

# PHYSIO4ALL

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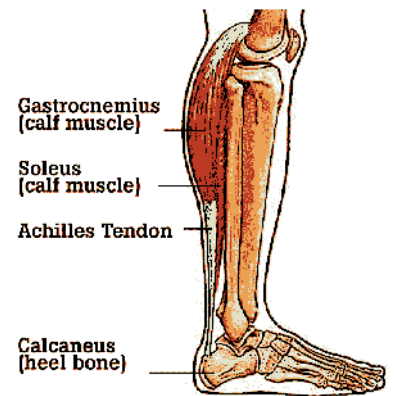
## Achilles Tendinopathy

### **What is Achilles Tendinopathy?**

Achilles tendinopathy is a common overuse injury, particularly in runners and other athletes who compete in racquet sports, track and field, volleyball, and soccer. The specific factors linking this injury with running include excessive mileage, sudden increase in training intensity, decrease in recovery time, change of running surface, and poor footwear. The presentation of Achilles tendinopathy usually involves the gradual onset of pain and dysfunction secondary to a chronic overuse injury. A lack of inflammatory cells makes way for an increase in degenerative tissue, weakening the existing tissues of an already overloaded tendon.

### **Anatomy**

The Achilles tendon (A.K.A. heel cord) is the thickest and strongest tendon in the human body. It is made up of fibrous tissue that connects the heel (calcaneus) to two calf muscles: the gastrocnemius and the soleus. The strong linear fiber arrangement of the Achilles tendon is encased in a strong sheath enabling the Achilles to transmit forces to and from the foot. The sheath has three layers reducing friction of the tendon and the surrounding environment. The tendon itself has a very poor blood supply; hence it recovers slowly after injury.



### **Signs and Symptoms**

- Pain in the posterior part of the heel with contraction of calf muscles during walking, jumping, running and traversing stairs.
- During the initial stages of the condition, the tendon may only be painful following exercise or first felt on rising the day following participation.
- Stiffness and tightness in the Achilles region may be present mostly in the AM (getting out of bed) and tends to decrease throughout the day with walking or warm-up prior to activity participation.
- As the tendinopathy worsens with continued participation, the pain may present itself for a longer period of time, even during and after activity to inhibit your performance.

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## Causes:

- Overuse and overload of the tendon with repetitive motions involving forced lengthening of the tendon (e.g. running, jumping) causing microscopic tearing of the tendon.
- Sudden Increase in training intensity and volume with decreased recovery time.
- Muscular imbalance (weakness, decreased muscle length) of the calf muscles—loading the tendon instead of the muscle.
- Faulty foot mechanics and positioning during running and jumping activities whipping the Achilles tendon and causing excessive rotation of the tibia (shin bone)
- Weakness of abdominals and pelvic stabilizers unable to control the ankle and knee motion when striking the ground.
- Stiffness in the ankle joint complex causing repetitive overload of the Achilles tendon.
- Stiffness in the first metatarsal-pharyngeal joint (Big Toe) overloading the Achilles tendon.

## Management (Divided in three phases)

### *Acute Phase*

- Treatment should begin with relative rest to allow time for the tendon to heal.
- Ice has been shown to be effective in minimizing pain by lowering the metabolic rate in tendinopathy.
- The use of anti-inflammatory medication should be considered initially; however, their role in treatment of Achilles tendinopathy is unclear because many believe anti-inflammatory medications do not offer much benefit since it is classically a non-inflammatory condition.
- Short-term use of a 12—15-mm heel lift helps reduce unnecessary loading on the affected tendon. (The heel lift should be eliminated after calf flexibility improves because it can perpetuate calf inflexibility)
- Ultrasound therapy can be helpful in the promotion of local tissue and tendon healing.
- Manual mobilization of the Achilles tendon will support tissue healing.
- Always walk with shoes that offer proper support and avoid walking bare feet especially upon waking to reduce the incidence of microtears in the tendon.

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## ***Recovery Phase***

- Manual mobilization is used to improve foot and ankle range of motion.
- Strengthening the weak proximal muscles, especially the gluteals to regain adequate control of leg and ankle motion.
- Multiplanar stretching of the tight calf muscle group.
- Eccentric strengthening program for the gastrocnemius and soleus complex is implemented to decrease pain and improve function (e.g. heel drops).
- Reduce the height of the heel raise to 4-6mm to support the soft tissue structures.
- A night sock can be worn (The Strassburg Sock) to keep the tissue structures in a lengthened position and increase the rate of cellular synthesis.

## ***Functional phase***

- Strengthening exercises are performed in multiple planes and in single-leg stance to promote normal motor patterns and control of the entire lower extremity.
- Running footwear evaluation is necessary because shoes with poor support may exacerbate the tendinopathy.
- Sports-specific training is introduced gradually and accordingly increased if there is no pain during and after exercise.

## **Surgery**

Conservative management has been shown to be effective in most cases of Achilles tendinopathy because this condition is usually secondary to chronic degenerative changes from a prolonged period of overuse. A 6 month period of rehabilitation may be needed before the clinical resolution of symptoms. If symptoms don't resolve within a 6 month timeframe, surgery may be indicated.

## **Differential Diagnosis** (if applicable):

- Achilles tendon rupture
- Rupture or inflammation of other tendons such as posterior tibialis, flexor hallucis longus, plantaris, or flexor digitorum longus
- Fracture (i.e. Calcaneal stress fx)
- Subcalcaneal bursitis
- Haglunds's deformity (prominent superior tuberosity of the calcaneus)
- Plantar fasciitis or Heel pain
- Calcaneal periostitis/calcaneal apophysitis
- Tarsal tunnel syndrome
- Medial calcaneal or sural nerve entrapment
- Compartment syndrome
- Osteonecrosis
- Spinal involvement/Lumbosacral radiculopathy

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