



SPRI and the Science of Sport

**AS THE WORLD GATHERS
TO CELEBRATE SPORT,
SPRI CHAMPIONS INJURY
PREVENTION AND
ATHLETE HEALTH**

At Steadman Philippon Research Institute (SPRI), scientists and researchers are passionate about orthopaedics and sports medicine research, and are committed to upholding the mission of keeping people active through scientific research and education. In close collaboration with The Steadman Clinic, SPRI is dedicated to returning people of all activity levels—from elite Olympic and professional athletes to recreationists—back to the sports and pursuits they love. With regenerative medicine studies, biomechanical research, injury prevention programs, and a legacy of outcomes research, SPRI is a leader in orthopaedics and sports medicine science.

As an organization that employs scientists and researchers from all over the world, hosts international meetings and collaborates with universities and organizations across the globe, SPRI is a global citizen. This summer, as the world celebrates a return to sport of colossal proportions in the return of the Olympic Games, SPRI applauds all of the athletes competing in Tokyo.

Every Olympic Games is special, and after the COVID-19 pandemic delayed Tokyo 2020 until Summer 2021, this will certainly be an Olympics to remember. The world has been waiting to celebrate these athletes, and SPRI wishes all Team USA athletes the best of luck in Tokyo. With this Olympic spirit in mind, this edition of *SPRI News* focuses on injury prevention, returning to sport, and new injury surveillance and sports medicine programs at SPRI.



SPRI worked behind the scenes at the U.S. Olympic and Paralympic Committee at the 2021 virtual Injury Prevention Symposium

5th Annual Injury Prevention Symposium Inspires Researchers and Clinicians

For the second consecutive year, Steadman Philippon Research Institute (SPRI) and the United States Olympic & Paralympic Committee (USOPC) conducted the annual Injury Prevention Symposium via a live webinar. Although the motivation for holding the conference virtually was due to COVID-19, there was an added benefit to holding the events remotely: more international scholars, researchers and physicians could join in the important conversations regarding injury prevention efforts—28 international participants joined from 8 countries.

This year, 25 presenters and speakers from around the world addressed the most important topics in injury prevention techniques and practices, centering around the protection of athlete health. Topics included youth concussions and injury surveillance programs, injury prevention for elite athletes, evaluating injury prevention programs, returning to sport following COVID-19, translating data for injury prevention, clinical perspectives, athlete mental health and perspectives from Olympic athletes.

More than 400 participants ranging physicians, scientists, researchers, trainers and therapists tuned in for the 5th Annual Injury Prevention Symposium this spring.



Brianna Tammaro of the U.S. Olympic & Paralympic Committee presents at the Injury Prevention Symposium

WHAT IS INJURY PREVENTION?

Injury prevention research focuses on identifying injury risk factors and working to control or eliminate those factors—bringing science into action. While it may not be possible to prevent every injury, tracking injury patterns, implementing training and exercise protocols and enacting technique and equipment modifications has proven to be hugely impactful in injury reduction. For injury recovery, thoughtful return-to-sport protocols and rehabilitation strategies can get athletes back to their sports safely, while reducing reinjury rates.

A person with dreadlocks, wearing a white t-shirt and dark shorts, is climbing a rock wall. The wall is grey with various colored climbing holds (red, blue, green, orange). The person is seen from behind, reaching up with their right hand. The background is a blurred red wall on the left. The overall scene is an indoor climbing gym.

INJURY SURVEILLANCE IN SPORT CLIMBING: THE CRIMP SYSTEM

Sport climbing—also referred to as rock climbing—is a hugely popular sport across the world. In the United States alone, there are over 500 sport climbing gyms and more than 5,000 registered competitive youth climbers. With growing interest in the sport—it will debut at this summer’s Olympic Games in Tokyo—scientists and researchers at SPRI saw tremendous, sport-specific research potential.

LEVERAGING OUTCOMES DATABASE EXPERTISE

With over 30 years of patient-reported outcomes data, SPRI has been on the forefront of orthopaedic and sports medicine outcomes research for decades. With this experience, SPRI launched the Climbing-Related Injury Monitoring and Prevention (CRIMP) program, which was awarded a grant from the International Olympic Committee (IOC) to study the injuries suffered in sport climbing and ultimately work toward preventing common climbing injuries from happening.

COLLABORATION IN INJURY SURVEILLANCE

Principal Investigator Lauren Pierpoint, PhD, sports injury epidemiologist, leads the IOC-funded project alongside SPRI collaborators within the United States Coalition for the Prevention of Illness and Injury in Sport—the U.S. Olympic & Paralympic Committee (USOPC) and University of Utah. CRIMP has several U.S.-based teams enrolled in the beta testing of the program, which launched in February 2021. Each team has a designated reporter who volunteers injury and participation data from their teams, which will build up a database from which the CRIMP team can extrapolate patterns.

LOOKING AHEAD

Following the Tokyo Games, competitive sport climbing season begins, which will allow researchers to capture injury information from elite competitions. Pierpoint estimates that a full year of competition data will enable the team to begin developing injury prevention protocols for climbers. The ultimate goal of CRIMP is to identify injury problems in sport climbing to develop an evidence-based injury prevention program. A successful program could lead to significant reduction in climbing-related injuries.

REAL-WORLD INJURY PREVENTION

The FIFA 11+ program is a warm-up soccer program that has been adopted worldwide to help prevent soccer injuries. Based in data collected from injury monitoring, this program has shown to reduce soccer injuries by 30%, proving that injury prevention protocols can have meaningful results. The CRIMP program strives to employ a similar practice of data collection and injury surveillance to create an injury prevention protocol to help reduce injuries in sport climbing.

WHAT IS INJURY SURVEILLANCE?

Injury surveillance is the collection of data regarding injury occurrence and the factors that are associated with injuries. This data collection occurs over time, which helps researchers and data scientists identify patterns in the data. Injury surveillance is also referred to as injury monitoring, and it's a critical part of the injury prevention process. This work serves as the basis for injury control initiatives—warm-up and stretching protocols, for example—which ultimately lead to the reduction in injury rates. Put simply, without injury surveillance and studying the data, it's challenging to put together a successful injury prevention program.



INTRODUCING THE

SPRI Golf Sports Medicine Program

Building on a legacy of sports medicine and orthopaedic medicine and science, the institute has launched the SPRI Golf Sports Medicine Program, which combines the unparalleled biomechanical imaging capabilities of the Biomotion Lab with a leading launch monitor and simulator technology. The program will collect data and build a database to not only extrapolate rehab and injury prevention protocols, but also help participants optimize their performance.

Pairing Advanced Technology

SPRI's Biomotion Laboratory is equipped with some of the world's most advanced technology, offering unmatched imaging and biomechanical analysis. The array of equipment is used to provide detailed measurement of the kinematics—motion—and kinetics—forces—that generate movement.



With the addition of advanced analysis software, the lab can comprehensively assess an individual's biomechanical profile in any activity. The team has integrated a specialized golf module designed for assessing the biomechanics of the golf swing, providing detailed metrics on swing components.

Within the Biomotion Lab, SPRI has installed a custom golf simulator system including the Foresight GC Quad Launch Monitor—the most precise system available. Using infrared object tracking and high-speed, high-resolution camera-based technology, the system measures every aspect of club speed and ball launch performance.

A Differentiating Program

The SPRI Golf Sports Medicine Program is designed to provide participants with a unique, personalized experience based on their needs, including biomechanical analysis of golf movement, baseline performance metrics, golf simulation, and golf coaching. For patients returning to sport from injury, the program works with physicians at The Steadman Clinic and Titleist Performance Institute (TPI)-certified physical therapists to integrate an individualized return-to-sport program that communicates with an individual's care plan.

The SPRI Golf Sports Medicine Program will build the first golf research database of its kind—where most institutions' data is centered around young, elite golfers, SPRI's program will capture the golf movement of all ages and ability levels. The collection of this data will provide participants with real, evidence-based plans based on their age, gender, motion, health status, ability level and more. The research database will help position SPRI to conduct sport-specific research into golf movement and its effect on the body as it ages.



Steve Atherton, PGA Master Professional demonstrates the SPRI Golf Sports Medicine technology to SPRI Co-Chair Dr. Marc Philippon