

Newsletter

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Eccentric Training for Treatment of Achilles Tendinosis

Nicholas Institute of Sports Medicine and Athletic Trauma

Anatomy of the Achilles Tendon

The soleus, gastrocnemius, and plantaris muscles form a common tendon, the tendo calcaneus (Achilles tendon), which attaches medially to the posterior surface of the calcaneus.

Achilles Tendinitis and Tendinosis

Achilles tendinitis develops due to inflammation, strain, or repetitive trauma to the Achilles tendon. This occurs usually due to a repetitive activity. Symptoms are also associated with recreational activities like running, tennis and basketball.

If this is left untreated, it can develop into Achilles tendinosis, due to a degenerative change in the tendon from repetitive microtrauma.

The majority of achilles tendon overuse injuries occur in middle aged, athletic males. Runners with overly pronated feet may be at greater risk for developing achilles tendinosis. The increased pronation may put additional stress on the tendon, therefore, placing it at greater risk for injury.

Eccentric Muscle Action and Rehab

Eccentric muscle action is a lengthening muscle contraction. The muscle fiber (sarcomeres) crossbridges are at their maximal overlap at the beginning of the contraction, therefore, the eccentric contraction generates more tension than both concentric and isometric contractions.

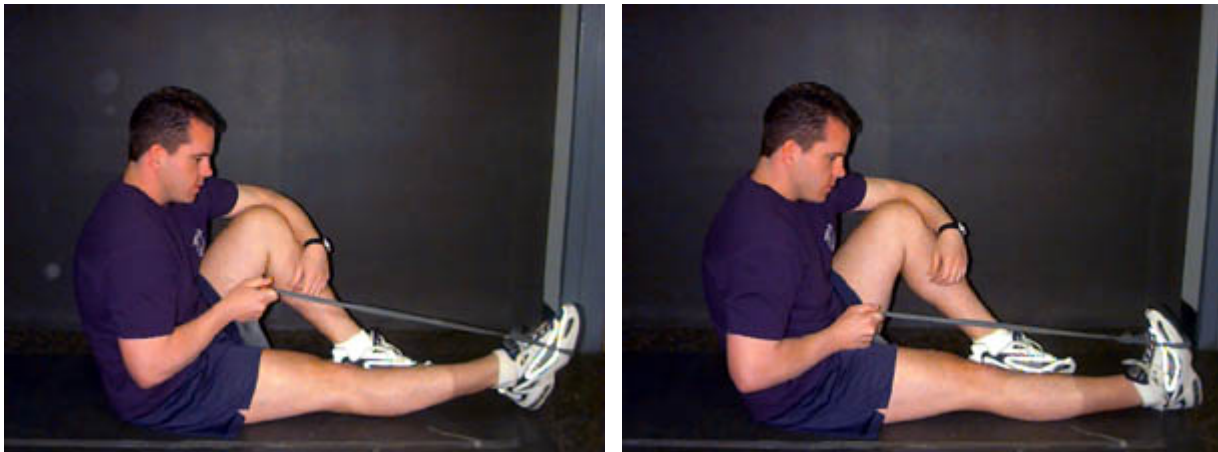
"It has been proposed that possible explanations for the positive effects of eccentric training on tendinitis might be either an effect of stretching, with a lengthening of the muscle-tendon unit, and consequently less strain during ankle joint motion, or hypertrophy and increased tensile strength in the tendon."(Alfredson, Pietila, Jonsson, Lorentzon, p.365) It is this concept that may explain the possible remodeling effect of the tendon due to the eccentric exercise.

Rehab Guidelines for Runners

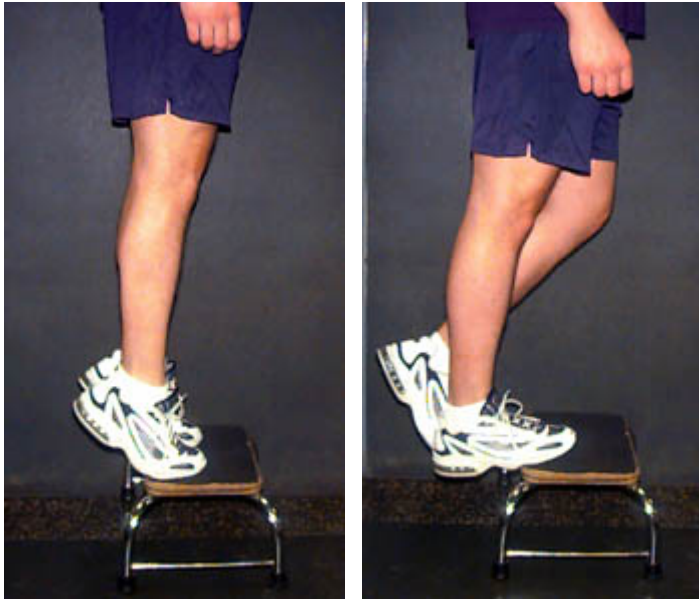
- Begin ice after exercise
- Use small heel lift in shoe
- Rest for two weeks after the aggravating activity
- Begin stretching regimen for gastrocnemius and soleus complex



- Begin eccentric exercise program 7-10 days after pain has subsided
- Perform eccentric thera-band exercises 3 sets of 10, progressing to 3 sets of 15.
- Start with toes pointed, giving resistance through the thera-band, slowly allow your foot into dorsiflexion.



- Perform a toe raise on a 4-6 inch box or step with both legs. Once on your toes, lift the uninvolved leg and lower yourself slowly into dorsiflexion.



- Increase the speed, number of sets, and amount of weight as tolerated.
- Warm up and cool down before exercise
 - o 5-10 min. warm up
 - o 3x30 sec. calf stretches

Rehab Protocol for Severe Conditions

- Stop running all together
- Immobilize the ankle for 2-6 weeks depending on the severity of the inflammation
- Remove immobilization when non tender to palpation
- When non-tender to palpation:
 - o Gentle stretching 2-3x daily
 - o Oral anti-inflammatory if not contra-indicated
- Slow, painless progression of activities
 - o Swimming
 - o Bicycling
 - o Walking
 - o Light jogging
 - o Eccentric exercises
- Return to rest if symptoms return