

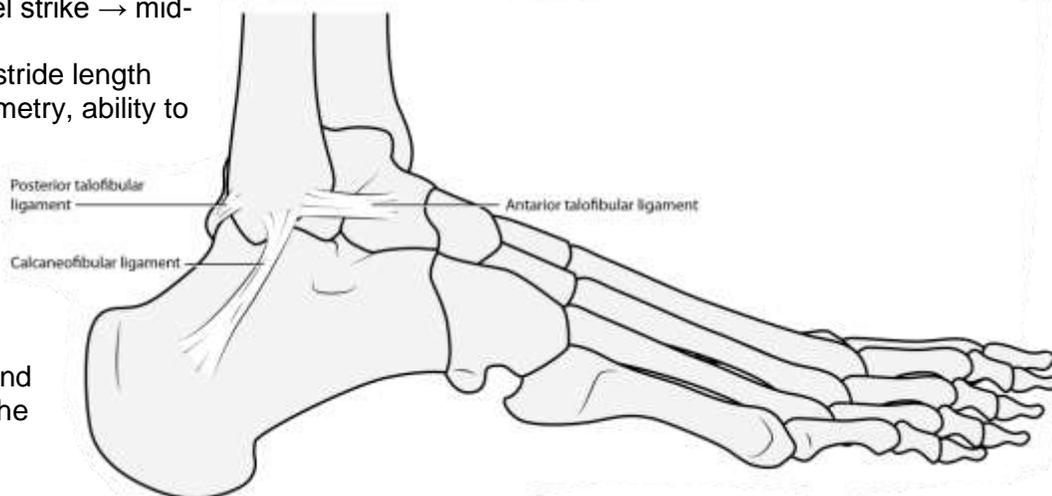
ANKLE AND FOOT EXAMINATION

FOOTWEAR

- Abnormal wear may indicate gait abnormalities

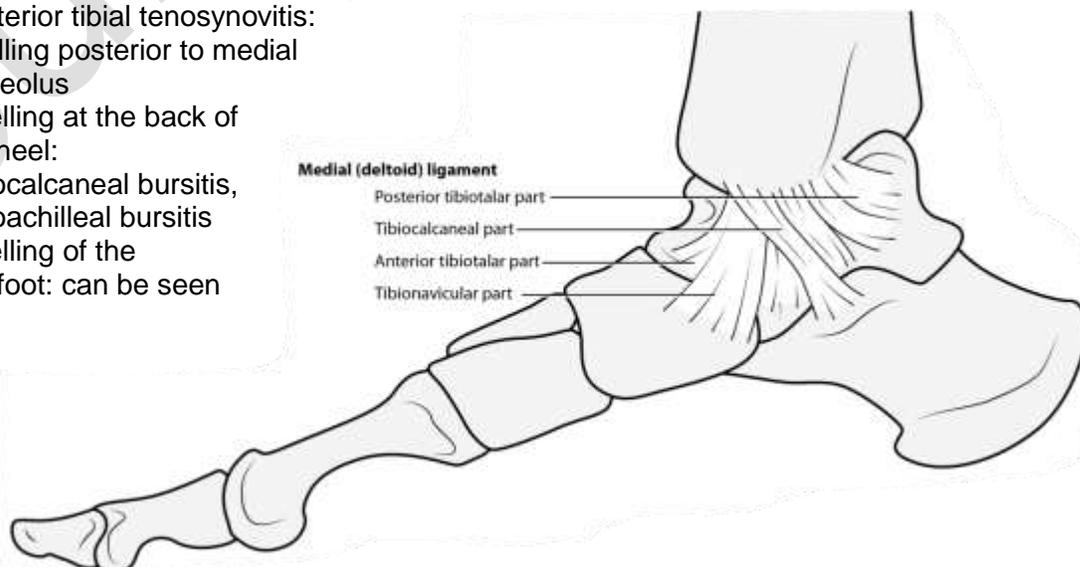
GAIT

- Stance phase (heel strike → mid-stance → toe-off)
- Swing phase and stride length
- Smoothness, symmetry, ability to turn quickly
- Antalgic gait (identify point at which pain occurs)
- Ask patient to walk on the heels, toes, and medial and lateral borders of the feet



INSPECTION

- Briefly observe spine, hip and knee for misalignment
- Feet should be inspected in weight-bearing and at rest
- Standing
 - Splaying of the toes (suggest collapse of transverse arch)
 - Pes planus or “flat feet” (collapsed longitudinal arch)
 - Pes cavus (high longitudinal arch)
 - Hindfoot valgus (normally 5-10°)
 - "Too many toes sign"
 - *More than 2 toes visible when looking from the back*
 - Seen in severe pes planus or posterior tibialis dysfunction
- Swelling
 - True ankle swelling causes loss of normal depressions anterior to malleoli
 - Peroneal tenosynovitis: swelling posterior to lateral malleolus
 - Posterior tibial tenosynovitis: swelling posterior to medial malleolus
 - Swelling at the back of the heel: retrocalcaneal bursitis, retroachilleal bursitis
 - Swelling of the forefoot: can be seen



in inflammatory arthritis

- Erythema
- Atrophy
- Deformities
 - Hallux valgus, bunions, or bunionettes
 - Hammer toes
 - Claw toes
 - Mallet toes
- Skin changes or scars
 - Callous formation (may indicate abnormal gait or stance)
 - Remember to inspect sole of the foot

PALPTION (tenderness or temperature changes)

- Palpate bones and soft tissue structures in a systematic manner
- Fibula, lateral malleolus, lateral malleolar bursa, lateral ligaments, peroneal tendons
- Shin, extensor tendons, tarsal bones, metatarsals
- Medial malleolus, deltoid ligament, posterior tibialis
- Gastrocnemius, musculotendinous junction, Achilles tendon, entheses, calcaneus
- Plantar fasciitis
 - *Apply pressure to medial calcaneus tuberosity (insertion of plantar fascia)*
 - *Tense plantar fascia by passively dorsiflexing toes*
- Painful Heel Pad Syndrome
 - *Centre of heel is painful*
- True ankle (tibiotalar) joint swelling
 - *Cup hands around the ankle, palpate tibiotalar joint space anteriorly for fullness, try to ballot fluid between thumbs*
- MTP Squeeze (metatarsal compression test)
 - *Painful with inflammatory arthritis, intermetatarsal bursitis*
- MTP joint swelling
 - *Four-finger technique: palpate with tips of thumbs on top and fingers stabilizing underneath. Remember: MTP joint is 1-2 cm proximal to the webspace.*
- PIPs and DIPs
 - *Palpate with two fingers stabilizing at sides, index finger and thumb of other hand pressing from top and bottom*

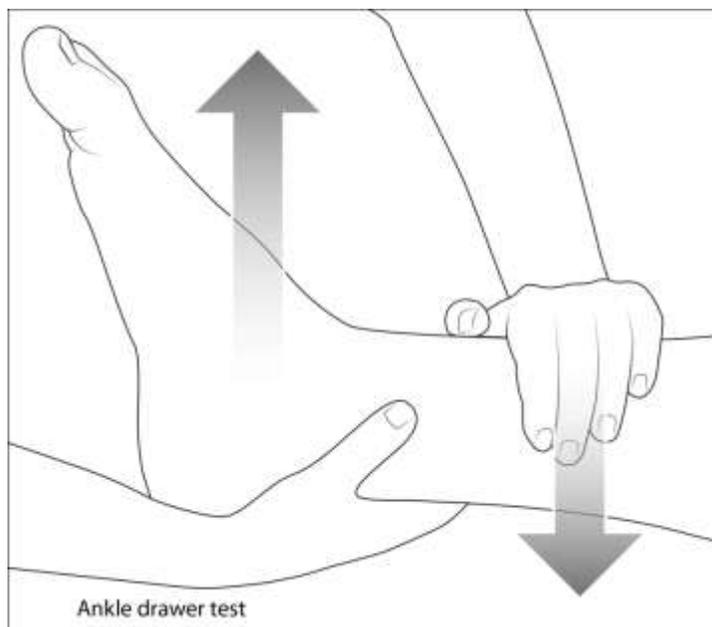
RANGE OF MOVEMENT

- Assess ROM with knee flexed and foot in neutral position (90° flexion)
- True ankle (tibiotalar) joint
 - Ankle dorsiflexion (15-25°)
 - Ankle plantar flexion (40-50°)
 - Ankle inversion and eversion (subtalar joint)
- Subtalar joint (between talus and calcaneum)
 - Ankle inversion (up to 30°)
 - Ankle eversion (up to 20°)
- Midtarsal joint
 - *Stabilize heel, grasp and rotate the mid and forefoot*
 - Inversion (30°)
 - Eversion (20°)
 - Adduction
 - Abduction
- Toes: flexion and extension

SPECIAL TESTS

● Stability Testing

- Deltoid Ligament
 - *Stabilize lower leg, grasp hindfoot and apply eversion force checking for excessive movement*
- Lateral Ligaments
 - *Stabilize lower leg, grasp hindfoot and apply inversion force checking for excessive movement*
- Anterior Drawer Test (anterior talofibular ligament)



- *With the foot in 20 ° of plantar flexion, stabilize the leg, grasp the calcaneus, and pull the heel forward (normally < 5 mm movement)*
- *A positive test indicates an anterior talofibular ligament tear*

● Tarsal Tunnel Syndrome

- *Tinel's Test*
 - *Tap over the tarsal tunnel (just posterior to medial malleolus)*
 - *Paresthesias radiating to the first three toes indicates possible tarsal tunnel syndrome*

● Torn Achilles Tendon

- *Thompson Calf-Squeeze Test*
 - *With the patient supine or kneeling and foot hanging off chair, squeeze the calf*
 - *Failure of the foot to plantarflex indicates a torn Achilles tendon*