Achilles Tendon Injury

Contents

Video link on Page 3
Common taping techniques for injuries related to running

Possible causes of pain in the achilles region

Most common

- Achilles tendinopathy/tendinosis
- Retrocalcaneal bursitis

Less common

- Posterior impingement
- Sever's disease (adolescents)
- Achilles bursitis
- Referred pain from neural structures/lumbar
- Sciatica

Not to be missed

- Achilles tendon rupture

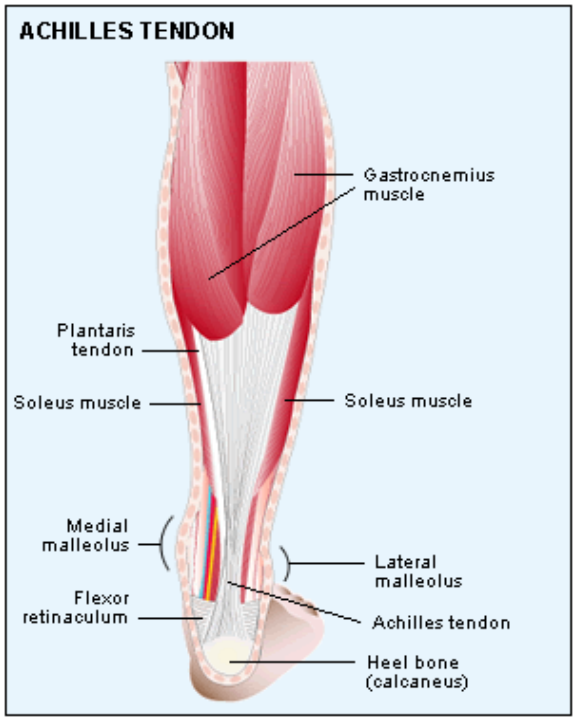

Illustration 1: Anatomy of the Achilles Tendon

Achilles Tendon Injury

The Achilles tendon is the thickest and strongest tendon in the body. It is the combined tendon of the Gastrocnemius and Soleus muscles (calf muscles). The tiny Plantaris muscle also inserts on to the achilles tendon.

Those most at risk

Overuse achilles tendon injuries are common in many sports especially runners. Most of these injuries occur in men with the majority being middle aged. Those who supinate or pronate have a higher risk of achilles problems. It has also been found that weaknesses in core stability (controlling the position of the pelvis) can add to the problem. You have to remember movement requires co-ordination, the sequence of body parts is called the kinetic chain, each kinetic chain has its own sequence of which the basics is proximal to distal (closest to the trunk to furthest away). Injuries and adaptations in some areas of the kinetic chain can cause problems not only locally but distally. If the back is weak the distal link must compensate for the lack of force delivered through the more proximal links. These changes can cause alterations in techniques and decrease performance.

Achilles problems can take time before they are fully healed. There is limited blood supply to this area so healing is a slow process. Seeing a specialist can help you to learn how to control this condition yourself with only a few appointments necessary to keep progress and advance exercises when needed.

The sooner you see a specialist when symptoms start the quicker you can get back to your sport.

Symptoms

This typically affects the middle third of the tendon or at its insertion. Degeneration and micro tears that heal poorly results in a thickened, swollen and painful tendon which causes pain during and after exercise. Morning stiffness is a sign of ongoing inflammation. The onset of pain may be sudden or gradual but noticeable. Severity of pain can range from minor to severe. The duration can be for days up to years. Disability can be minimal able to continue to not being able to walk without pain.

A tender nodule may be present and the extent of tenderness may be pinpoint extending through to several centimetres. A deep nagging ache will occur during and after running or other weight bearing activities particularly up hill. You may experience stiffness after resting on the area of the achilles and heel. Pain may be present when performing a heel raise.

Illustration 2: Achilles tendon on the right showing signs of injury

The right achilles shows signs of inflammation. The right achilles is shown to be much thicker. Insertional Achilles injuries can effect the tendon, bone and bursa and is very hard to treat compared to a mid tendon injury. This following link will show you a video which shows you how to apply kinesio tape to the achilles to reduce swelling and pain
http://youtu.be/SgUtmVQDdc0

Causes

- years of running
- increase in activity (time, intensity, gradient, speed)
- short recovery periods
- changes in surface or footwear
- footwear - esp. low heeled running shoes
- excessive pronation - this can put loading on to the calf muscles to re-supinate for toe off (whipping action)
- calf weakness
- poor muscle flexibility
- restricted joint mobility
- weak core stability

Injury to the achilles occurs when the load applied either in a single episode or more often over a period of time exceeds the ability of the tendon to withstand that load.

Treatments Given at Pro-Am Sports Injury Clinic

Treatments in the clinic will follow the PRICE regime if the injury is an acute episode. **Ultrasound** may be used if very painful to the touch, ice treatments can be soothing with gentle joint mobilistations. When inflammation has settled ultrasound maybe used to warm-up the area before applying **sports massage** to the site of the thickness (frictions). Massage will also be completed to the calf muscles to reduce any tightness which might be contributing to the problem. Stretching of the calf muscles should be taken out of the routine if the client performs them. Some patients may benefit from further **ankle joint mobilisations,** to help with any stiffness present particularly dorsiflexion. As part of our treatment we will also get the patient to perform some type of **strengthening** exercises, these are good for taking base line measures to show improvement and also show the patient clearly what to do at home. The type of exercise included starts with simple heel raises and ankle movements until pain allows the patient to perform eccentric controlled dorsiflexion. Research shows that **eccentric training** to be very beneficial in treating achilles problems. This is because it results in improved muscular damping of the high forces generated by impact loading. I always use **ice** after to soothe the area as it can be quite a painful treatment.

Many athletes will still be able to continue with their sport, but don't go berserk. Keep the session short and do a thorough warm-up before and stretching routine after. If the condition is painful stop try an alternative like swimming or cycling to off load the achilles. All upper body strength and core stability work can still be achieved. Most lower limb strengthening can also still be done but again let the injury control the intensity.

To complete at home

The patient must comply to a home rehabilitation programme for the condition to improve and recover. Regular use of ice post exercise for fifteen minutes repeated again after an hour is great. It will help to minimise any aggravation.

Strengthening will be targeted at **eccentric** control for the ankle plantar flexors and also extensors of the hip and knee. Other exercises include strengthening the ankle everters and inverters to help control dynamic foot control. They also help the plantarflexors.

The standard exercise used is the heel drop (pictures shown below).

- Bilateral heel drop while standing on step with heels over the edge. lower heels below the level of the step controlled, the up phase can be fast. For insertional achilles do not do heel raises off a step, only do on the ground. Reps 40-60 controlled

Illustration 3: Heel Drop

- increase the percentage of weight through the injured leg
- single leg heel drops
- add weights

Progression should only happen when the previous exercise is pain free before and after. You can expect to feel pain at the beginning of the programme and when progressing. Remember to do a good warm-up before and follow with ice.

Return to full activity must be gradual. On return, **a heel raise cushion** can be used to reduce the load on the achilles (in both shoes). Jogging is to be commenced **gradually by 10%** each week, when reaching 30-40 minutes pain free, speed can start to be implemented. Sprints and hill work should be the last types of training to be introduced.

Prevention

Getting some **orthotics** made to help correct over pronation is advised especially if excessive.

Using a **heel raise cushion** can help off load the achilles.

Make sure you **warm-up** fully before any exercise.

Strengthening the calf muscles eccentrically can help decrease injury. Plyometrics is a form of training that can help to strengthen and prepare the achilles for explosive sports.

Balance training can help improve reactions to uneven ground. Any activity that challenges your ability to balance, and keep your balance, will help what's called proprioception: - your body's ability to know where it's limbs are at any given time.

Be aware of the importance of good footwear. A good pair of shoes will help to keep your ankles stable, provide adequate cushioning, and support your foot and lower leg during the running or walking motion.