke, BC.



## RESEARCH PROJECTS

BSMF's Research Group previously ran as a non-profit within the Banff Sport Medicine Clinic for over 10 years. As such, the small but dedicated team now have over 10 years of experience designing and implementing clinical and outcomes research as well as randomized clinical trials. Our research group supports a highly developed research program that includes a database with over 2500 anterior cruciate ligament (ACL) and 600 patellar (kneecap) instability surgery cases. This wealth of information are some of the largest surgical study groups for these conditions in the world.

One of the many other strengths of the Research team is its ability to collaborate. The 28 research projects currently underway include collaborations with local and international partners, and cover diverse research questions that include assessing and improving patient outcomes following ACL and patellofemoral surgery, comparing different orthopaedic surgery techniques, evaluating pain and medication use following orthopaedic surgery, and novel treatments for MSK conditions.

For a detailed list of current research projects, please visit the BSMF website, [www.bsmfoundation.ca](http://www.bsmfoundation.ca).

**RESEARCH BY THE NUMBERS**

**14 PUBLICATIONS**  
in peer-reviewed scientific journals and book chapters

**29 PRESENTATIONS**  
to researchers, physicians, orthopaedic surgeons and residents, other health professionals, athletes and the public both locally and abroad

**28 PROJECTS**  
collaborating with local and international researchers, orthopaedic surgeons and other health professionals

[WWW.BSMFOUNDATION.COM](http://WWW.BSMFOUNDATION.COM)

## UPCOMING RESEARCH PROJECTS

### Effectiveness of Cingal™ for improving Pain scores and Function in Anterior Knee Pain

In collaboration with Dr Andy Reed, a Sport Medicine Physician for the BSM Clinic, this study will aim to answer the question, “In young, active patients diagnosed with anterior knee pain (AKP) who have failed conservative management, does a single Cingal™ knee injection influence pain scores and functional outcomes, or subjective and objective outcomes?”

AKP is a common condition that can be challenging to effectively treat. The condition is more common in females than males, and frequently results in significant pain, reduced function, and lower quality of life. Research has also demonstrated an association between AKP and the development of a common form of knee arthritis under the kneecap called patellofemoral osteoarthritis (OA).

Numerous causes of AKP have been proposed and as such, there is currently no gold standard of care to treat patients suffering from this condition. Treatment is predominantly conservative and includes a combination of physiotherapy, activity modification, taping or bracing, or non-steroidal anti-inflammatory medications (NSAIDS), all with the goal of improving knee function.

Research suggests that neuromuscular rehabilitation training programs currently offer the soundest evidence for treatment of AKP. However, the most significant challenge for both clinicians and patients to enable a patients' participation in an appropriate neuromuscular rehabilitation program, is sufficient management of pain.

Injections into the knee joint using cortisone and viscosupplementation with hyaluronic acid (HA; hyaluronan) have also been used to treat AKP. While no randomized controlled trials have assessed the use of cortisone to treat AKP, a limited number of studies have shown short-term improvement following cortisone injections, which has led to the use of cortisone in clinical practice.



HA is a non-sulfonated component of the extracellular matrix and is abundant in the synovial fluid of freely movable joints such as the knee. HA functions as a cartilage joint lubricant during movement and acts as a damper during compression, and is often used in clinical practice to treat joint inflammation. There is some evidence from animal research indicating the disease modifying benefits of HA as a treatment for early OA. Despite the indications of a link between AKP and changes in chondral cartilage, HA viscosupplementation has only been suggested as a treatment in a few papers, with only one randomized clinical trial examining the acute effects of HA (Synvisc-One) in AKP having been published. In this study, no difference in pain or functional outcomes was observed between HA and a sham injection. Nevertheless, viscosupplementation is recommended by some clinicians as a treatment for AKP in challenging cases.

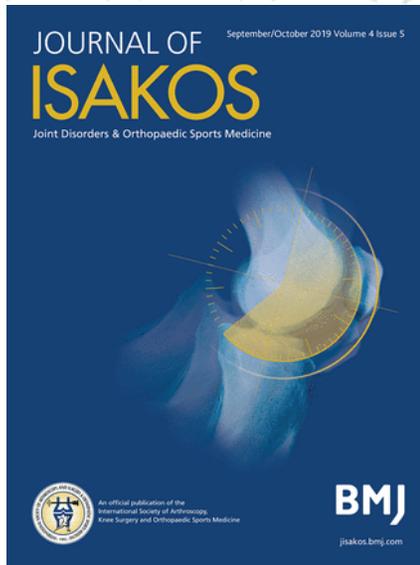


Despite evidence indicating that AKP is likely on the same spectrum as knee OA, viscosupplementation research has focused on advanced stages of knee OA with minimal attention paid to the onset of the disease. Cingal™ is a novel combination HA viscosupplement with a corticosteroid, triamcinolone hexacetonide (TH). A recent randomized, double-blind, saline-controlled clinical trial demonstrated that Cingal™ provided immediate term relief of OA-related pain, stiffness and function compared to saline, with improved short-term pain relief compared to HA alone. Given the link between AKP and the development of patellofemoral OA, there may be a role for including a combined anti-inflammatory and HA injection, such as Cingal™, to reduce symptoms in patients with AKP.

To our knowledge, this will be the first clinical trial evaluating the efficacy of Cingal™ to reduce symptoms in young, active patients diagnosed with AKP who have failed conservative management. Gait analysis using a 3-dimensional system will be used along with symptoms questionnaires. It is hoped a reduction in symptoms will facilitate participation in an appropriate neuromuscular rehabilitation program and therefore enable a return to regular activities. Potential reduction in patellofemoral joint pressures and the treatment of the initial onset of articular cartilage degeneration would be additional benefits.



## BSMF PUBLICATIONS 2018 - 2019



Hiemstra LA, Wittman T, Mulpuri K, Vezina C, Kerslake S. Dissecting disparity: improvements towards gender parity in leadership and on the podium within the Canadian Orthopaedic Association. Journal of ISAKOS: Joint Disorders & Orthopaedic Sports Medicine 2019; 4:227-232.

Hiemstra LA, Lafave MR, Kerslake S. The Influence of Demographic and Pathoanatomic risk factors on Clinical Outcomes after isolated MPFL Reconstruction – A Regression Analysis. Am J Sports Med. 2019 Aug 14. doi: 10.1177/0363546519866452

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Hiemstra LA, Kerslake S, Kupfer N, Lafave M. Patellofemoral Stabilization: Postoperative Redislocation and Risk Factors Following Surgery. Orthop J Sports Med 2019 Jun 19; 7(6)

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Getgood A, Bryant D, Firth A, Stability Group. The Stability study: a protocol for a multicenter randomized clinical trial comparing anterior cruciate ligament reconstruction with and without Lateral Extra-articular Tenodesis in individuals who are at risk of graft failure. BMC Musculoskelet Disord 2019 May 15; 20(1): 216

Lafave M, Hiemstra L, Parikh SN, Peterson D, Kerslake S. Validity and Reliability of the Banff Patellofemoral Instability Instrument 2.0 in an Adolescent Population. J Pediatr Orthop 2019 May 27

Kerslake S & Hiemstra L. Failed Medial Patellofemoral Ligament Reconstruction: Causes and Treatment. In: Patellar Instability: Management Principles and Operative Techniques, First Edition. Parikh S. ed. 2019



Hiemstra LA, Page JL, Kerslake S. Patient-Reported Outcome Measures for Patellofemoral Instability: a Critical Review. *Curr Rev Musculoskelet Med* 2019 Mar 5; 12(2): 124-137

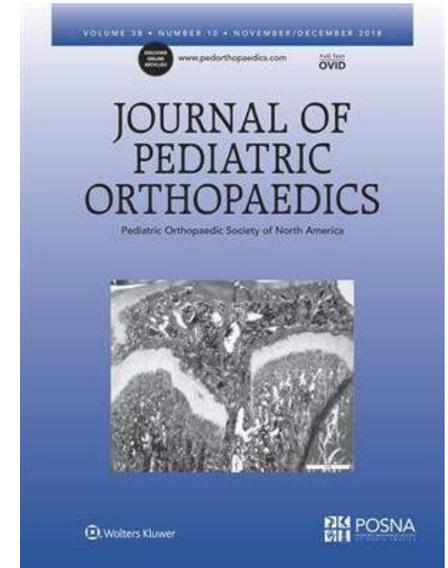
Hiemstra LA, Kerslake S, Kupfer N, Lafave MR. Generalized joint hypermobility does not influence clinical outcomes following isolated MPFL reconstruction for patellofemoral instability. *Knee Surg Sports Traumatol Arthrosc* 2019 Nov;27(11):3660-3667

Kopka M, Heard M. Surgical Treatment of Combined PCL/Lateral Side Injuries: Acute and Chronic. In: *The Multiple Ligament Injured Knee: A Practical Guide to Management*. (3<sup>rd</sup> Edition). Fanelli GC (ed). 2019. Springer.

Hiemstra LA, Peterson D, Youssef M, Soliman J, Banfield L, Ayeni OR. Trochleoplasty provides good clinical outcomes and an acceptable complication profile in both short and long-term follow-up. *Knee Surg Sports Truamatol Arthrosc*. 2019: 27(9), 2967-2983.

Walker REA, Hiemstra LA, Forster BB. Musculoskeletal Radiology Practice Subspecialization in Canada. A Subject of Substance? *Semin Musculoskelet Radiol*. 2018 Nov;22(5):522-527.

Lafave MR, Hiemstra LA, Kerslake S. Validity, Reliability, and Responsiveness of the Banff Patellar Instability Instrument (BPII) in a Adolescent Population. *J Pediatr Orthop*. 2018;38:e629-e33.



## RESEARCH GRANTS



**Should You transfer the Tubercle? (The SHYFT Trial) - A Randomized Clinical Trial comparing Isolated MPFL Reconstruction to MPFL combined with Tibial Tubercle Osteotomy**

ConMed Research Award

Canadian Orthopaedic Research Legacy (CORL) Grant

**The influence of Meniscal Pathology on Clinical, Functional and Patient-reported Outcomes following ACL Reconstruction**

Canadian Orthopaedic Association Community Investment Grant

## AWARDS

**Best Canadian Research Podium** – ICORS Meeting

Dr Allison Tucker *ACL reconstruction graft laxity negatively affects patient-reported quality of life*

**Best Clinical Research Paper** – Arthroscopy Association of Canada

Dr. Mireille Marquis *Post-operative Laxity, Functional Performance and Quality of Life following ACL Reconstruction*

**Honorable Mention Best Clinical Research Paper** – Arthroscopy Association of Canada

Dr. Jessica Page *Quality of Life and Functional Outcomes For Anterior Cruciate Ligament Reconstruction Patients with Meniscal Injury*

**Jan I. Gillquist Scientific Research Award** – ISAKOS

Dr. Mark Heard *Anterior Cruciate Ligament Reconstruction with or without a Lateral Extra-Articular Tenodesis: Analysis of Complications from the ISAKOS-sponsored Stability Study*

# EDUCATION & COMMUNITY OUTREACH GRANTS

## **Sport Medicine / Arthroscopy of the Knee and Shoulder Fellowship**

ConMed Educational Grant

University of Calgary

## **Injury Prevention Education & Outreach Program**

The Calgary Foundation

The Town of Canmore

The Banff Canmore Community Foundation

The Town of Banff



# FINANCIAL STATEMENTS

## Banff Sport Medicine Foundation

### Statement of Financial Position

As at September 30, 2019

#### ASSESTS

##### CURRENT ASSESTS

Cash  
Accounts Receivable  
Inventory Asset  
Sales Tax  
Prepaid Expenses

##### TOTAL CURRENT ASSESTS

##### EQUIPMENT (net)

##### TOTAL ASSETS

#### LIABILITIES AND NET ASSESTS

##### LIABILITIES

Accounts Payable

##### Fund Balances

##### NET ASSETS

	Unrestricted	Restricted	Total
Cash	\$ 14,070	\$ 90,114	\$ 104,184
Accounts Receivable	18,139	-	18,139
Inventory Asset	14,809	-	14,809
Sales Tax	1,722	2,425	4,147
Prepaid Expenses	7,200	-	7,200
<b>TOTAL CURRENT ASSESTS</b>	<b>55,940</b>	<b>92,539</b>	<b>148,479</b>
<b>EQUIPMENT (net)</b>	<b>2,228</b>	<b>-</b>	<b>2,228</b>
<b>TOTAL ASSETS</b>	<b>\$ 58,168</b>	<b>92,539</b>	<b>150,707</b>

	Unrestricted	Restricted	Total
Accounts Payable	\$ 17,506	\$ 17,719	\$ 35,225
<b>Fund Balances</b>	<b>40,662</b>	<b>74,820</b>	<b>115,482</b>
<b>NET ASSETS</b>	<b>\$ 58,168</b>	<b>92,539</b>	<b>150,707</b>

	<b>Unrestricted</b>	<b>Restricted</b>	<b>Total</b>
<b>SALES</b>			
Equipment and injection sales	\$ 187,537	\$ -	\$ 187,537
Cost of goods sold	131,507	-	131,507
<b>GROSS PROFIT</b>	56,030	-	56,030
<b>OTHER INCOME</b>			
Sustainability funding	\$ 3,308	\$ -	\$ 3,308
Donations	132,103	50,000	182,103
Grants	55,551	112,516	168,067
<b>TOTAL SALES and OTHER INCOME</b>	246,992	162,516	409,508
<b>OPERATING EXPENSES</b>			
Wages and salaries	145,837	37,579	183,416
Advertising	5,000	1,000	6,000
Fundraising and grant support	16,758	48,611	65,369
Subcontractors	6,975	-	6,975
Professional Fees	13,981	-	13,981
Travel	1,816	490	2,306
Office expenses	10,694	16	10,710
Depreciation	131	-	131
Bank charges and Interest	5,138	-	5,138
<b>TOTAL OPERATING EXPENSES</b>	206,330	87,696	294,026
<b>EXCESS OF REVENUE OVER EXPENSES</b>	40,662	74,820	115,482
<b>FUND BALANCES, BEGINNING</b>	-	-	-
<b>FUND BALANCES, ENDING</b>	40,662	74,820	115,482

## LOOKING FORWARD

BSMF will continue to develop new and current education initiatives including an expansion of our Injury Prevention Education & Outreach Program and foster relationships with other organizations and partners. We will continue to spread the word about the prevention and early treatment of MSK injury. We will continue to design and carry out meaningful research that can be rapidly implemented into clinical practice and seek out fruitful collaborations with industry partners and academic institutions.

### **Our vision for 2019 – 2020 includes:**

- Develop the new BSMF website as an education and research hub for orthopaedics and sport medicine;
- The development of a strategic plan to provide clarity on BSMFs Mission and Vision;
- An awareness campaign using social media, the BSMF website and participation in local events to promote BSMFs programs and key messages;
- Development of a donor cultivation strategy that includes a BSMF newsletter, and further education and outreach activities to attract new supporters;
- A patient rehabilitation video strategy to enhance patient education and increase patient engagement in their rehabilitation journey.



## BOARD OF DIRECTORS

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### Secretary

John Clarkson

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Dr Greg Buchko

Kevin Nugent

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### Jeremy Tynedal MSc

Research Assistant

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# THANK YOU TO OUR SUPPORTERS

We continue to develop partnerships and projects with the funding provided by community members, organizations and industry. The support and generosity of these partnerships provide our communities of Banff, Canmore and beyond with innovative research, education and outreach programs and evidence-based clinical care.

The Board of Directors and BSMF staff wish to thank those that have generously supported our efforts this past year including:

## Our valued individual donors



## SUPPORT BSMF

As a registered charity, contributions from the community play a crucial role in our work.

Your financial support to carry out leading-edge research and to develop and deliver education and community outreach initiatives assists in advancing the treatment of MSK conditions and injury; helping people get back in motion.

Charitable Registration #793737685RR0001

## DONATE

To support the BSMF, please get in touch:

PO Box 1300

#207 – 303 Lynx St

Banff, Alberta T1L 1B3

Phone: (403) 760 2897 x 6

Or give online at:

[www.bsmfoundation.ca](http://www.bsmfoundation.ca)

[www.canadahelps.ca](http://www.canadahelps.ca)

Tax receipts for donations are provided.

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**Stay informed** by signing up for our newsletter via the website to receive expert injury prevention and MSK health tips, a sneak preview of our latest research and inspiring patient stories direct to your inbox.