

Effect of cyclic stretching on the tensile properties of patellar tendon and medial collateral ligament in rat

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摘要

Abstract

Background

Although dynamic stretching is often prescribed before exercise is undertaken, research has rarely been conducted to determine what effects dynamic stretching has on tendon and ligament injury prevention. The hypothesis is that the mechanical properties of tendon and ligament will increase in an ultimate tensile loading test after sinusoid cyclic stretching.

Methods

Ten paired rat medial collateral ligaments and patellar tendons were used with and without 150 sinusoid cyclic stretching in either side to determine the influence of cyclic stretching on the mechanical behavior of the tendons and ligaments.

Findings

The increase in ultimate stress and elastic modulus was significant after sinusoid cycling in both the medial collateral ligaments and the patellar tendons. An adequate sinusoid cyclic stretching could increase the mechanical properties of tendon and ligament under optimization of cyclic strain.

Interpretation

A better understanding of the mechanical behavior of tendon and ligament after a series of dynamic stretching prior to exercise may lead to the development of training strategies that could reduce the incidence of injury during sports activities.