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# Achilles tendinopathy

**Introduction**
This tendon is the strongest and thickest in the body withstanding forces of 9000N or up to 12.5 times body weight. Pain is usually located in the region of the achilles 2-6 cm above it's attachment into the heel. Acute inflammatory pain is described as a tendonitis whereas chronic inflammatory pain is described as a degenerative tendonosis.

Acute over-exertion injuries to the tendon are very common particularly in runners. These are usually caused by increased intensity or duration. For example sudden increases in a training program, or training on excessively soft or hard surfaces can overload the tendon. It has been found that training on sand has a higher incidence of achilles injuries.

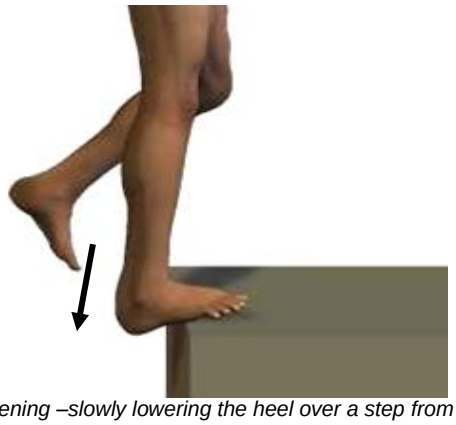
Excessive tensile strain is probably the most common causative factor involved in injury. The fibres of the tendon rotate 90° as they attach into the heel, and thus intratendonous shear and tendon wringing have also been theorised to cause injury.

Studies on foot pronation and achilles tendon tension found that there was a correlation between excessive pronation and increased strain on the medial portion of the tendon. This excessive pronation is the cause of tendon whipping as it bows from lateral to medial at heel strike. It is possible that this tendon wringing may therefore contribute to injury.

In tendonosis a hypervascular pattern with capillary proliferation in the peritendon tissue is usually present and has been linked to the pain suffered.

**Treatment**
As with any treatment programme it is necessary to reduce pain and swelling as well as to restore normal function. Avoiding abuse as opposed to complete rest of the injury is important.

- **Ice** with regular application of ice for 15-20 minutes at 2 hourly intervals can reduce symptoms.
- **Heel lifts** inside the shoe can immediately reduce stress on the tendon.
- **Calf stretching** promotes flexibility reducing strain, and also for the tendon fibres' to become more aligned and organised.
- **Eccentric strengthening** has been suggested as being the most significant exercise for this condition.



*Eccentric strengthening –slowly lowering the heel over a step from a fully flexed ankle position in both knee flexion, and knee extension. These are performed daily in 3 sets of 10-15 repetitions for each.*

Specific "negative" calf raises are performed for this, as per the "Alfredson programme" of 3 * 15 repetitions twice daily for both single legged knee flexion and knee extension. MRI studies have shown the reduction of "tendon thickness" with this regime. A recent study has also highlighted that in conjunction with eccentric strengthening; pain was significantly reduced in those who continued with moderate exercise.

- **Eliminate biomechanical causes** such as abnormal foot mechanics with orthotic devices, and also replacing poor or inappropriate footwear are essential for the athlete both short and long term.

**Summary**
For Achilles tendonosis there is a need for more aggressive handling of this chronic condition with strengthening. Persistence in this area is the key to good results. Reassurance to the patient that they must persist with a regular overall management programme is important. Return to activity on soft surfaces. Diagnostic ultrasound is an appropriate investigation in non responsive cases.

## Take home messages

- Pain worse in morning or rising after rest
- Acute tendonitis or chronic tendonosis
- A poor blood supply to the achilles
- Rotation and bowing of tendon during gait may aggravate the condition
- Activity modification will quickly reduce symptoms
- Eccentric strengthening is very important however may take 7-10 days before results occur.
- Orthotic therapy and heel raises can often offer immediate results