Applied Anatomy of the Lower Leg & Ankle

What's wrong with this picture?

Topics

Exercises

Stretching

Walking gait cycle

Sprains

Shin splints

Plantar fascia

Achilles tendon

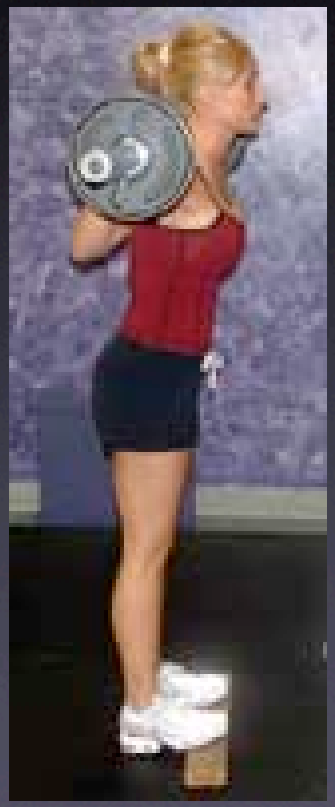
Turf toe

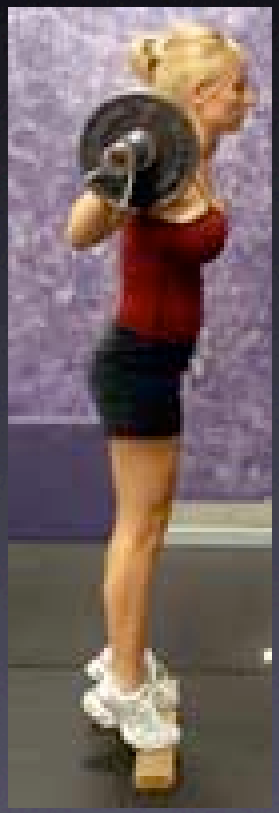
Ankle Exercises

Wobble Boards

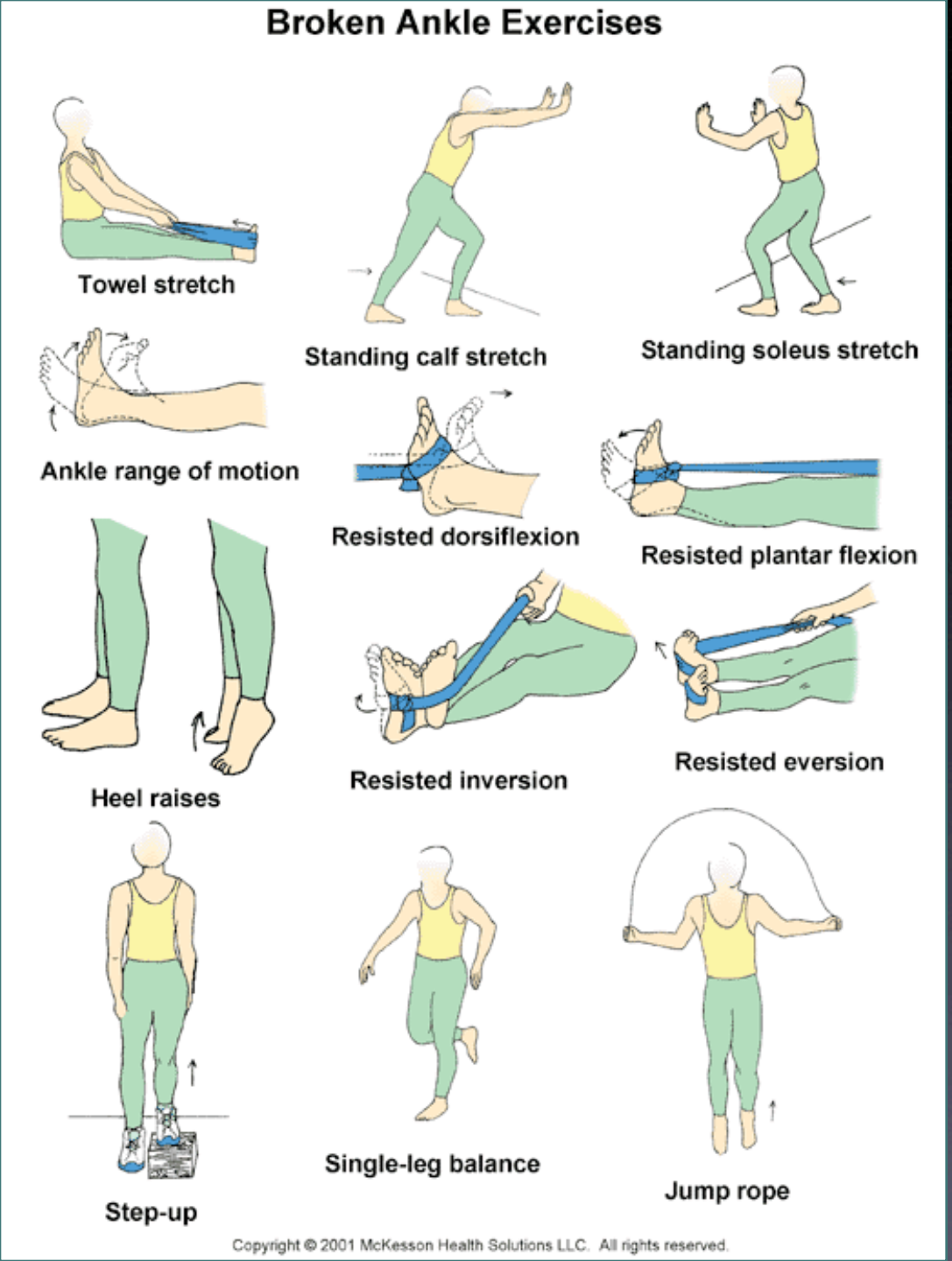
Balance Board

Calf Raises





Rocking Calf Raises

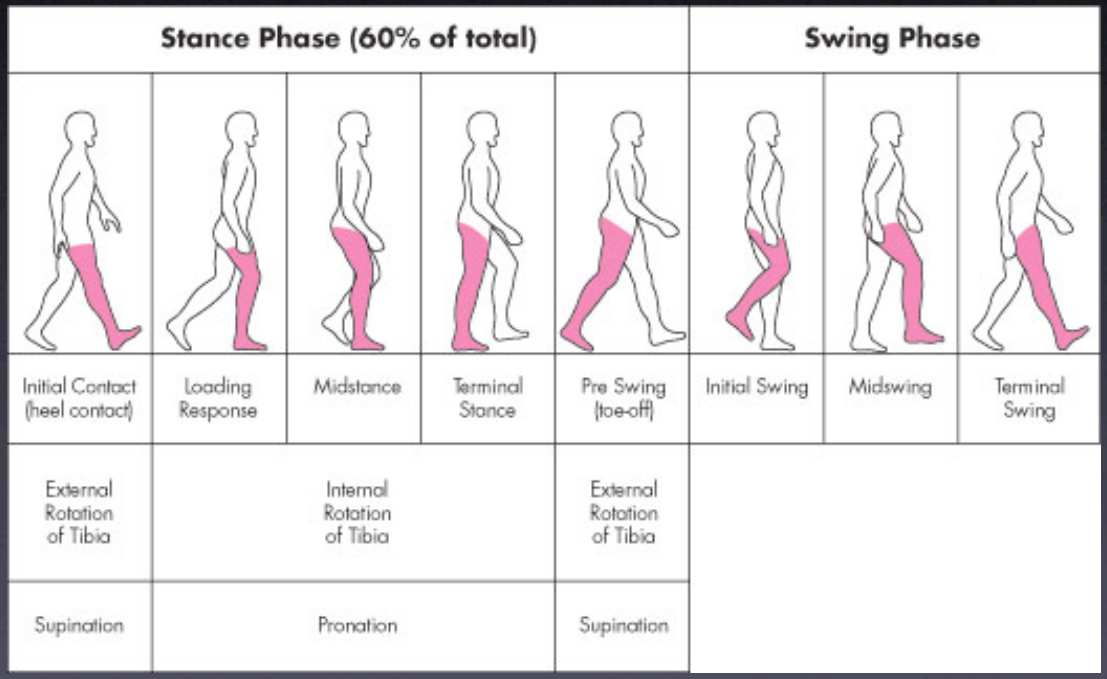


Ankle Exercises

- Calf stretch
- Soleus stretch
- Resisted dorsal and plantar flexion
- Heel raises
- Step-up
- Jump rope

Walking Gait

- Stance Phase
  - Heel-strike
  - Midstance
  - Toe-off
- Swing Phase



Additional Movements

- **Pronation** - a combination of dorsiflexion, eversion, and abduction (toe out)
- **Supination** - a combination of plantar flexion, inversion, and adduction (toe in)

- Excessive pronation or supination can be prevented with proper shoes.

Ankle Sprains

- Medial malleolus is shorter than the lateral mallelous
- More inversion (20-30°) than eversion (5-15°)
- Excessive inversion - stretches the lateral ligaments.

- Lateral sprains involve the anterior talofibular and calcanofibular ligaments.
- Deltoid ligament is sprained less often.

Ankle Sprains

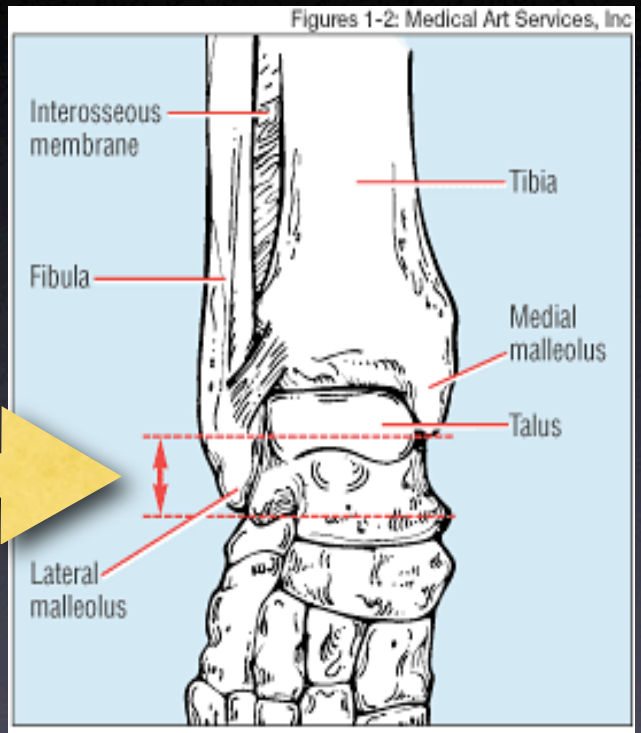


FIGURE 1. Anterior view of the ankle. Note the stabilizing boxlike mortise formed by the distal tibia and fibula over the talus. The lateral malleolus extends more distally than the medial malleolus (arrow). This creates a barrier to eversion, so most ankle sprains are caused by inversion.

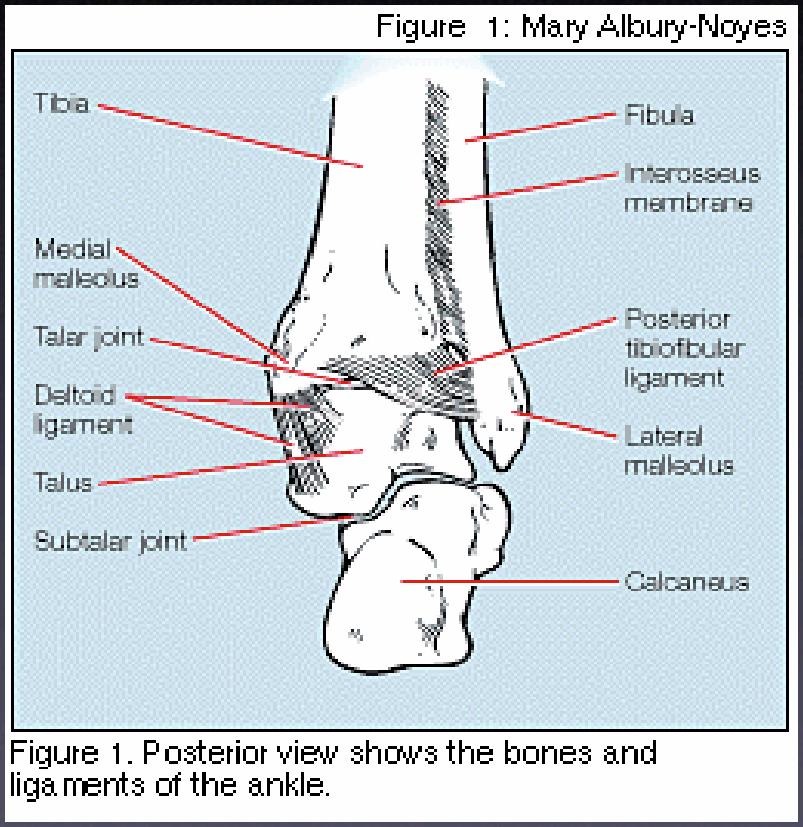
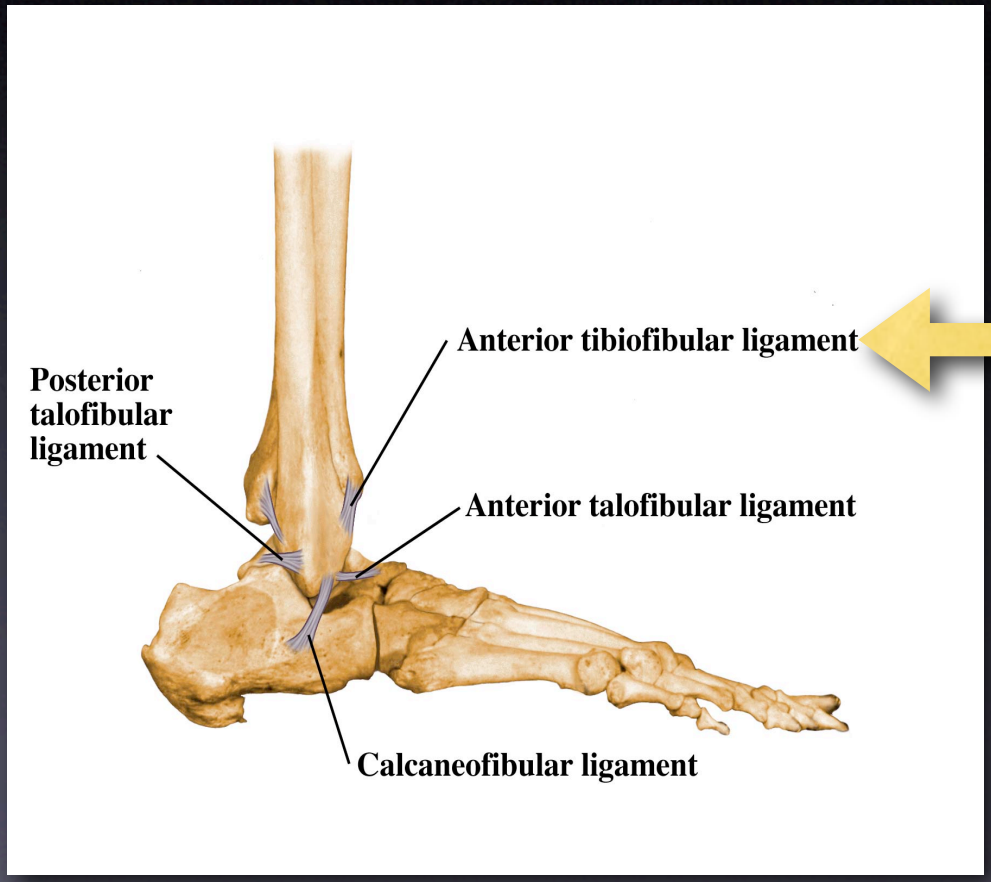


Figure 1. Posterior view shows the bones and ligaments of the ankle.

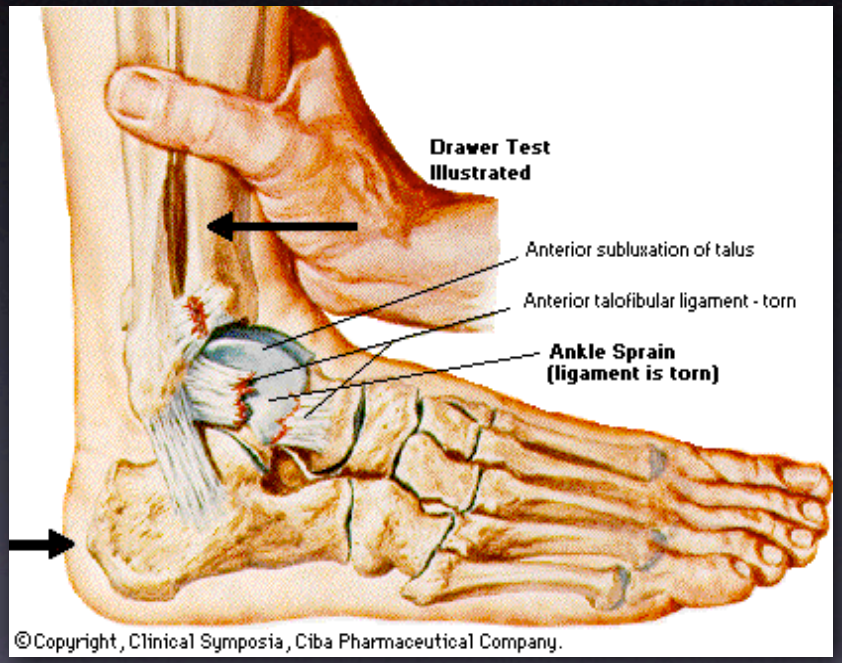
Ankle Sprain



- Anterior tibiofibular ligament
- High ankle sprain

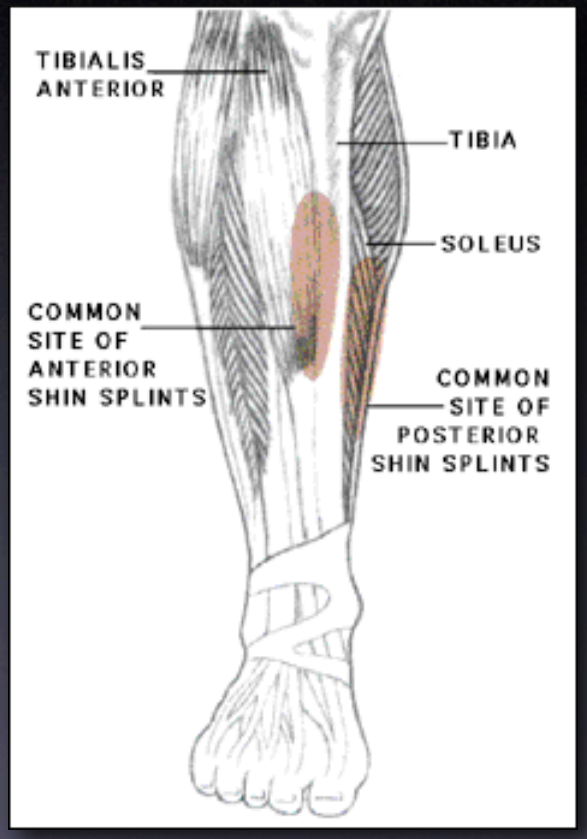
Classification of Sprains

- 1st Degree:
  - **Stretching** of ligament(s)
- 2nd Degree
  - **Partial tear**
- 3rd Degree
  - Complete tear



Shin Splints

- Non-specific injury
- Muscles
  - Tibialis posterior
  - Tibialis anterior
  - Medial soleus
  - Extensor digitorum
- Strenghten plantar flexors
- Stretch dorsiflexors



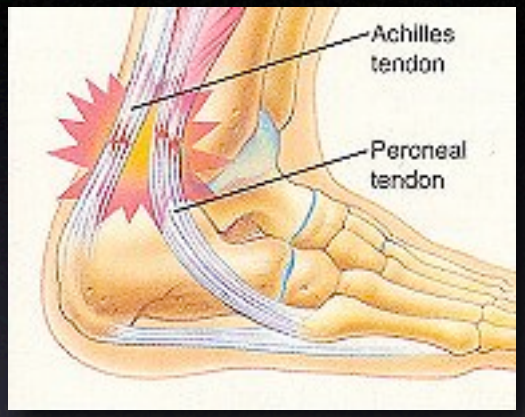
Plantar Fasciitis

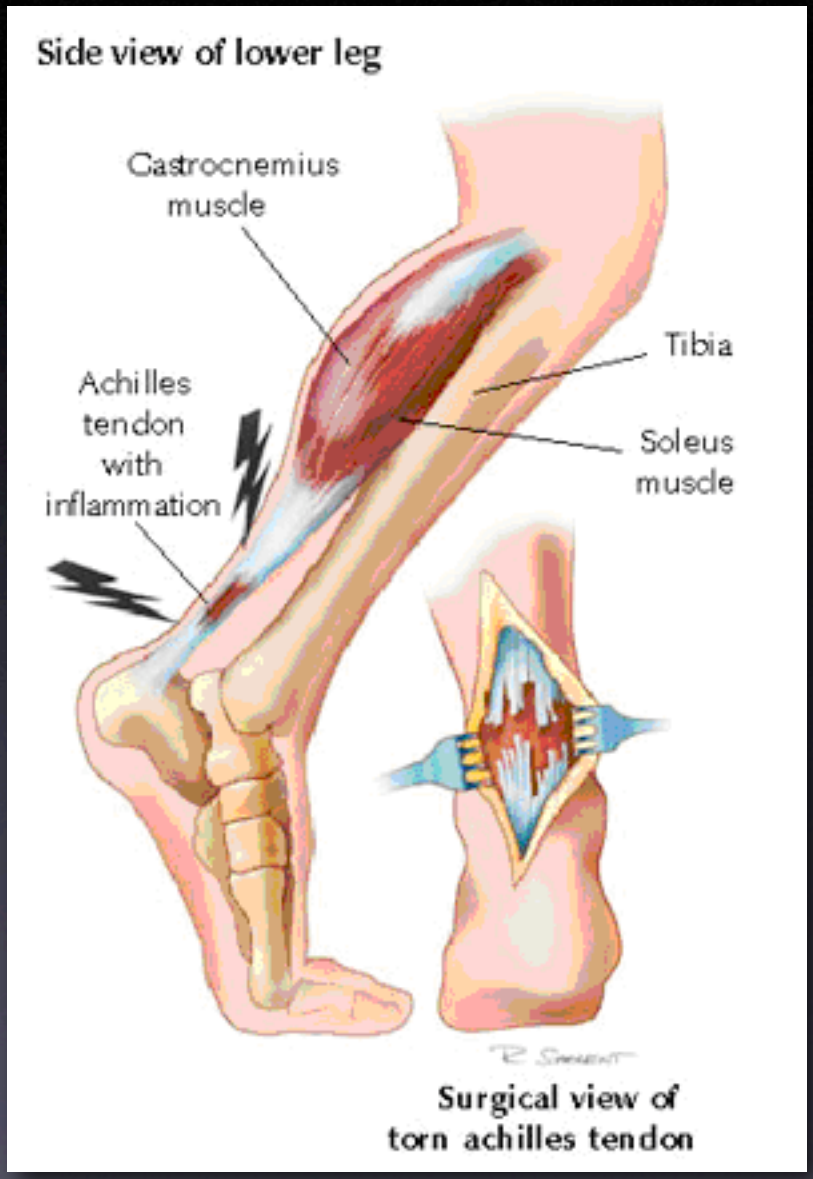
- Plantar fascia - calcaneus to the metatarsals.
- Maintains the longitudinal arches of the foot.

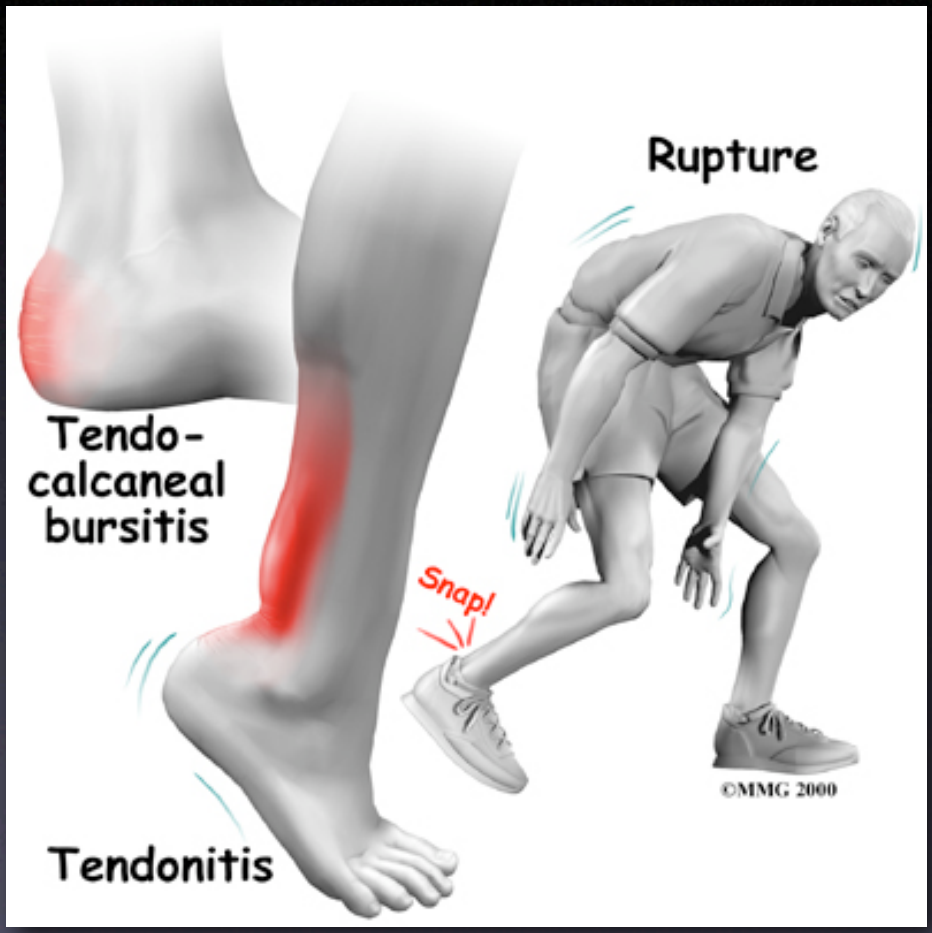
- Plantar fasciitis - inflammation of the plantar fascia
- Plantar surface of the calcaneus

Achilles Tendon

- Tendonitis
  - Excessive eversion/ pronation, etc.
- Ruptures
  - Most frequently ruptured tendon
  - Eccentric loading during abrupt stopping, landing from a jump.




Side view of lower leg
Castrocnemius muscle
Tibia
Achilles tendon with inflammation
Soleus muscle
Surgical view of torn achilles tendon


Rupture
Tendo-calcaneal bursitis
Snap!
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Tendonitis

Turf Toe

- Bruise or sprain between the first metatarsal and the first proximal phalange.
- Hyperextension