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 malleolus
- More inversion (20-30°) than eversion (5-15°)
- Excessive inversion - stretches the lateral ligaments.
- Lateral sprains involve the anterior talofibular and calcaneofibular 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.
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
- Strengthen 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.
Turf Toe

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