LOWER LIMBS

- Girdle attaching lower limb to axial skeleton.
- Lower limb: thigh, leg, foot. Generally, the organization of the lower limb is common through evolution, just with adaptations on how we use the structures creating differences.
- Thigh: single long bone, connects to leg with 2 long bones (this is same as arm) then tarsal bones then digits.

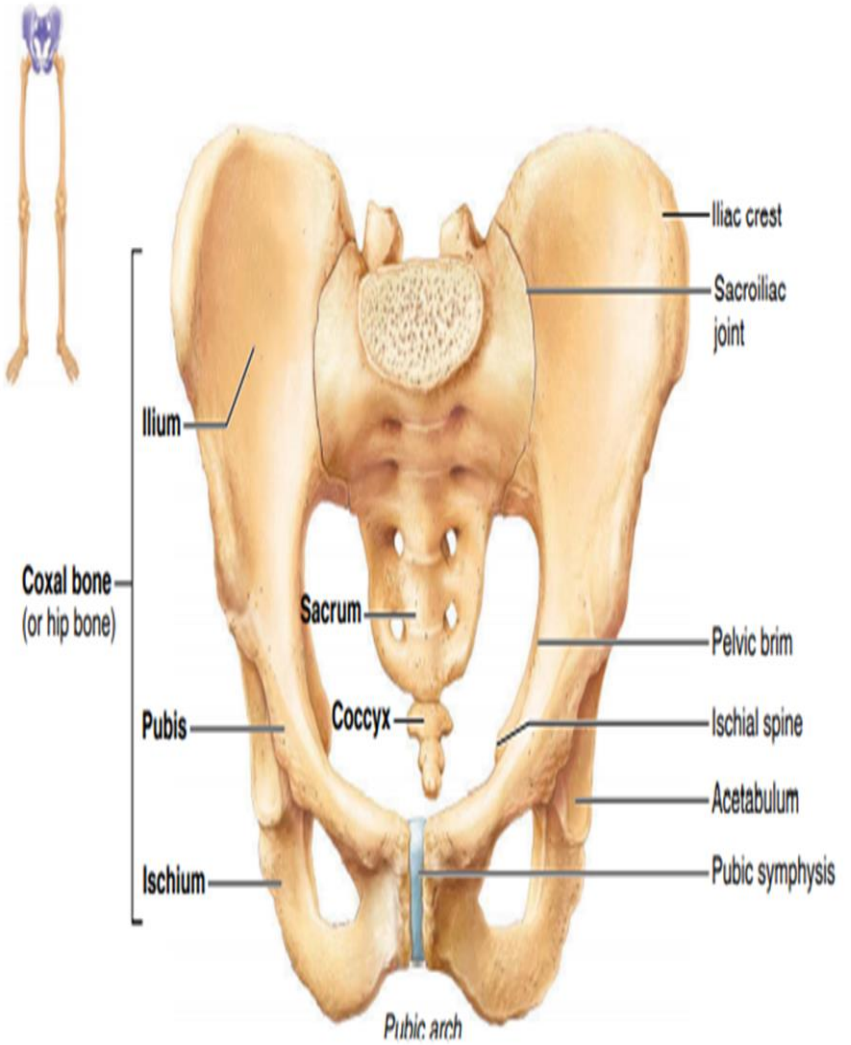
PELVIC GIRDLE

- distal component of axial skeleton is the sacrum. 5 sacral bones/vertebra which fuse during development, ultimately for increased stability. We have head, upper limbs, thoracic cage and abdomen weight has to be transferred via skeleton to sacrum and pelvic girdle. It is thus more stable to have 1 large sacral bone than 5 little ones.
- Sacrum articulates with hip bone. We have 2 hip bones, one on each the RHS and LHS. These arch anteriorly and meet in the midline at the front, generating a stable bony ring.
- Pelvis is the most sexually dimorphic bone in the body. Male pelvis is more narrow and higher, female is relatively wider and more shallow.

- Each hip bone has 3 distinct bones that develop independently and fuse late in development.

KNOW THESE 3 COMPONENTS:

- Ilium: big bony ridges (when you put your hands on your hips you are touching the ilium).
- Ischium: what you sit on.
- Pubis: (pubic bone).
- These 3 bones come together at a point called the acetabulum. This is also where the lower limb articulates with the pelvis. Known colloquially as a hip joint even though it isn't really.



Muscles of the Pelvis

- There are 36 muscles that attach to the sacrum or innominates. The purpose of these muscles is primarily to provide stability to the joint not to produce movement

Muscles of the Hip

- There are 9 muscles that attach to the hip bone.

Muscles of the Back

- Quadratus Lumborum - may play a role in functional scoliosis as a result of its attachments. Multifidus.
- **Muscles of the Abdominal Canister**

There are three layer (Urogenital Triangle, Urogenital Diaphragm and Pelvic Diaphragm).

- The nerve supply to the pelvis is provided by voluntary (somatic) and involuntary (autonomic) nerves

FEMUR

• long bone of thigh. Recall the humerus. Single long bone with a head, a neck. We also have trochanters (comparable to tuberosities in humerus). There is a greater trochanter and lesser trochanter.

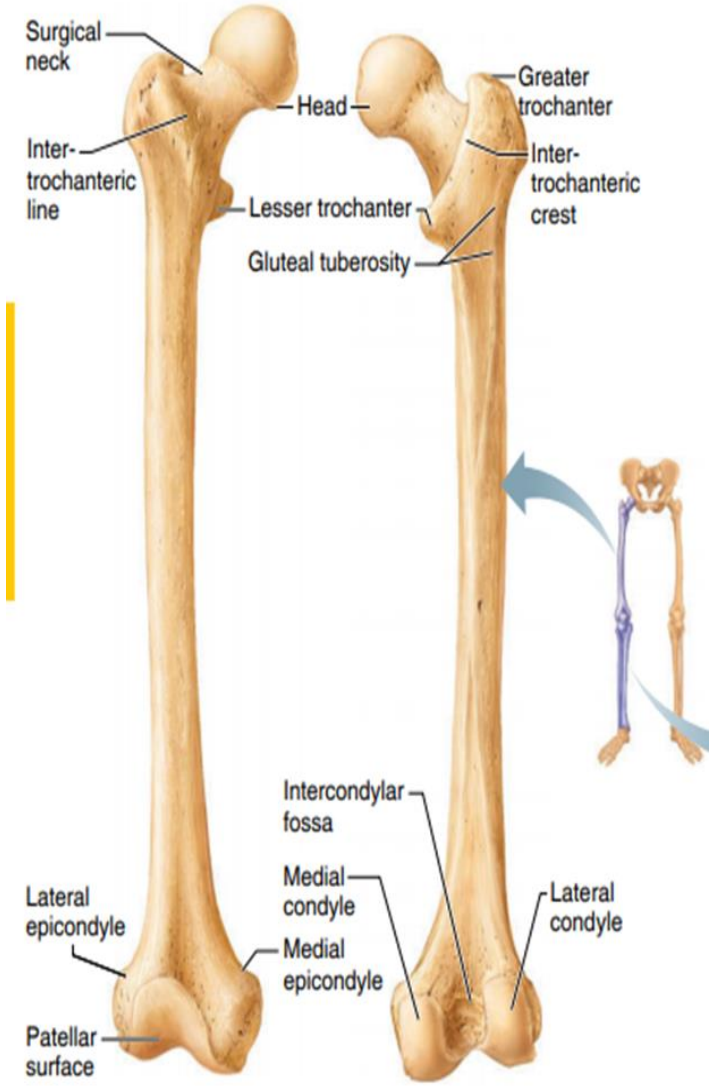
•There is also a long shaft, terminating in medial particular condyle and lateral articular condyle. The patella articulates with the femur. It is sesamoid bone and has leverage for knee extensors.

THE NECK

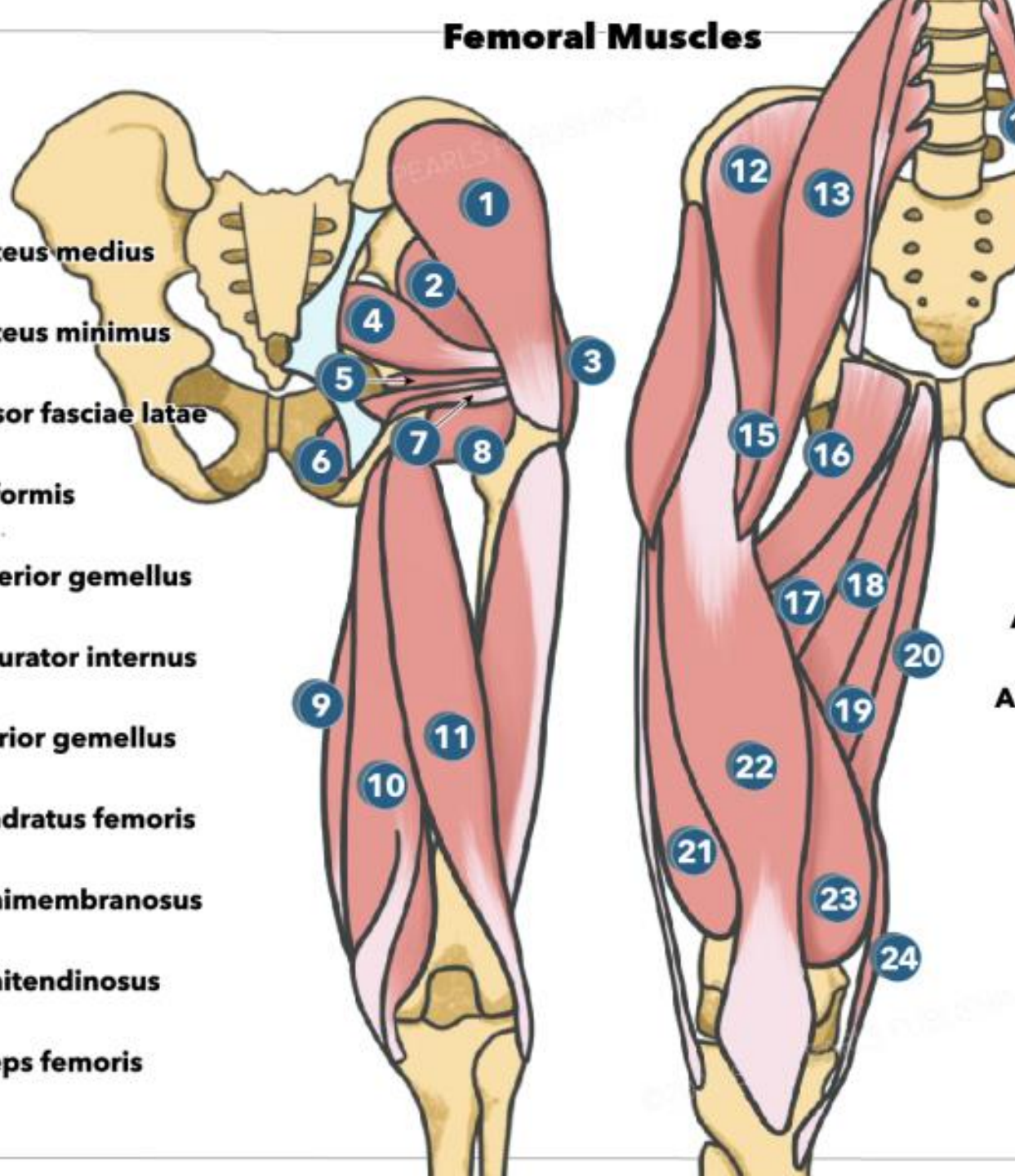
•(4) Very important. In a standing position with weight bearing, weight is transferred to superior aspect of acetabulum and then superior aspect of head of the femur.

•Bony trabeculae line up against forces of weight bearing, and also where muscles attach to and pull on bones.

- The femoral nerve is the largest branch of the lumbar plexus. It is derived from the anterior rami of nerve roots L2, L3 and L4.



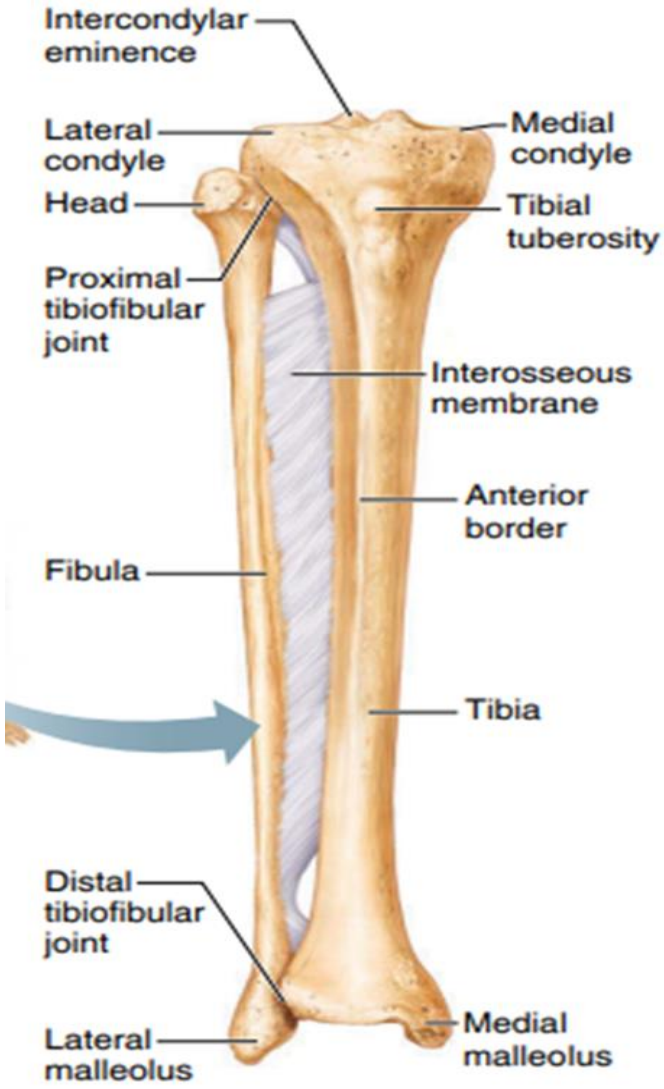
Femoral Muscles



1. Gluteus medius
2. Gluteus minimus
3. Tensor fasciae latae
4. Piriformis
5. Superior gemellus
6. Obturator internus
7. Inferior gemellus
8. Quadratus femoris
9. Semimembranosus
10. Semitendinosus
11. Biceps femoris
12. Iliacus
13. Psoas major
14. Psoas minor
15. Iliopsoas
16. Pectineus
17. Adductor brevis
18. Adductor longus
19. Adductor magnus
20. Gracilis
21. Vastus lateralis
22. Rectus femoris
23. Vastus medialis
24. Sartorius

TIBIA & FIBULA

- Femur articulates with 2 leg long bones, tibia and fibia.
- Tibia: long bone, weight bearing, bears all body weight down to angle. Is flat and has a plateau anteriorly. Trochlear notch for ankle joint.
- Has a shaft which is in the subcutaneous part. The tibial tuberosity just below the knew in front of tibia, distal to patella. Tibia terminates in the medial malleolus, which is the bump on the side of the angle.
- Fibula: long bone. not weight bearing. Joins the tibia via interosseus membrane. Shaft for muscle attachments, and lateral malleolus.



- Muscles of leg

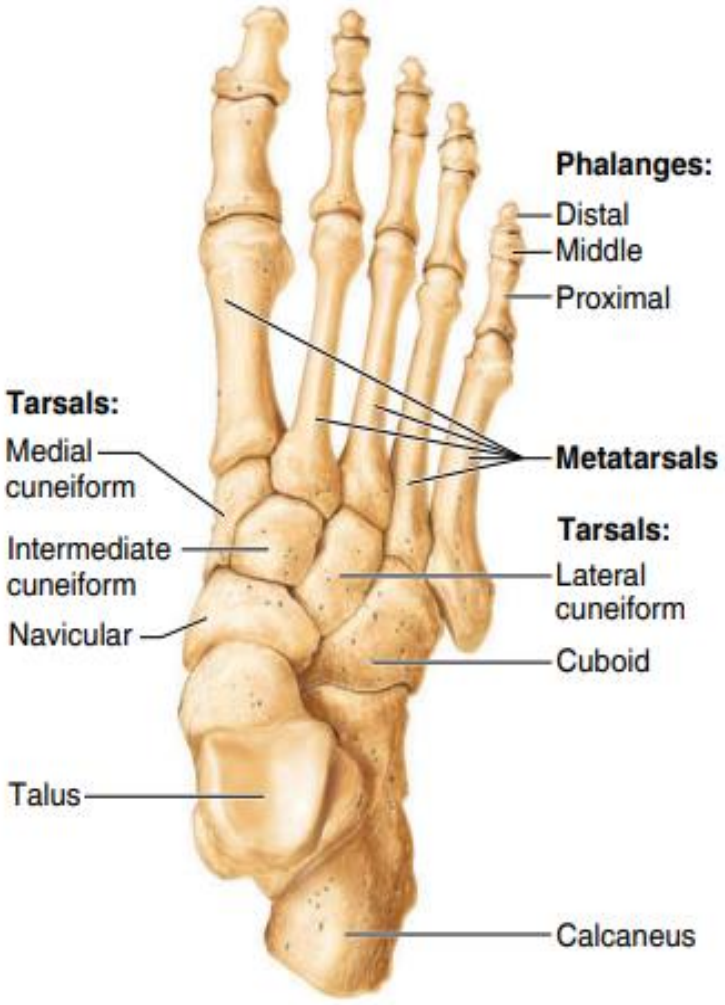
The leg is divided into three compartments: anterior, posterior, and lateral.

- The anterior muscle group includes: tibialis anterior, extensor hallucis longus, extensor digitorum longus, and fibularis/peroneus tertius.
- The posterior compartment consists of seven muscles in total, divided into superficial and deep groups. The superficial muscles are the gastrocnemius, soleus, and plantaris (together forming the triceps surae), while the deep layer consists of the popliteus, tibialis posterior, flexor digitorum longus, and flexor hallucis longus.
- The lateral compartment of the leg is the smallest one, containing only two muscles: fibularis/peroneal longus and brevis.

- The main arteries supplying the leg with oxygenated blood are the anterior and posterior tibial arteries together with their branches.
- the leg nerve are fibular/peroneal, tibial, and saphenous nerves. The first two are branches of the sciatic nerve while the latter stems from the femoral nerve. These three nerves divide further to supply the various structures of the leg.

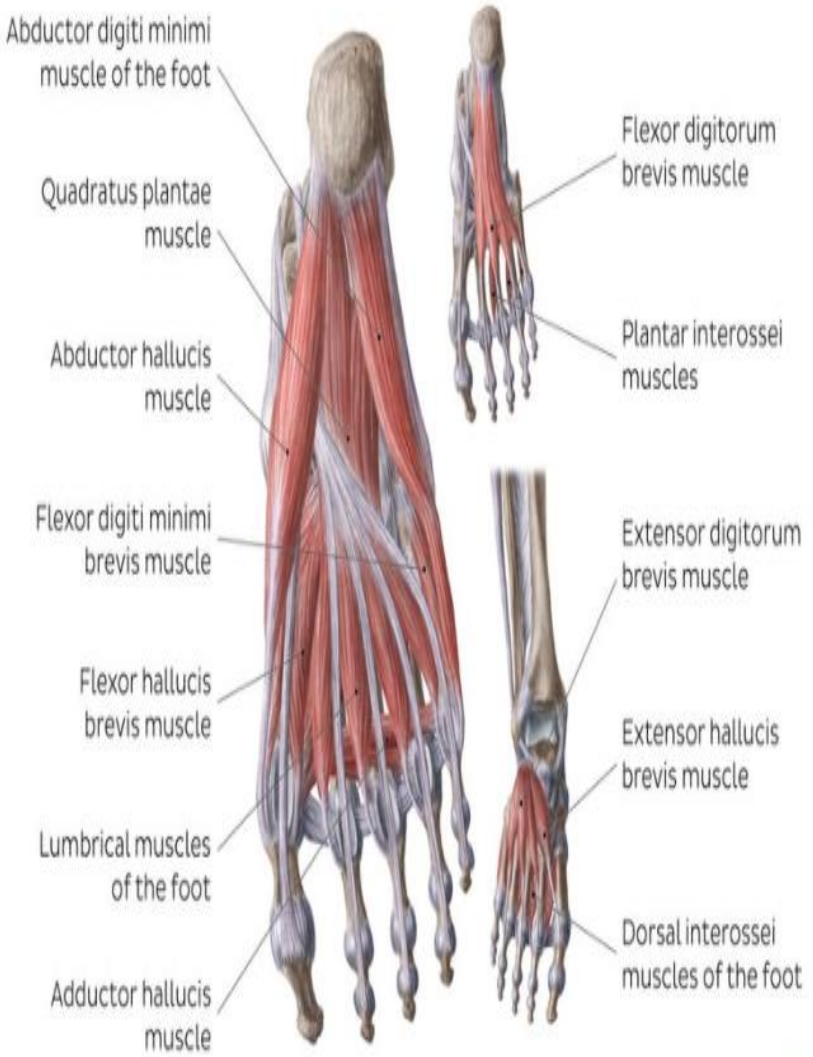
THE ANKLE & FOOT

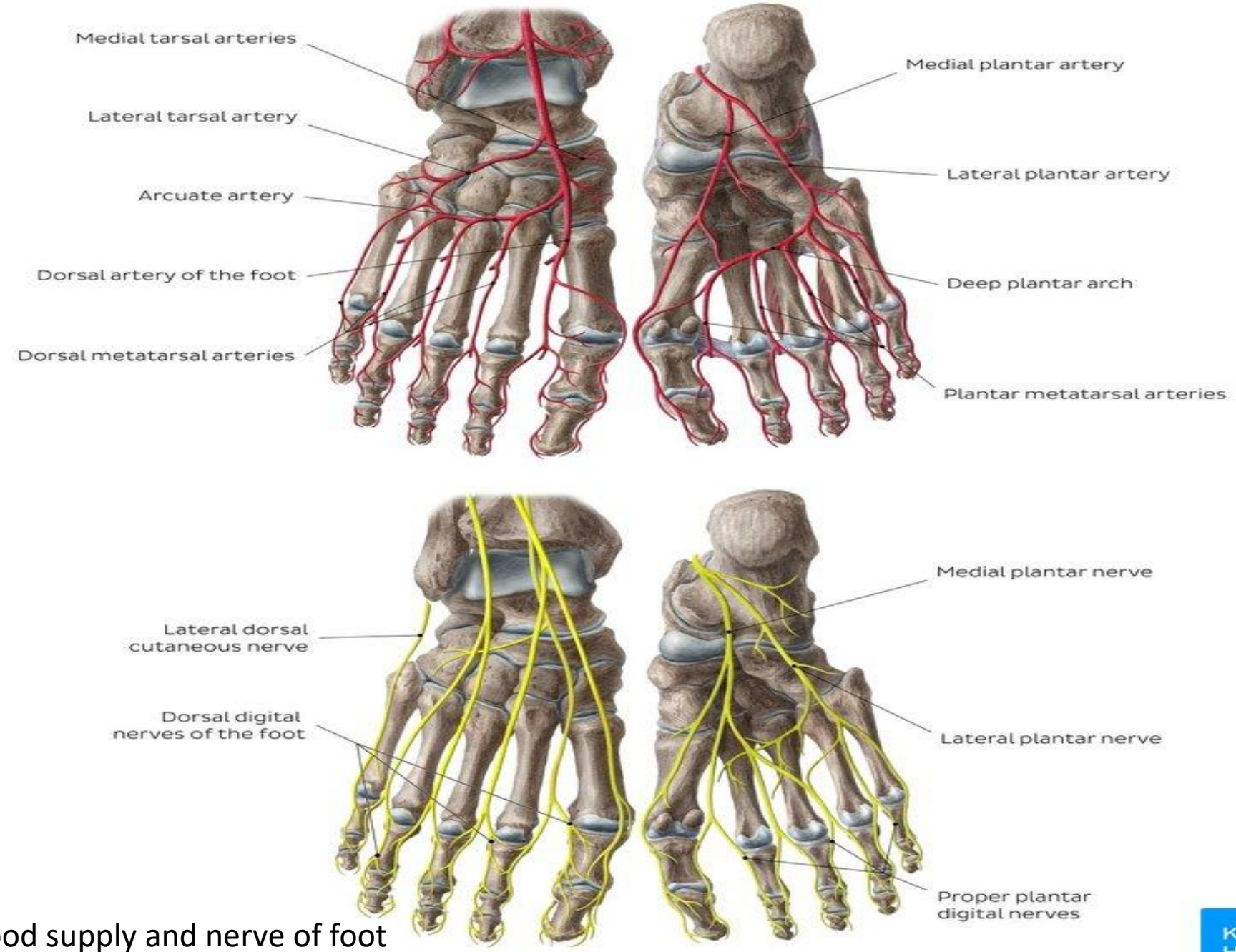
- foot bones same general arrangement as hand larger & heavier for weight transfer.
- tarsals bone are talus, calcaneus, cuboid, navicular, medial cuneiform, intermediate cuneiform, and lateral cuneiform.
- Tarsal bones articulate with metatarsals(5 bone), which in turn articulate with phalanges(14 bone).



Muscles of foot

- Several muscles attach to the previously named foot bones. They are divided into four groups: central, lateral, medial, and dorsal. The first three groups are collectively called the plantar muscles of the foot because they are located on the plantar aspect.





Blood supply and nerve of foot