WAKEFIELD

SPORTS CLINIC

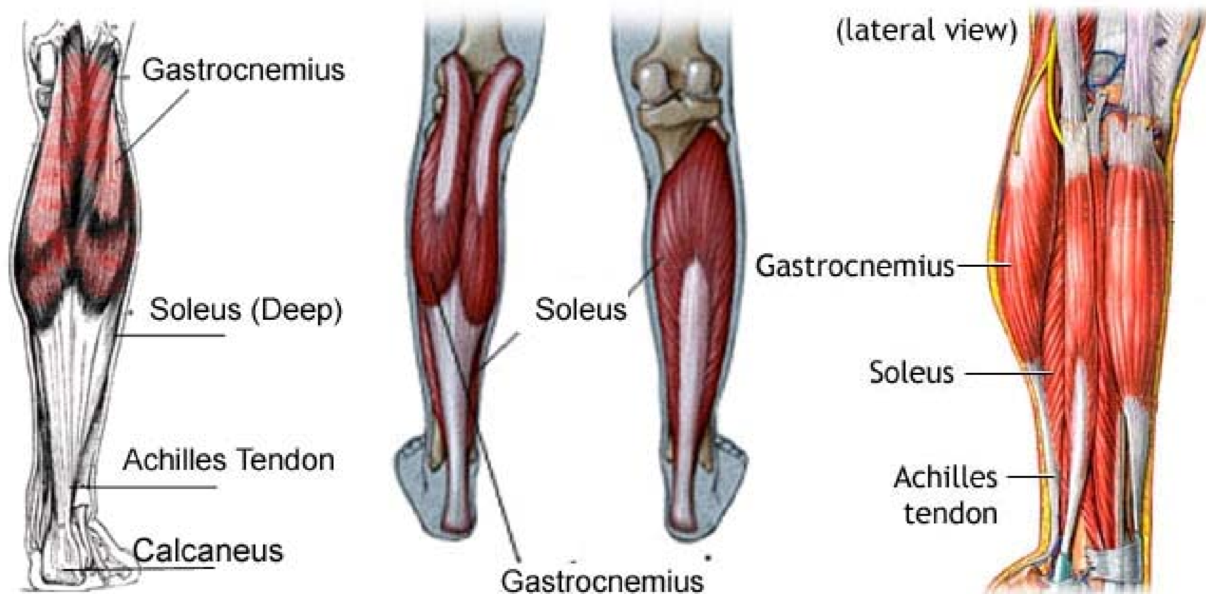
Achilles Tendon Injury

Achilles has its origins in ancient Greek mythology. Achilles was a magnificent athlete and a great warrior. He was invulnerable except for one heel, by which his mother, Thetis, had held him over the sacred fire in order to make him immortal. During the Trojan War, an arrow that struck his heel from the bow of Paris mortally wounded him. The Achilles Heel has become synonymous with injuries to this area.

Anatomy

The gastrocnemius and soleus muscles combine to form the Achilles tendon. The tiny plantaris muscle also inserts into the Achilles tendon.

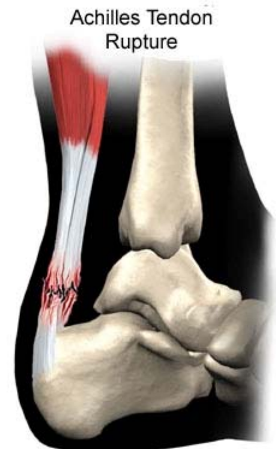
The tendon rotates as it descends to its insertion into the calcaneus. This rotation produces torsional forces between the fibres during activity, potentially causing friction, and occasionally tearing and damage to the microvasculature. This often progresses to degenerative change and sometimes rupture, especially in older athletes.



The most common site of injury is 2-6cms above the insertion of the Achilles into the calcaneus. This is where the Achilles is most twisted as it narrows and descends. It is also an area of constant relative

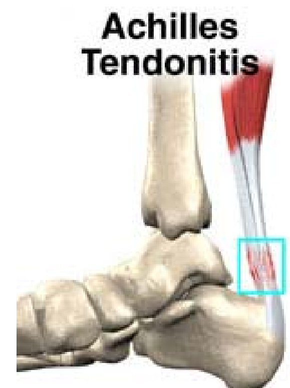
avascularity. With its poor blood supply, the Achilles tendon also has a low metabolic rate, which may explain why the tendon is slow to heal when injured.

Aetiology



1. **Biomechanical factors** – abnormal motion in the sub-talar joint places unequal tensile forces on different parts of the Achilles tendon.
2. **Muscular Factors** – ankle inflexibility due to calf tightness may force more pronation as a compensatory mechanism and place stress on the achilles tendon.
3. **Shoe design** – a poorly-padded heel counter, an inadequate heel elevation, a rigid sole, a lack of shock absorption properties and poor rearfoot stability in a shoe contributes towards Achilles tendon problems in the runner who over or under-pronates.
4. **Training factors** – training causes hypertrophy and increased vascularisation of active tissues, but inactivity has the reverse affect.

   With sudden return to training, the diminished blood supply cannot meet the demands of the active tendon, ischaemia, degeneration and rupture being the possible results.
5. **Other causes** – a prominent supero-posterior angle of the calcaneum causes compression of the tendon between the bone and the shoe.



History

Tendonitis patients will typically complain of pain and gradual onset of stiffness immediately on rising in the morning. It diminishes with walking about or applying heat.. Similarly, the athlete will notice the pain diminishing during training.

The onset of pain is more sudden with partial tears. A partial tear causes very little morning soreness but pain increases markedly with activity. In long-standing partial tears there is commonly associated tendonitis making it difficult to differentiate between the two.

A history of sudden severe pain in the Achilles tendon with disability (and a positive Thompson's Test – see appendix) is an indication of complete rupture.

Objective Examination

As well as examining the painful area, it is important to determine the possible pre-disposing factors such as unilateral calf tightness, stiffness in the ankle or subtalar joints and abnormal lower limb biomechanics.

Differential diagnosis

A number of conditions can mimic Achilles tendon problems. The sports trainer must be aware of these diagnostic entities and refer to a sports physiotherapist or medical practitioner where appropriate.

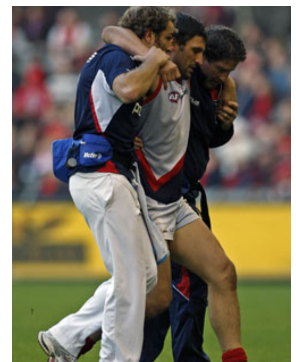
These conditions include:

- Calcaneal bruise/fractures
- Retrocalcaneal bursitis
- Subcutaneous bursitis
- Tibialis posterios tondonitis
- Soleus strains
- Tibial stress fractures
- Systemic arthropathies
- Infections
- Sever's Disease
- Neuro-meningeal pathologies

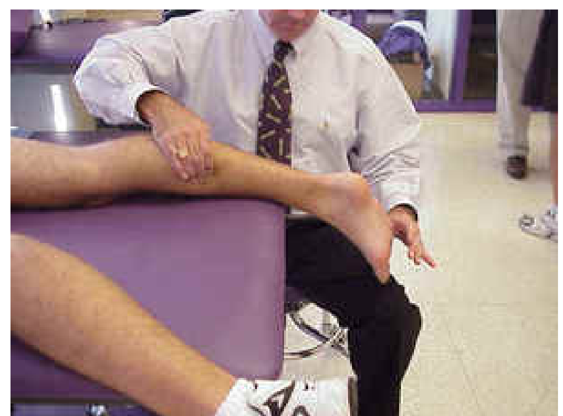
Conservative management

Conservative treatment techniques are numerous and best administered by an experienced sports physiotherapist. Some common methods of approach might include:

- Rest and ice initially – if necessary crutches and/or heel raise
- Modified activity and alternative training
- Ultrasound, magnetic field, laser, interferential therapy
- Transverse frictions
- Transverse mobilization of the Achilles tendon
- An eccentric strengthening program
- Stretch tight Achilles and gastrocnemius
- Myofascial release and/or acupressure to gastrocnemius and soleus
- Mobilisation of the sub-talar and talocrural joints.
- Correction of predisposing factors
- Shoe advice.



How to perform a Thompson's Test – Wakefield Sports Clinic



Step 1: Ask the patient to lie on the examination table face-down.

Step2: Squeeze the calf of the uninjured leg. The patient's foot should immediately flex downward, as if he or she were trying to point his or her toes. This is the normal and ideal response.

Step3: Squeeze the calf of the other leg and watch for any signs of movement in the foot. If the Achilles Tendon is injured or torn, the foot will stay still, indicating a positive result of the Thompson's test.

Step4: Refer the patient to a Wakefield Sports Clinic Doctor - 8232 5833 - *www.wakefieldsports.com.au*