

## **Sports**

### **Why and How Exercise is the Best Treatment for Tendinopathy**

Tendinopathy (pathology and pain in a tendon) is a prevalent injury in athletes and is very common in the competition season when loads are high. Treating tendinopathy, especially in season, can be very frustrating due to typically poor responses to intervention.

Mechanotransduction is an intervention model that refers to the process by which the body converts mechanical loading into cellular responses. These cellular responses, in turn, promote structural change in tendon, muscle, cartilage and bone.

Understanding how tendinopathy develops, and how this affects clinical assessment and treatment is critical to improving outcomes for the athlete. The role of exercise is often underestimated despite evidence that supports its use in tendinopathy. There is good physiological, research and clinical support for physical therapists having a leading role in the management of tendinopathy.

The session will cover the pathoetiology of tendinopathy, identifying stages of tendinopathy and how mechanotransduction through exercise helps tendon recovery.

#### **Course Objectives: Upon completion of this course, course participants will be able to:**

- a. Define mechanotransduction.
- b. Define the stages of tendinopathy.
- c. Describe how mechanotransduction through exercise helps tendon recovery.
- d. Describe the effect of load on various tendons, and the evidence for “unloading” these tendons.

## **Outline: time and content**

- I. Introduction
- II. Introduction of Mechanotransduction, pathoaetiology of tendinopathy, and identifying stages of tendinopathy
- III. Description of how mechanotransduction through exercise helps tendon recovery in various lower extremity tendons in the human body.

Discussion on the following topics:

1. How the various type and amount of load can influence tendon response
2. How to modify exercise to achieve the best outcome
3. How to amend load for the different pathoaetiology stages

Question and Answer

Jill Cook, PT, PhD

Professor

La Trobe University School of Allied Health

Karim Khan, MD, PhD, FACSM

Professor

Deputy Director, University of British Columbia ([Centre for Hip Health and Mobility](#))

Michael P. Reiman, PT, DPT, OCS, SCS, ATC, FAAOMPT, CSCS.

Assistant Professor

Division of Physical Therapy

Duke University Medical Center, Durham, NC.

### **Jill Cook, PT, PhD**

Professor Jill Cook, physiotherapist, PhD, is a Professor in musculoskeletal health in the La Trobe University School of Allied Health in Australia. Jill's research areas include sports medicine and tendon injury. After completing her PhD in 2000, she has investigated tendon pathology, treatment options and risk factors for tendon injury. Jill currently supplements her research by conducting a specialist tendon practice and by lecturing and presenting workshops both in Australia and overseas.

Jill has been awarded numerous professional and research awards, including multiple "best paper" of the conference awards at several prestigious national conferences. She has over 175 peer reviewed publications, serves as deputy editor of the British Journal of Sports Medicine, and is a member of the High Performance Commission for Basketball Australia.

### **Karim Khan, MD, PhD, FACSM**

Professor Karim Khan, MD, PhD, FACSM, is a Canadian sports physician and academic who played a role in the paradigm shift that 'tendinopathies' are not inflammatory conditions. Although that paradigm remains under scrutiny, the research helped provide a strong rationale for physical therapy treatment of these conditions rather than NSAIDs. His paper "*Mechanotherapy: how physical therapists' prescription of exercise promotes tissue repair*" (2009) has been downloaded > 50,000 times and cited > 100 times. It provides a rationale for physical therapy treatment across conditions – tendon, muscle, ligament, bone and joint.

He is a founding investigator and Deputy Director of the \$40 million research enterprise at the University of British Columbia called the [Centre for Hip Health and Mobility](#). In 2015 he is on leave from UBC to head up the Research & Education Department at Aspetar, Qatar Orthopaedic and Sports Medicine Hospital, one of only 9 IOC research centres world-wide.

Karim is in his 8<sup>th</sup> year as Editor-in-Chief of the British Journal of Sports Medicine which has very strong Physical Therapy focus. He is also an author of Brukner & Khan's [Clinical Sports Medicine \(currently in 4<sup>th</sup> edition\)](#).

### **Michael P. Reiman, PT, DPT, OCS, SCS, ATC, FAAOMPT, CSCS (Moderator)**

Mike is an assistant professor of physical therapy at Duke University Medical Center. As a clinician Dr. Reiman has over 20 years of experience in assessing, rehabilitating, and training clients at various levels of ability. He received his doctoral degree in physical therapy from MGH Institute of Health Professions. In addition to his certifications as an athletic trainer and strength and conditioning specialist, Dr. Reiman is a manual therapy fellow through the American Academy of Orthopaedic and Manual Physical Therapists, a USA Weightlifting level 1 coach, and a USA Track and Field level 1 coach. Dr.

Reiman has co-written the only textbook on functional testing, *Functional Testing in Human Performance*, written over 10 book chapters on orthopedic examination/intervention and training. He has also written over 40 peer-reviewed articles. Dr. Reiman currently serves on the editorial board, and is a reviewer for, multiple orthopedic and sports related journals. Dr. Reiman presents on and researches various areas of assessment and treatment methods in orthopaedic and sports medicine. He is the current Sports Section Hip SIG Chair for the APTA. He continues to practice clinically on various sports and orthopedic-related injuries. He is a member of the American Physical Therapy Association, National Athletic Trainers' Association, National Strength and Conditioning Association, USA Weightlifting Association, and USA Track and Field Association.

### **Bibliographic References:**

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