

# Foot and Ankle Examination

## Introduction

- **W**ash hands, **I**ntroduce self, ask **P**atient's name & DOB & what they like to be called, **E**xplain examination and get consent
- Expose knees and below
- **General inspection:** patient e.g. age, mobility, trauma, risk factors; around bed e.g. mobility aids.
- **Shoes:** wear pattern, insoles

## Look

- **Gait:** phases of gait looking at knee, ankle, limp, movement restriction
- **Standing inspection:**
  - Front: hallux deformities (**lateral angulation of big toe = hallux valgus**), lesser toe deformities (**flexed PIP joints = hammer toes; flexed DIP joints = mallet toes; flexed PIP joints and DIP joints with pes cavus = claw toes**)
  - Sides: foot arches (**pes plantus = flat foot; pes cavus = high arch, usually with clawed toes – neurological cause**)
  - Behind: alignment of hindfoot (5° valgus normal)
  - Tip-toe standing inspection: re-inspect foot arch if there was pes plantus (**if it corrects on tip-toe standing, it is 'flexible pes plantus'; if it does not correct, it is 'rigid pes plantus'**), big toe flexion (**no flexion = hallux rigidus**), hindfoot varus/valgus angulation change (normal hindfoot 5° valgus should correct into varus)
- **Lying inspection:** skin (scars/arthroscopic portals, bruising, erythema), joints (swelling, effusions), muscles (wasting), heel (callosities), between toes (ulcers), nails (psoriatic changes), feel up extensor surface of lower leg (psoriasis plaques, rheumatoid nodules, gouty tophi)
- **Measure calf muscle bulk:** measure calf diameter 10 cm below tibial tuberosity

## Feel

Ask if any pain first.

- **Temperature**
- **Bony landmarks** – assess joints for tenderness & feel for bony swellings, effusions, synovitis, deformities
  - Ankle: medial malleolus, lateral malleolus, anterior joint line
  - Hindfoot and midfoot: feel around joints in an n-shape from lateral distal, to lateral proximal, across dorsum, to medial proximal to medial distal
  - Forefoot: feel all joints in circle (metatarso-tarsal joints, metatarsal heads, MTP joints and IP joints)
- **Tendons:** deltoid ligament (medial ankle), lateral ligament complex (lateral ankle), Achilles tendon
- **Plantar fascia:** feel for thickening, tenderness, fibromatosis
- **Squeeze forefoot** (**pain may be Morton's neuroma**)

## Move

Best assessed with patient's legs hanging over bed

- **Ankle movements:** actively and passively (feel for crepitus): dorsiflexion 20° and plantarflexion 40°; inversion and eversion at subtalar joint (by stabilising ankle with one hand and moving heel with other)
- **Midtarsal movements:** hold calcaneus with one hand and abduct 10° and adduct 20° forefoot with other hand
- **Toe movements:** ask patient to: straighten toes fully (**difficulty = joint disease, extensor tendon rupture, neurological damage**); curl toes (**cant curl toes in = tendon/small joint involvement**); abduct (spread) toes and adduct toes (hold paper between); move MCPJs and IPJs passively (assess for limited movement and crepitus)
- **SPECIAL TESTS**
  - **Simmond's test:** ask patient to kneel on a chair with feet hanging over edge. Then squeeze both calves and feet should plantar flex (**no plantar flexion = Achilles tendon rupture**).
  - **Muscle power**
    - Tibialis anterior: ankle inversion against resistance
    - Peroneus longus and brevis: eversion against resistance

## Function

- (**Gait:** already seen)

## To complete exam

- "To complete my examination I would examine the joint above, and also do a full neurovascular exam – would you like me to do this now?"
- Summarise and suggest further investigations you would do after a full history

## ***Common pathology***

- **Pes plantus (flat foot)**
  - Loss of medial arch
  - May be flexible or rigid (non-correctable)
  - Flexible pes plantus is normal in toddlers and is often asymptomatic in adults
  - Rigid pes plantus may be due to tarsal coalition or tibialis posterior tendon rupture
- **Hallux valgus**
  - Lateral angulation of big toe
  - Usually occurs in older women
  - Can result in painful bunions on medial aspect of MTP joint (from shoe pressure)
  - May be treated with osteotomy or fusion
- **Gout**
  - Monoarthropathy caused by deposition of monosodium urate crystals in hyperuricaemia
  - Signs: tender, erythematous, inflamed joint
  - MTP joint most commonly affected
  - Acutely managed with NSAIDs/colchicines
  - Prevented by allopurinol, avoiding purine rich foods/drinks and stopping thiazide and loop diuretics
- **Achilles tendon rupture**
  - Patient feels like someone 'kicked them in the back of the leg' while pushing off with foot (e.g. while running)
  - Signs: unable to plantarflex, Simmond's test positive
  - May be treated by surgical repair, or in a equines cast in older less fit patients
- **Charcot foot**
  - Pain free joint destruction after minor trauma
  - Usually occurs in patients with peripheral neuropathy and diabetes
  - In undeveloped countries, tabes dorsalis and leprosy are common causes
  - Signs: erythema and swelling in the acute phase only, gross joint deformity, instability
  - Managed by educating patient, treating underlying cause, podiatry and joint protection