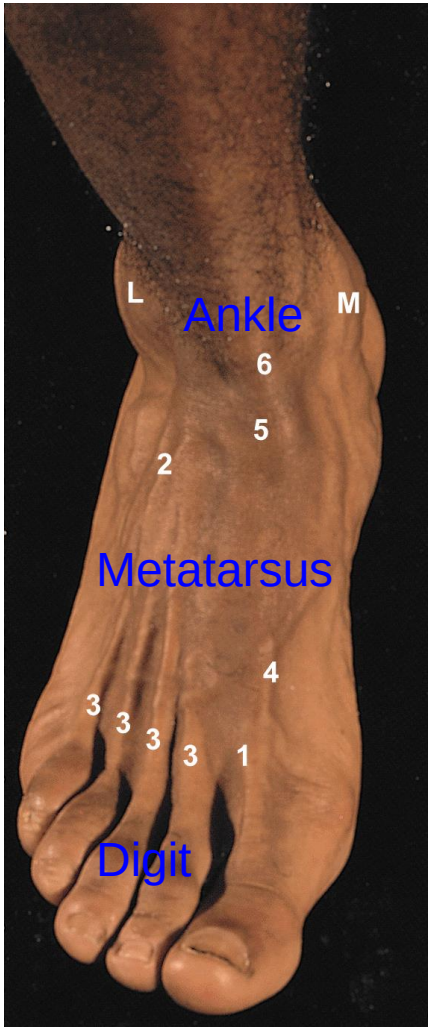
Foot

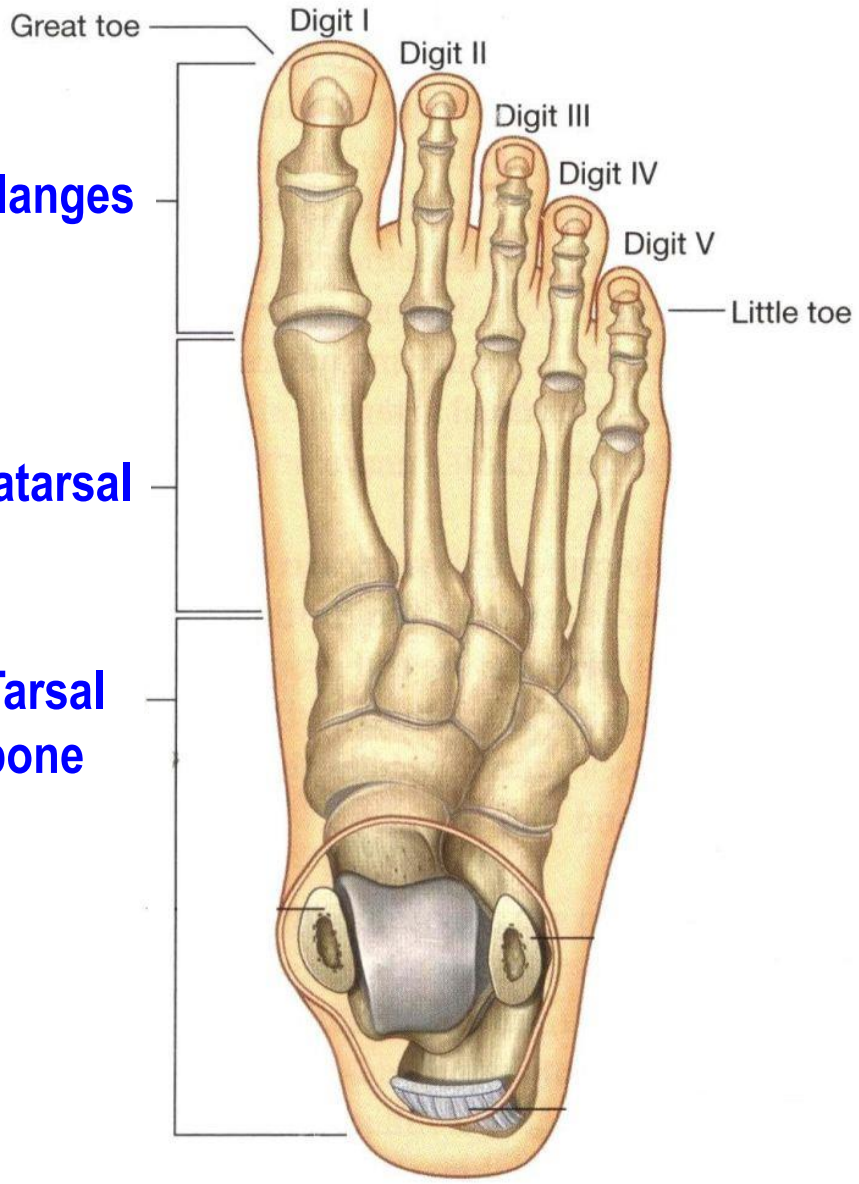
FOOT

- Foot is the region of the lower limb distal to the ankle
- Is subdivided into the ankle, metatarsus & digits
- Has 2 surfaces: superior surface (dorsum of foot) and inferior surface (sole of foot)



BONES OF THE FOOT

- There are 3 groups of bones in the foot:
  1) Tarsal – 7
  2) Metatarsal - 5
  3) Phalanges
  – each toe has 3 phalanges except for the great toe



Side view

Top view

A.D.A.M.

TARSAL BONES

- Tarsal bones are:

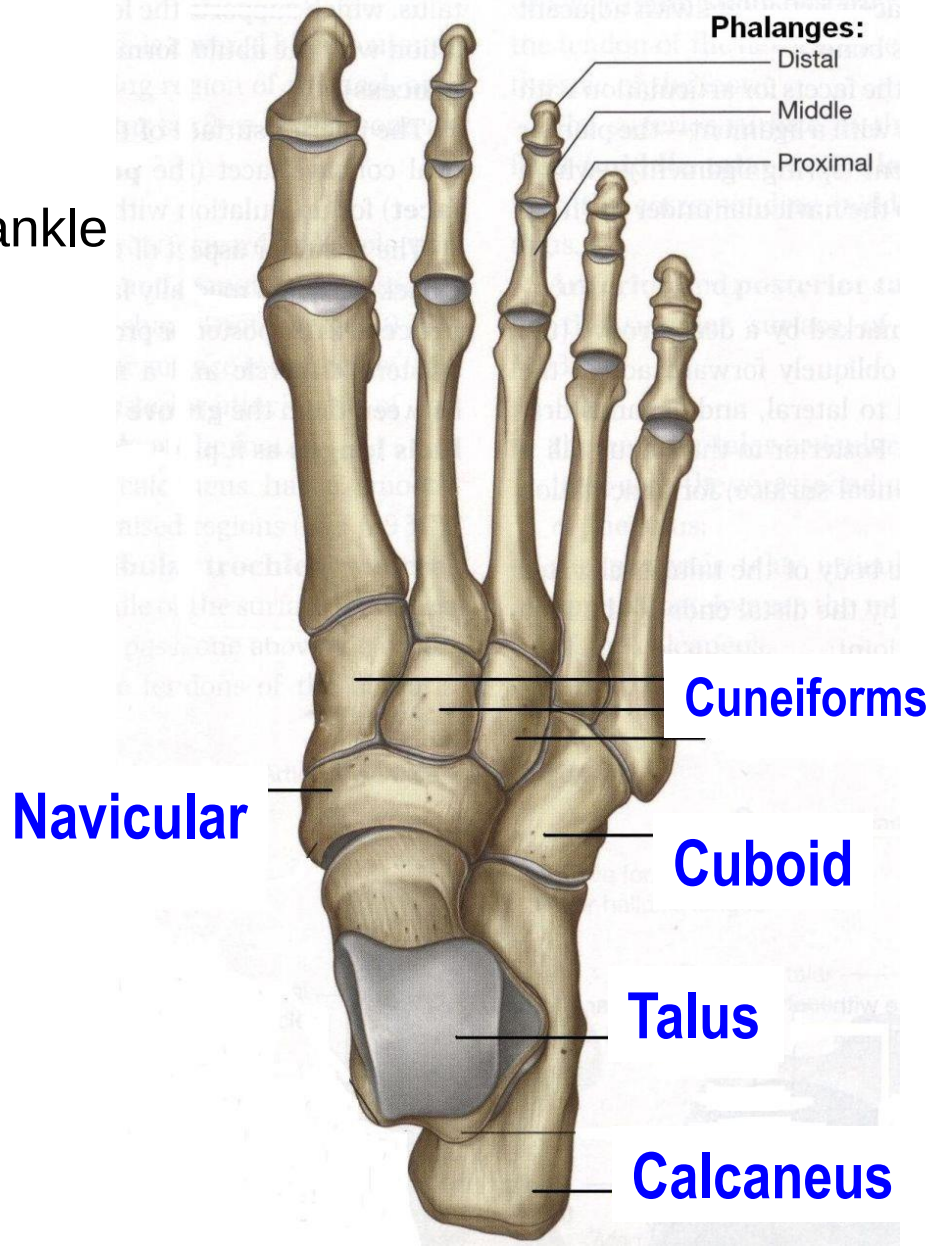
1) Talus
- articulates with tibia & fibula to form ankle joint

2) Calcaneus
- largest tarsal bone, forms the heel

3) Navicular

4) Cuboid

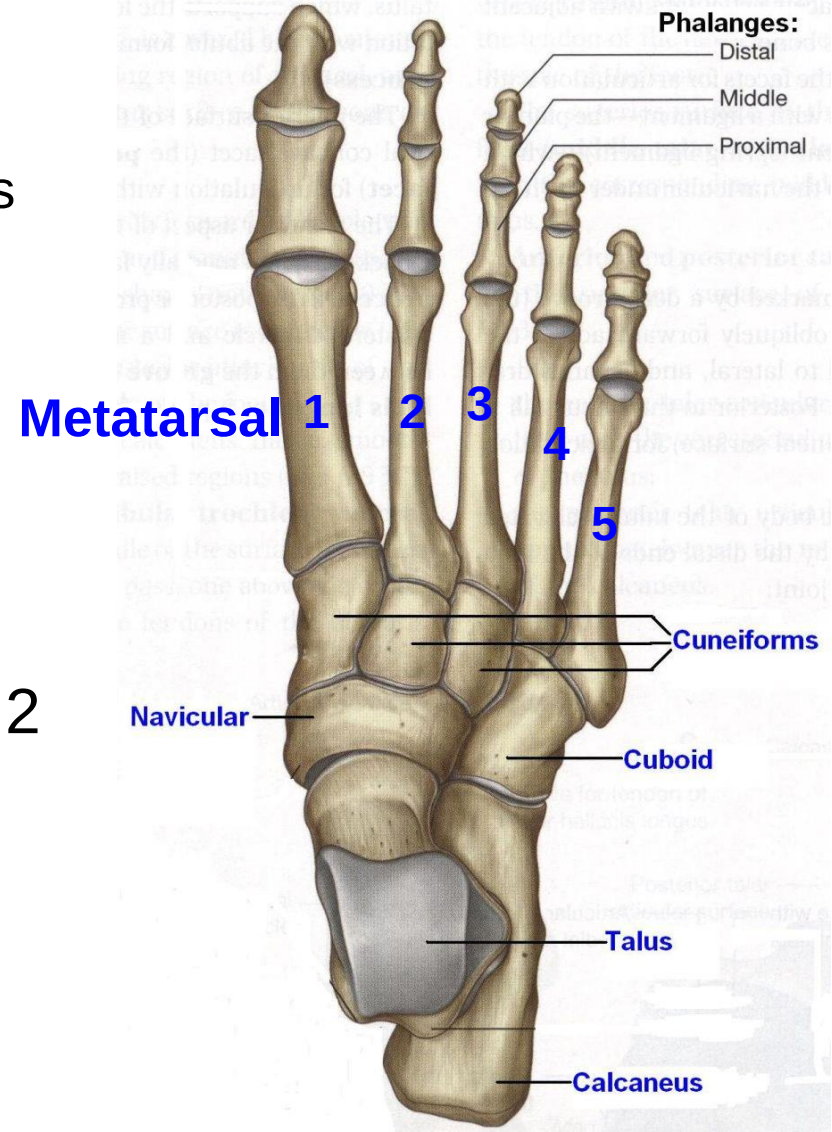
5) 3 Cuneiforms
- 3 cuneiforms – lateral, intermediate & medial cuneiforms



METATARSAL & PHALANGES

- There are 5 metatarsal, numbered form I to V
  - 1st metatarsal is the shortest, 2nd is the longest
  - Each metatarsal has head, shaft and base

- Each toe has 3 phalanges – proximal, middle & distal except for the great toe which has only 2 phalanges (proximal & distal)
  - Each phalanx has head, shaft & base

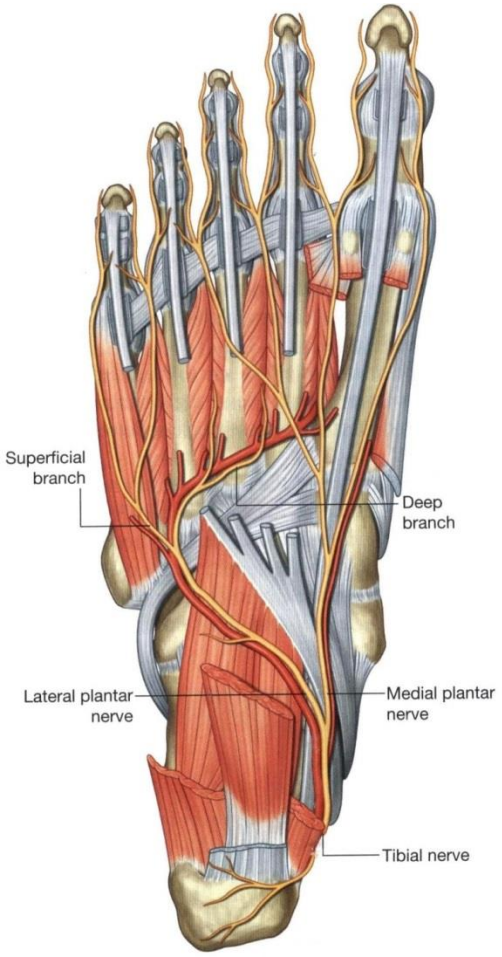


ARTERY OF THE FOOT

- Blood supply to the foot is by branches of posterior tibial artery (plantar arteries) and dorsalis pedis artery

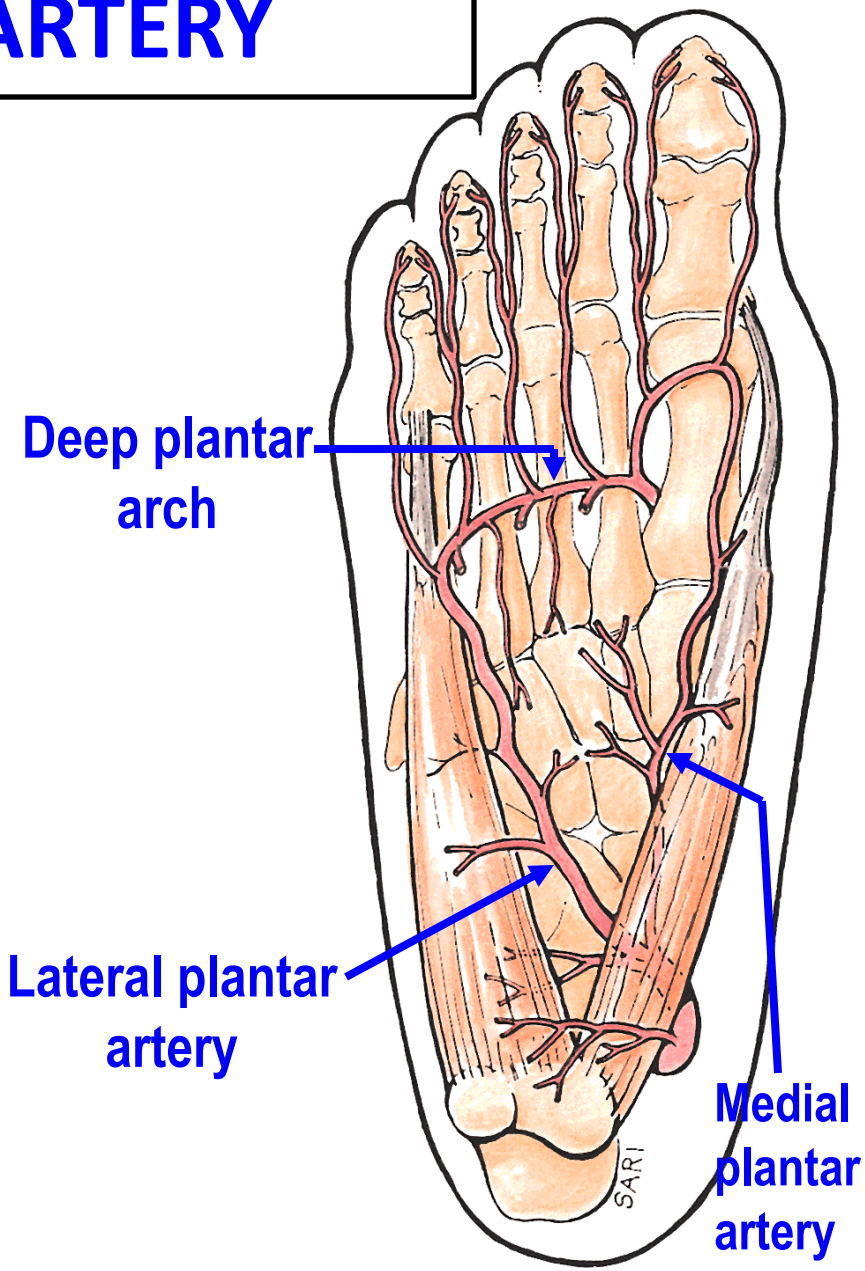
- Lateral and medial plantar arteries are the terminal branches of the posterior tibial artery

- Dorsalis pedis is a continuation of anterior tibial artery



LATERAL PLANTAR ARTERY

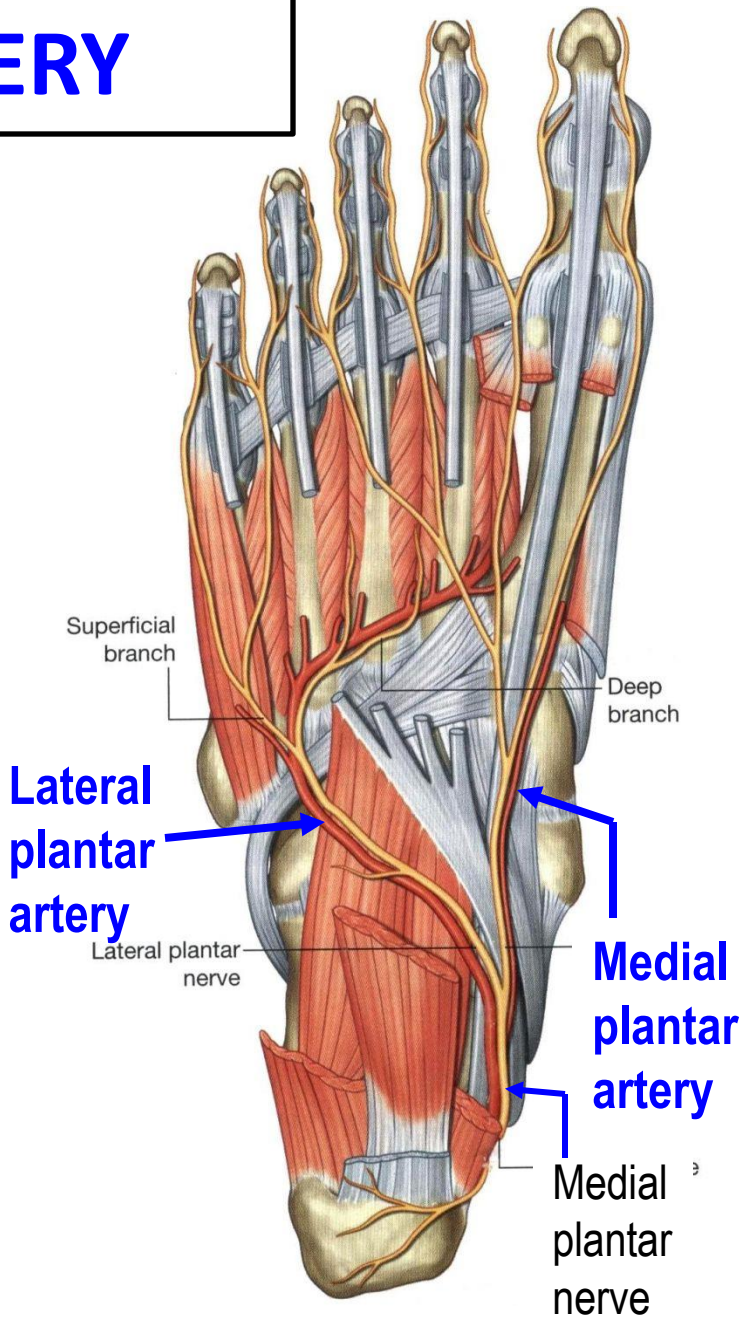
- Is the larger terminal branch of posterior tibial artery, begins just distal to medial malleolus
- Run forward laterally in company with lateral plantar nerve
- Curves medially to form deep plantar arch, which join the terminal branch of dorsalis pedis artery



MEDIAL PLANTAR ARTERY

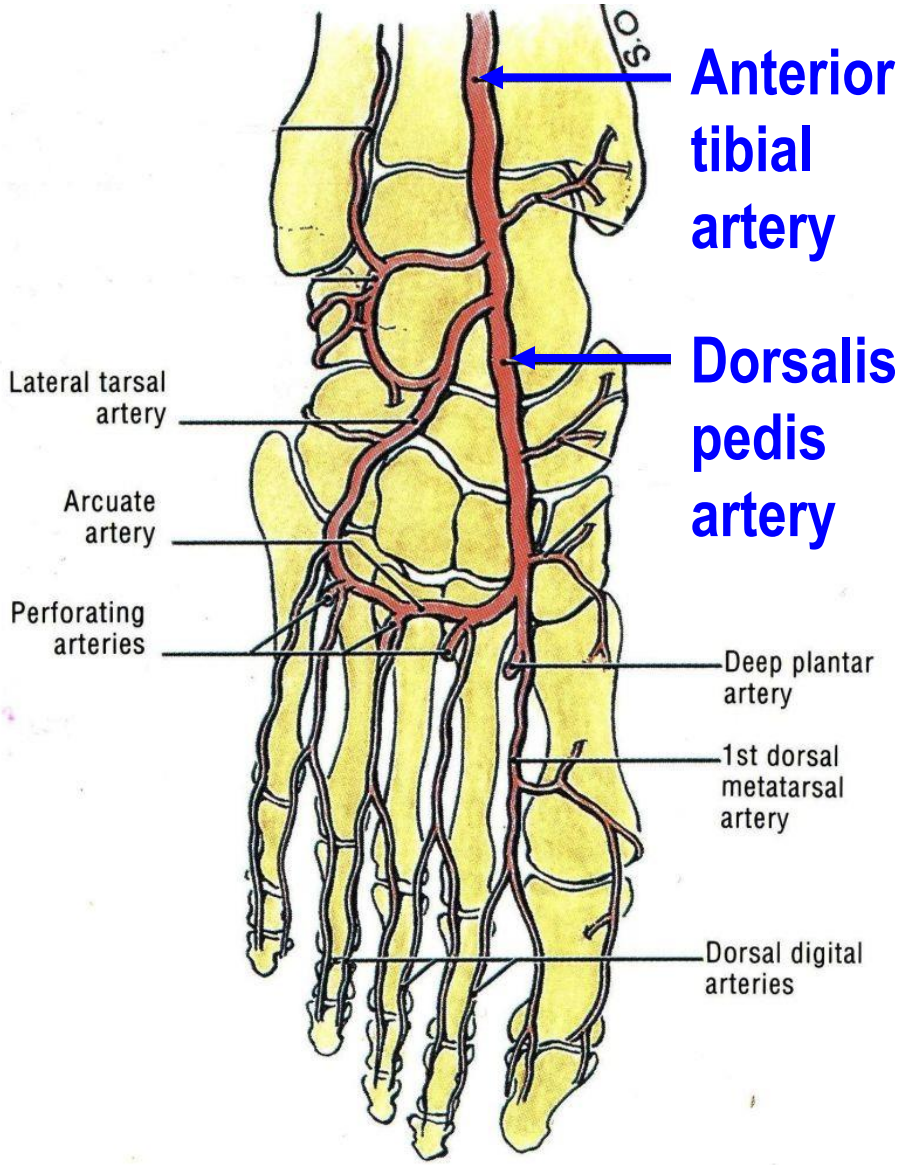
- Is the smaller terminal branch of posterior tibial artery

- Run on medial side of the sole, in company with medial plantar nerve



DORSALIS PEDIS ARTREY

- Is a continuation of anterior tibial artery, distal to ankle joint



NERVES OF THE FOOT

- Main nerves of the foot include:

  1) Medial plantar nerve

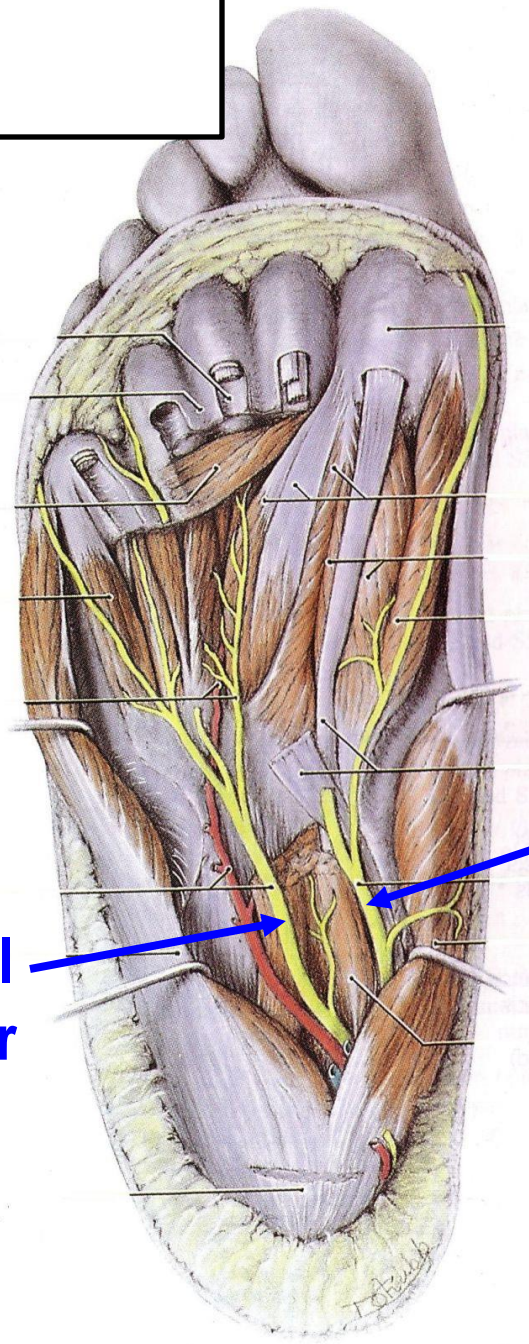
  - supply muscles in the sole of the foot

  2) Lateral plantar nerve

  - supply muscles in the sole of the foot

  3) Deep fibular nerve

  - supply muscles of the dorsum of the foot



ARCHES OF THE FOOT

- 3 arches of the foot:

  i) Medial longitudinal arch

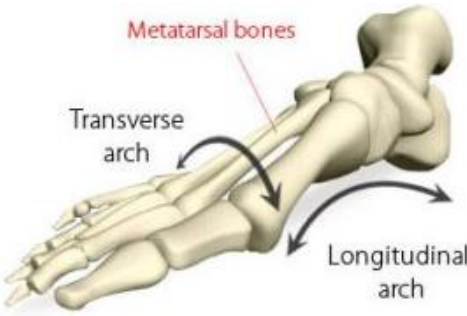
  - formed by calcaneus, talus, navicular, 3 cuneiforms and 3 metatarsals

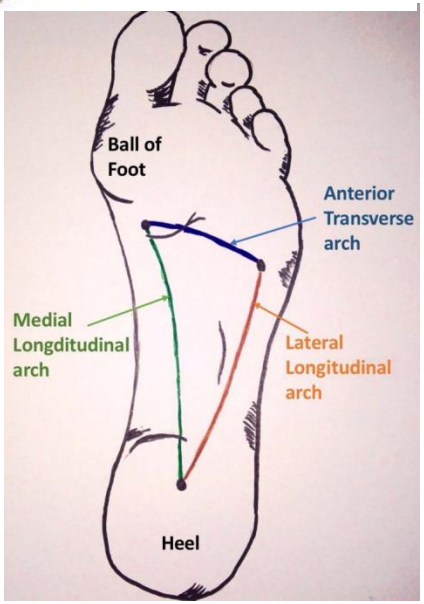
  ii) Lateral longitudinal arch

  - formed by calcaneus, cuboid and lateral 2 metatarsals

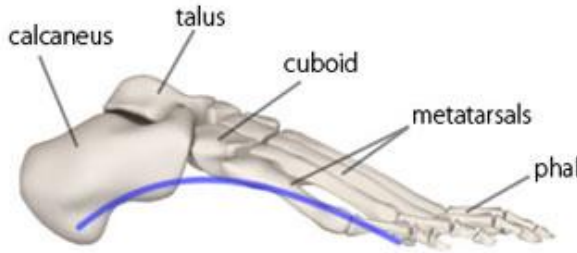
  iii) Transverse arch

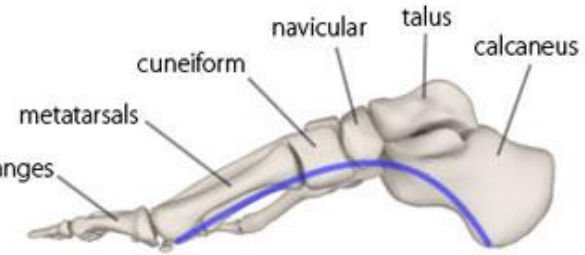
  - formed by cuboid, cuneiforms, bases of metatarsals





- Arches do not develop until about 2-3 years of age (flat feet during infancy is normal)





FUNCTIONS ARCHES OF THE FOOT

i) Act as shock absorbers in stepping and particularly in jumping

ii) Act as a spring which help in walking and running

iii) Body weight distribution

- The arches distribute about half of the standing weight to the heel bones and half to heads of the metatarsals

iv) Concavity of the arches protect the soft tissue of the sole against pressure

Clinical Note: Pes Cavus (High Arch)

- Is a condition where medial longitudinal arch is unusually high
- The ability to shock absorb during walking is diminished and an increased stress is placed on the ball and heel of the foot
- Can appear in early life and become symptomatic with increasing age
- Symptoms will generally include pain in the foot, which can radiate to the ankle, leg, thigh and hip

Clinical Note: Pes Planus (Flat Footed)

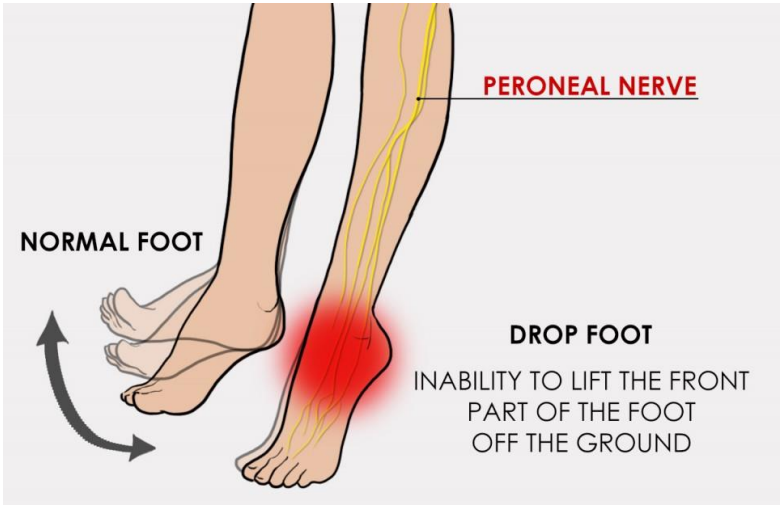
- Is a common condition in which the longitudinal arches have been lost

- Can be cause by damage to the structures that support the arch or the arches never formed during development

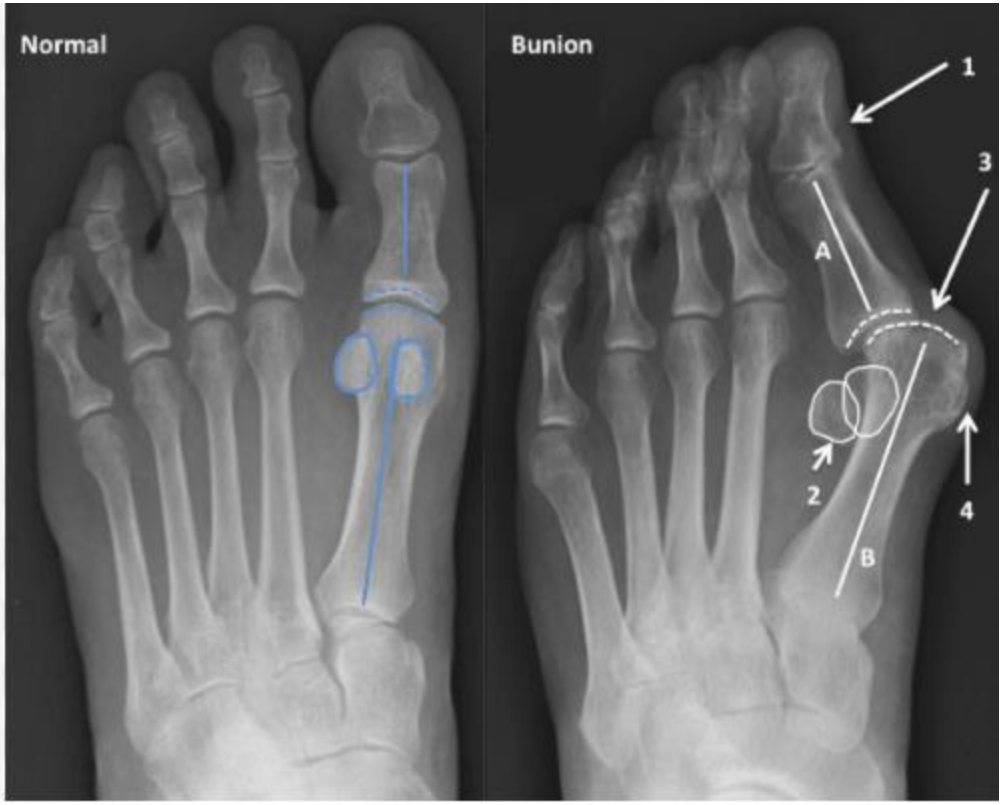
- For most individuals, being flat-footed causes few, if any symptoms

Clinical Note

- Foot drop = inability to dorsiflex the foot
  - Causes: Injury to nerves (common fibular nerve, sciatc nerve), L5 root compression, lesion in spinal cord etc



- Bunion = bony bump that forms on the first metatarsophalangeal joint


Normal
Bunion
1
3
A
2
4
B