Faculty Spotlight:

Seth L. Sherman, MD

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Associate Professor, Orthopaedic Surgery
Director, Sports Medicine Fellowship
Head Team Physician, Stanford Cardinal Football

"Sports medicine research is exciting and innovative… it directly translates to improve healing potential, human performance, and to prevent injuries in the elite athlete or weekend warrior."

An athlete and a musician share a common truth—if their instruments are not properly tuned, they cannot perform at their best. While a musician's guitar might simply require new strings to keep the music going, an athlete's body often requires complex maintenance to keep the game alive, including strategies for injury prevention, as well as surgical and non-surgical interventions.

Dr. Seth Sherman is helping athletes keep their bodies in tune by working in the clinic and in the lab on strategies that augment tissue healing, improve human performance, and prevent musculoskeletal injuries. Approaching these challenges through parallel basic science and clinical pathways, Dr. Sherman's team works from the "*bedside to the bench and back to the bedside",* identifying areas of clinical need to deliver evidence-based solutions for patients.

Dr. Sherman collaborates with orthopaedic surgeons, non-surgical physicians, and researchers within bioengineering, human performance, and musculoskeletal imaging across the Stanford campus. The team is developing novel methods to accurately record human movement (including wearable technology, phone-based systems), rapid MRI imaging protocols, and exploring the use of biomarkers to track injury and recovery. This research builds on Dr. Sherman's earlier work, which utilized portable, inexpensive software for Microsoft Kinect to detect knee injury risk in youth athletes performing a drop vertical jump test. The team's multifaceted goal is: 1) develop innovative methods to screen for injury risk (i.e. youth athlete non-contact ACL), 2) create targeted intervention programs to reduce risk, 3) enhance athletic performance; and 4) improve accuracy of return to play testing following injury/surgery (i.e. clinical evaluation, biomarkers, functional tests, imaging analysis for healing).

In the laboratory, Dr. Sherman's team investigates cellular and molecular deficiencies in tissue types including tendon, ligament, articular cartilage, and meniscus. By understanding aberrant pathways leading to tissue injury, they can identify innovative therapeutic targets for intervention. In collaboration with the Genetic Engineering and Synthetic Biology laboratories, Dr. Sherman's research has explored the role of orthobiologic agents such as platelet rich plasma (PRP) and bone marrow aspirate concentrate (BMAC) for tissue healing in patella tendinopathy (the breakdown of collagen in a tendon).

Dr. Sherman's lab is also investigating the use of CBD for musculoskeletal applications as an alternative to commonly used local anesthetics and cortisone derivatives. In his earlier work, Dr. Sherman had researched the cellular toxicity of such applications.

In addition to basic science research, Dr. Sherman has helped to build a Sports Medicine clinical research team that includes several full-time clinical research coordinators, residents, fellows, and students. The team collects prospective outcomes on their patients using a novel data collection platform called Patient IQ. The group is part of the JUPITER study which is the largest, multicenter study ever assembled in patellofemoral instability. They are additionally planning to enroll in FDA-approved clinical studies investigating pioneering strategies for knee cartilage restoration, joint preservation, and orthobiologic injections for osteoarthritis. Recent clinical publications explore outcomes in meniscus preservation and transplantation, medial patellofemoral ligament reconstruction, osteochondral allograft and matrix-induced autologous chondrocyte implantation (MACI), and surgical augmentation using PRP/BMAC. The clinical research team actively reports results of non-surgical and surgical interventions to continue to introduce new knowledge to the field, with the goal of improved patient outcome.

Biography

Seth L. Sherman, MD is board certified and fellowship trained in Sports Medicine and is a third-generation physician and surgeon. He serves as head team physician for Stanford Cardinal Football and as director of the Sports Medicine Fellowship program. Dr. Sherman specializes in arthroscopic and minimally invasive surgical interventions for the knee and shoulder. His subspecialty and research interests are in knee joint preservation/cartilage restoration and the patellofemoral joint. As a tertiary care provider, Dr. Sherman offers non-surgical and salvage surgical solutions for active patients with complex problems and in cases where other surgeries have failed. Dr. Sherman completed his residency training at the Hospital for Special Surgery in New York City and was trained by the team physicians for the NY Giants, Mets, and Knicks. During his sports medicine fellowship in Chicago, he served as assistant team physician for the Chicago Bulls and White Sox. Prior to joining the team at Stanford University in July 2019, he served as a team physician for the Mizzou Tigers in the NCAA SEC conference. Dr. Sherman is co-author on more than 100 peer-reviewed articles/chapters and actively presents his research at national and international meetings. He is Chairman of the American Academy of Orthopaedic Surgeons Sports Medicine/Arthroscopy committee and holds leadership positions in several other organizations including American Orthopaedic Society for Sports Medicine, Arthroscopic Association of North America, International Society of Arthroscopy, Knee Surgery and Orthopaedic Sports Medicine, and International Cartilage Regeneration & Joint Preservation Society. He is also a member of the prestigious international ACL and Patellofemoral Study Groups.