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Jess G. Snedeker, Jasper Foolen

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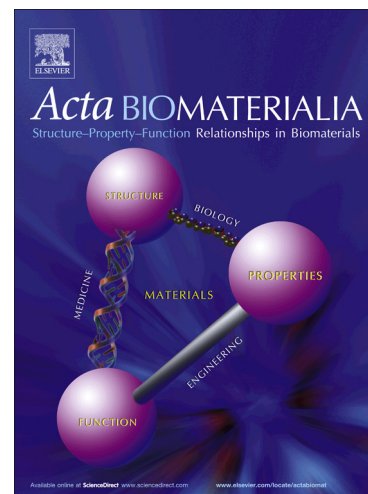
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# **Tendon injury and repair – A perspective on the basic mechanisms of tendon disease and future clinical therapy**

**Jess G. Snedeker (a,b) and Jasper Foolen (c)**

**a - Department of Orthopaedics, University Hospital Balgrist, Lengghalde 5, CH-8008 Zurich, Switzerland**

**b - Institute for Biomechanics, ETH Zurich, Lengghalde 5, CH-8008 Zurich, Switzerland**

**c - Department of Biomedical Engineering, Eindhoven University of Technology, Eindhoven, The Netherlands**

## **1 Abstract**

Tendon is an intricately organized connective tissue that efficiently transfers muscle force to the bony skeleton. Its structure, function, and physiology reflect the extreme, repetitive mechanical stresses that tendon tissues bear. These mechanical demands also lie beneath high clinical rates of tendon disorders, and present daunting challenges for clinical treatment of these ailments. This article aims to provide perspective on the most urgent frontiers of tendon research and therapeutic development. We start by broadly introducing essential elements of current understanding about tendon structure, function, physiology, damage, and repair. We then introduce and describe a novel paradigm explaining tendon disease progression from initial accumulation of damage in the tendon core to eventual vascular recruitment from the surrounding synovial tissues. We conclude with a perspective on the important role that biomaterials will play in translating research discoveries to the patient.

Tendon and ligament problems represent the most frequent musculoskeletal complaints for which patients seek medical attention. Current therapeutic options for addressing tendon disorders are often ineffective, and the need for improved understanding of tendon physiology is urgent. This perspective article summarizes essential elements of our current knowledge on tendon structure, function, physiology, damage, and repair. It also describes a novel framework to understand tendon physiology and pathophysiology that may be useful in pushing the field forward.

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