



# The Lower Limb VII:



## The Foot

Anatomy

RHS 241

Lecture 8

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# Intrinsic muscles of the foot

- The most important are associated with the big toe
- The big toe plays an important role in walking
- Arranged in layers

# Superficial layer

- Abductor hallucis
  - Flexor digitorum brevis
  - Abductor digiti minimi
- All rise from the calcaneus and insert into the proximal phalanges of.....

# Abductor hallucis

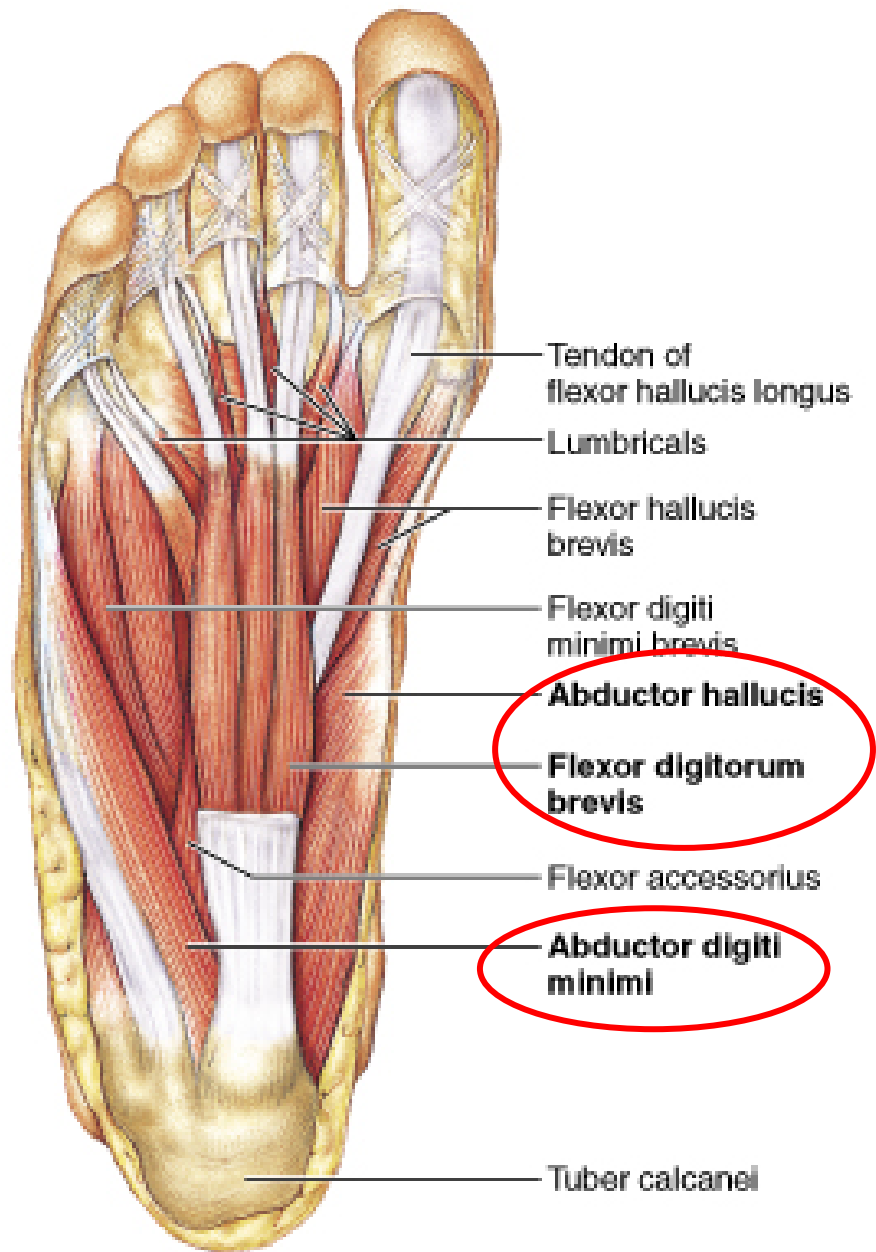
- **Origin:** calcaneus (medial tuberal process)
- **Insertion:** proximal phalanx of big toe
- **Action:** flexion & abduction of big toe (at metatarsophalngeal joint)
- **Innervation:** medial plantar nerve

# Flexor digitorum brevis

- **Origin:** calcaneus (medial tuberal process)
- **Insertion:** middle phalanges of lateral four toes
- **Action:** flexion of middle phalanges of lateral four toes
- **Innervation:** medial plantar nerve

# Abductor digiti mini

- **Origin:** calcaneus (lateral tuberal process)
- **Insertion:** proximal phalanx of little toe
- **Action:** flexion & abduction of little toe
- **Innervation:** lateral plantar nerve



(a) First layer

# 2<sup>nd</sup> layer

- **Quadratus plantae**
- **Lumbricals**
  
- **Extrinsic muscles:**
  - Flexor digitorum longus
  - Flexor hallucis longus



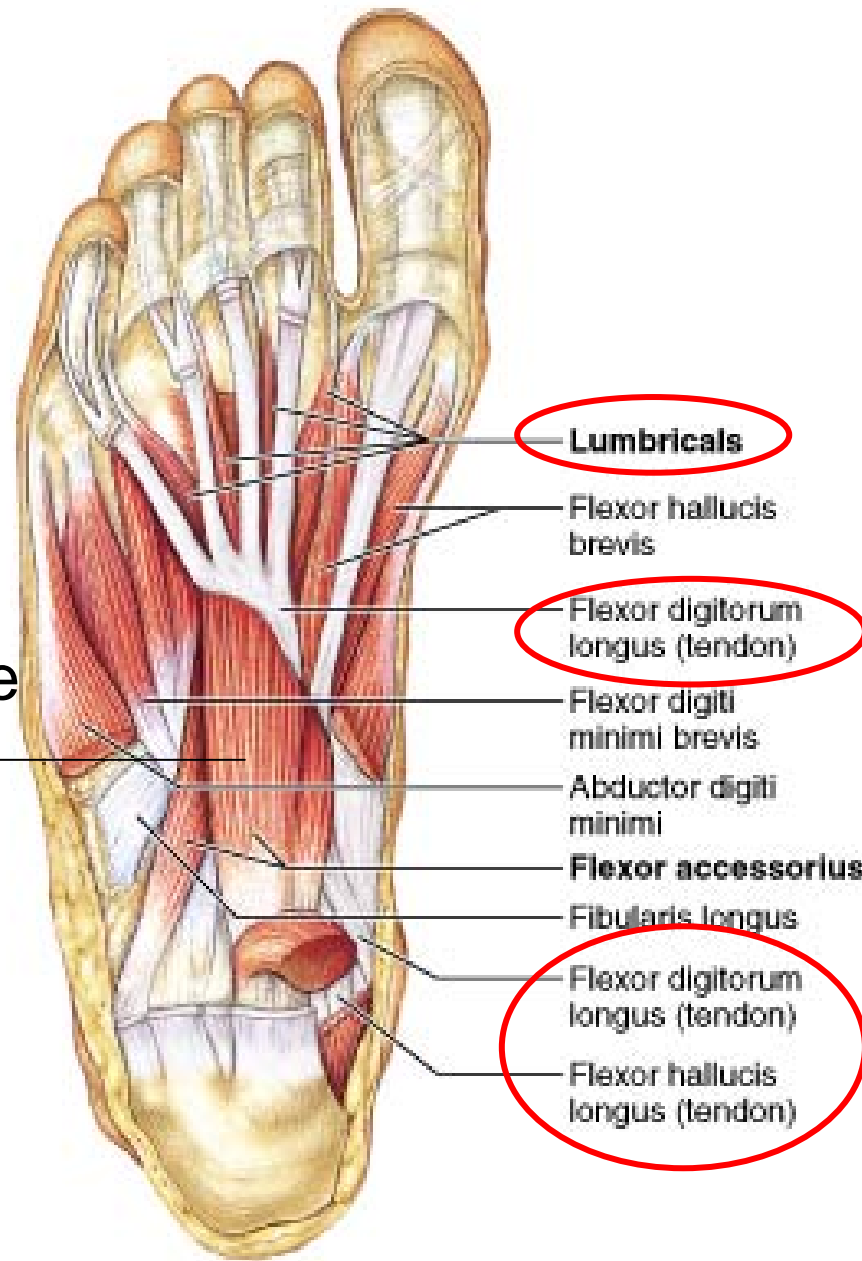
# Quadratus plantae

- **Origin:** calcaneus (medial & lateral sides of plantar surface – distal to tuber)
- **Insertion:** tendon of flexor digitorum longus
- **Action:** assist in flexion of lateral four toes...how?
- **Innervation:** lateral plantar nerve

# Lumbricals

- **Origin:** flexor digitorum longus tendon
- **Insertion:** expansion of extensor tendons of lateral four toes
- **Action:** flexion of metatarsophalangeal joints (& possible extension of interphalangeal joints)
- **Innervation:** medial plantar nerve to 1<sup>st</sup> lumbrical, lateral plantar nerve to 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup> lumbrical

Quadratus plantae



(b) Second layer

# 3<sup>rd</sup> layer

- Flexors hallucis brevis
- Adductor hallucis
- Flexor digiti minimi brevis

# Flexor hallucis brevis

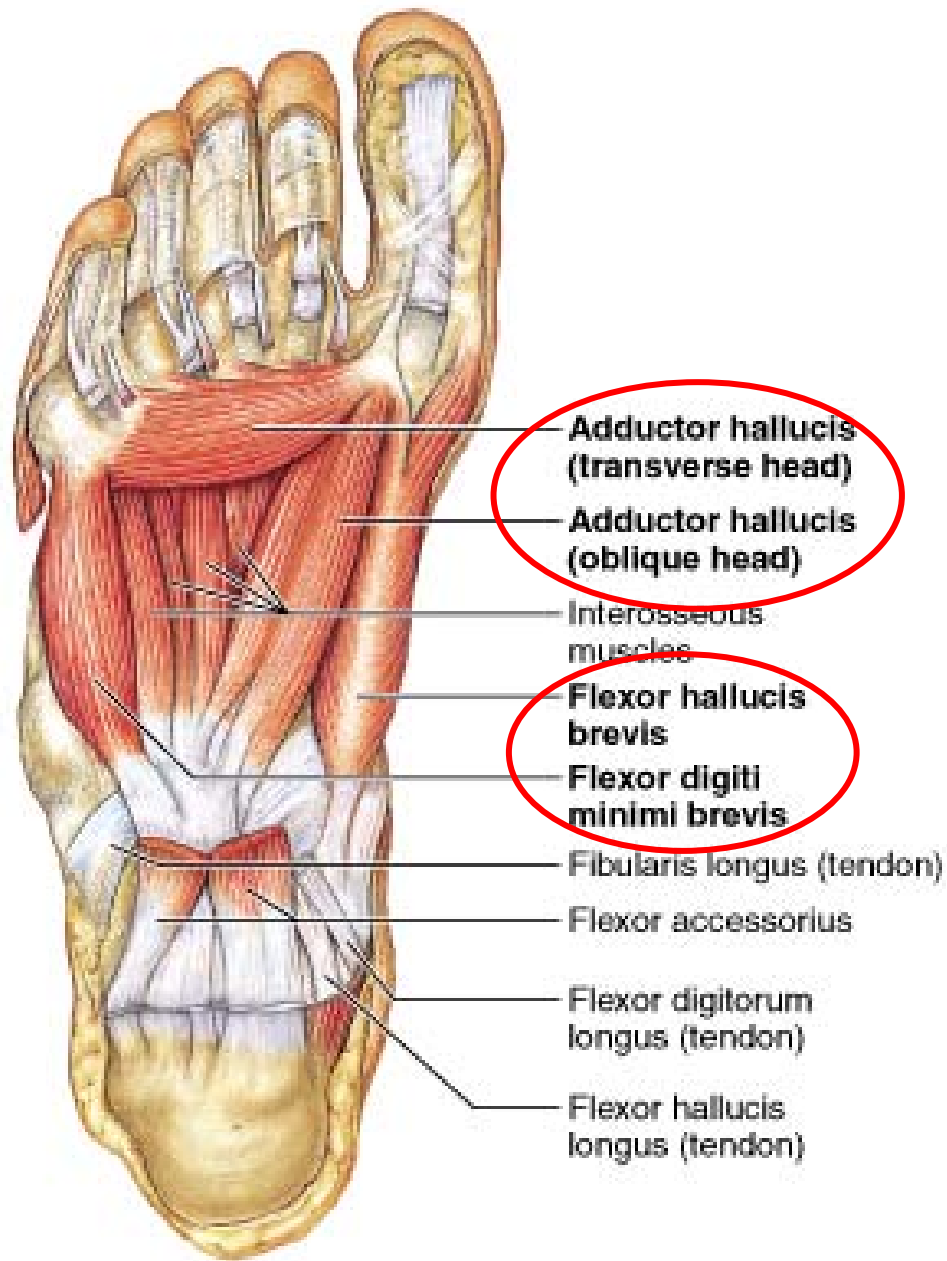
- **Origin:** cuboid, lateral cuneiform, tendon of tibialis posterior
- **Insertion:** medial & lateral sides of proximal phalanx of big toe
- **Action:** flexion of proximal phalanx of big toe
- **Innervation:** medial plantar nerve

# Adductor hallucis

- **Origin:**
  - oblique head: bases of 2<sup>nd</sup> to 4<sup>th</sup> metatarsals
  - transverse head: capsules of 3<sup>rd</sup> to 5<sup>th</sup> metatarsophalangeal joints
- **Insertion:** proximal phalanx of big toe
- **Action:** adduction & flexion of big toe
- **Innervation:** lateral plantar nerve

# Flexor digiti mini brevis

- **Origin:** base of 5<sup>th</sup> metatarsal
- **Insertion:** proximal phalanx of little toe (plantar surface)
- **Action:** flexion of proximal phalanx of little toe
- **Innervation:** lateral plantar nerve



**(c) Third layer**

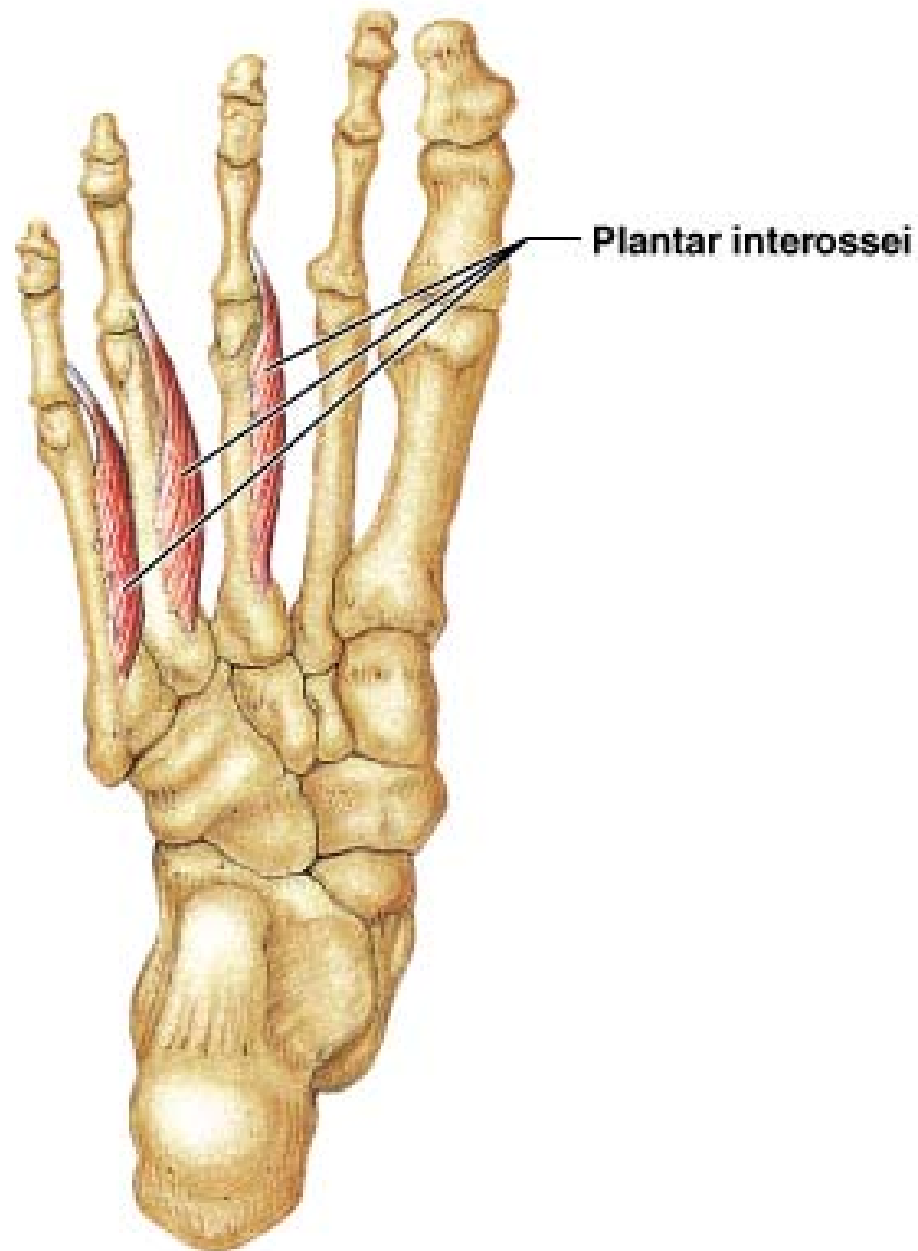


# Deep layer

- Plantar interossei
- Dorsal interossei

# Plantar interossei

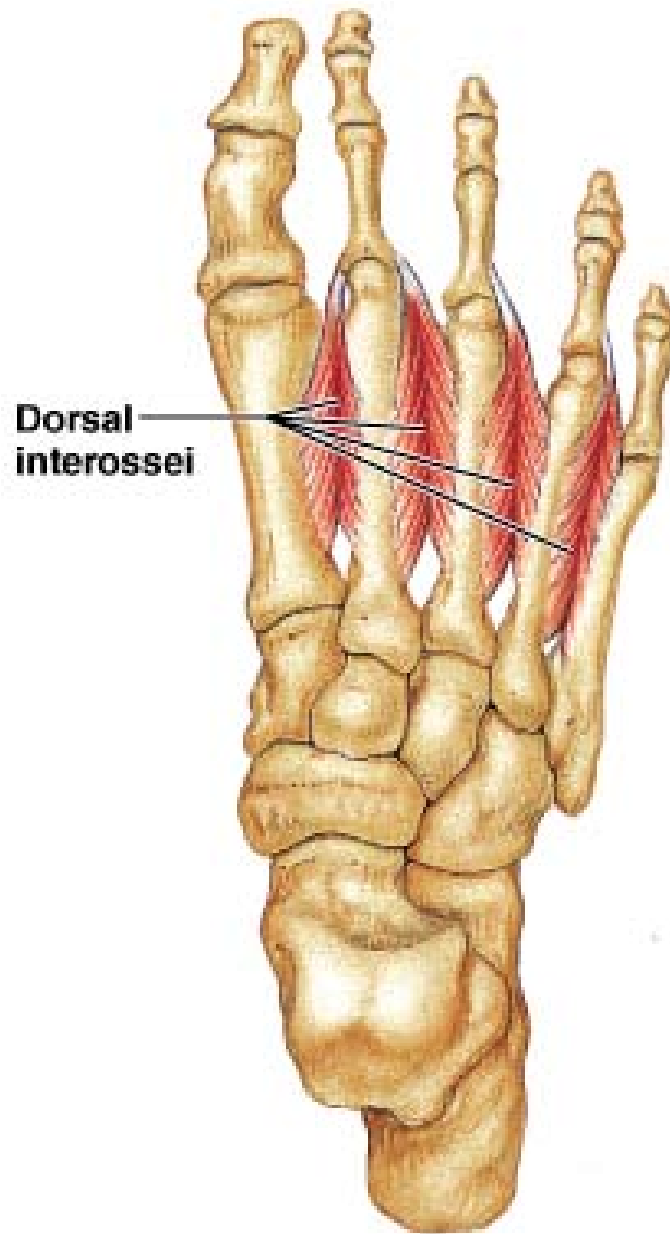
- **Origin:** medial side of 3<sup>rd</sup> to 5<sup>th</sup> metatarsals
- **Insertion:** medial side of proximal phalanges of same toes
- **Action:** adduction of toes
- **Innervation:** lateral plantar nerve



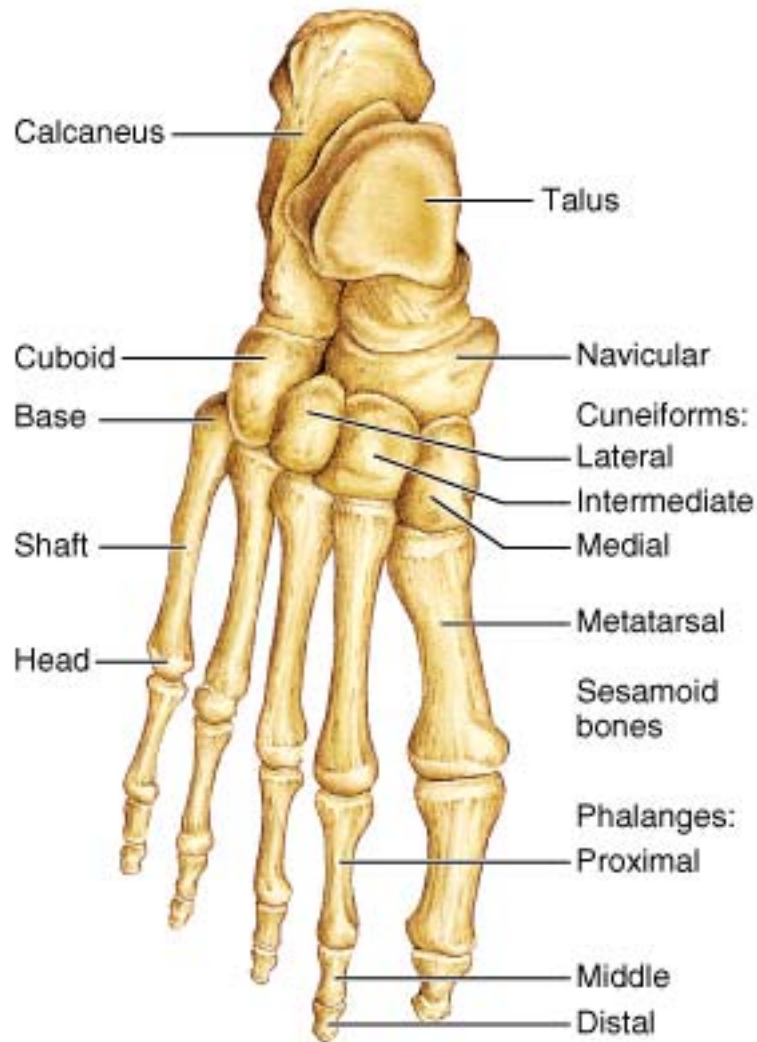
**(d) Fourth layer: plantar interossei**

# Dorsal interossei

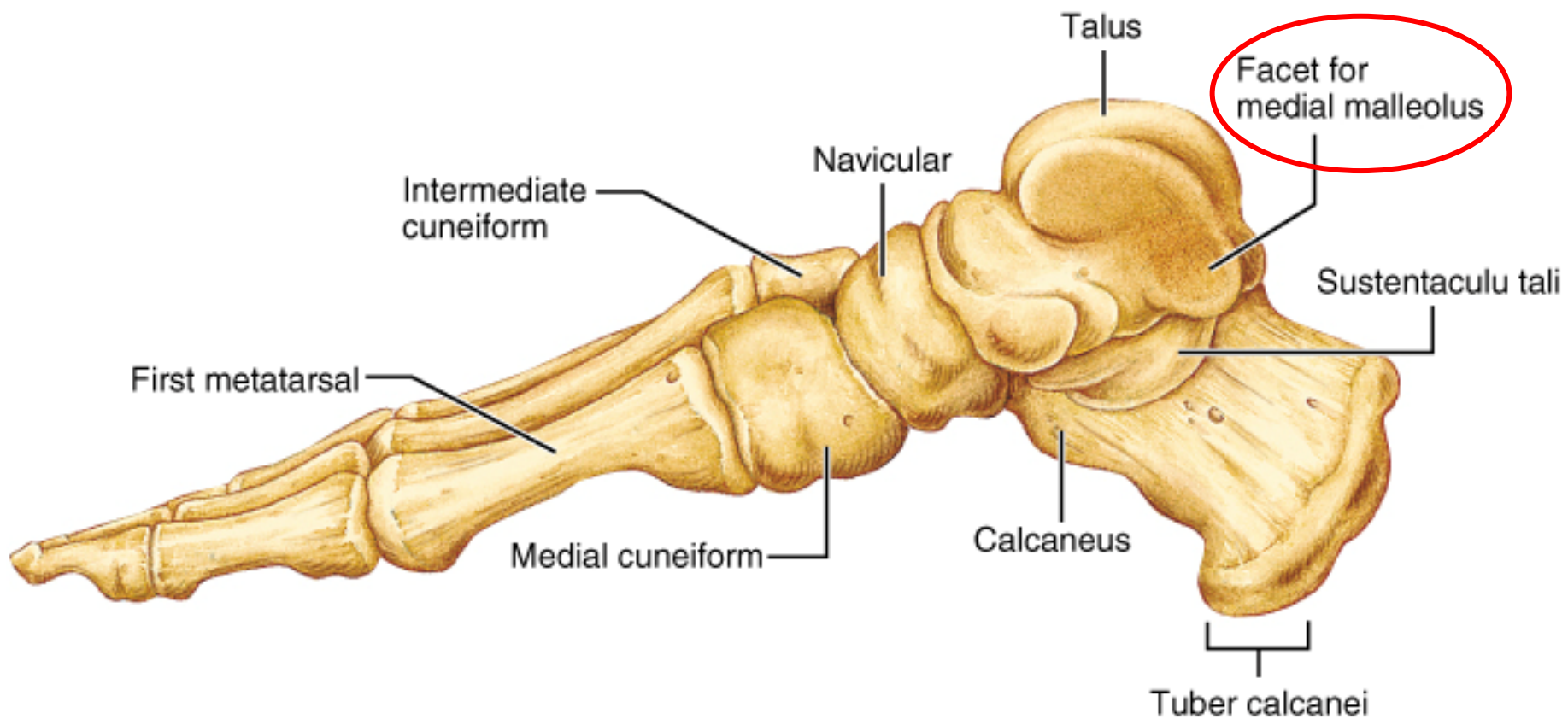
- **Origin:** adjacent sides of metatarsals
- **Insertion:** proximal phalanges
  - #1 to medial side of 2<sup>nd</sup> toe
  - #2, 3, & 4: to lateral side of corresponding toes
- **Action:** abduction of toes
- **Innervation:** lateral plantar nerve



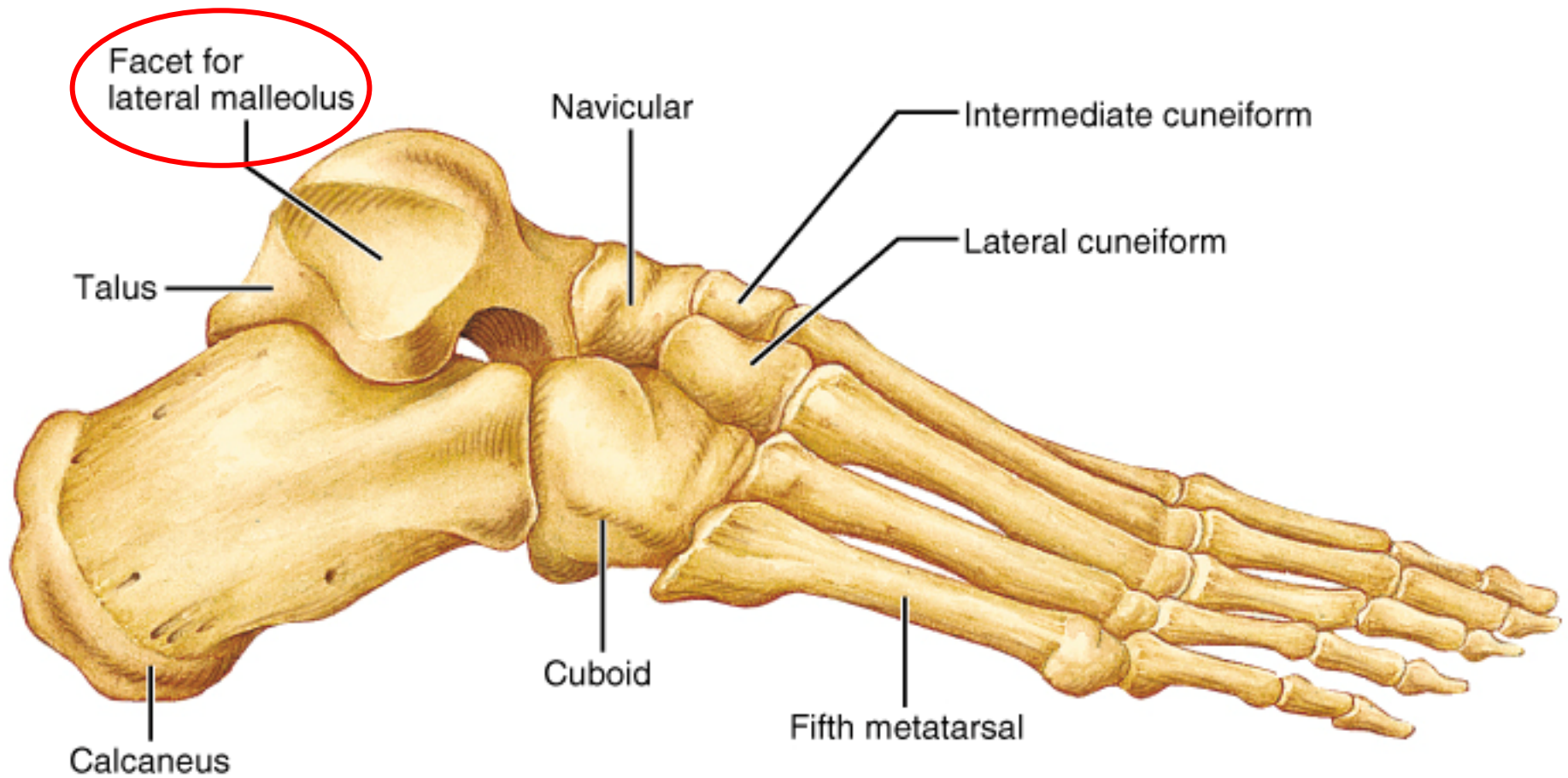
**(e) Fourth layer: dorsal interossei**



**(a) Superior view**



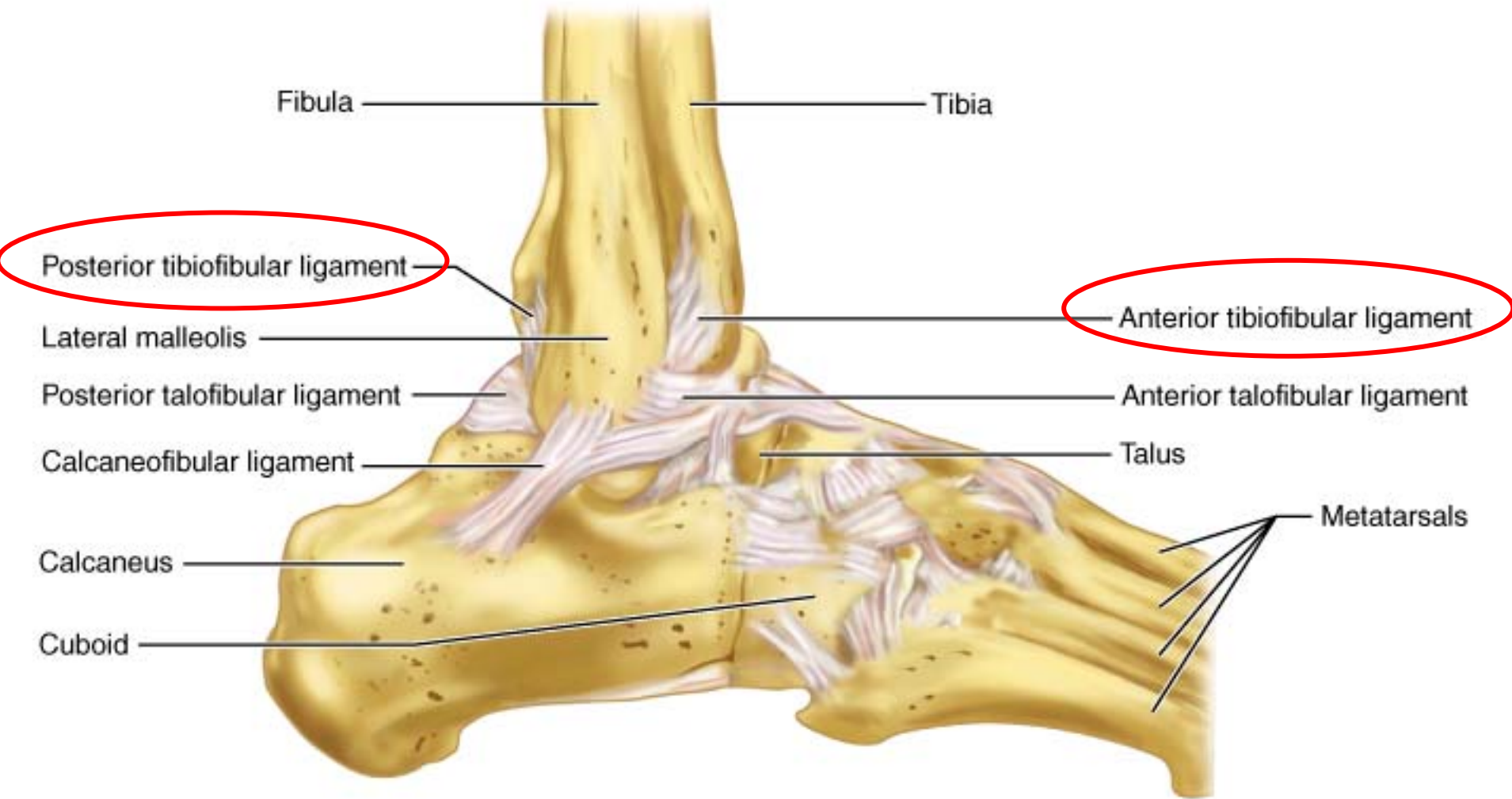
**(b) Medial view**



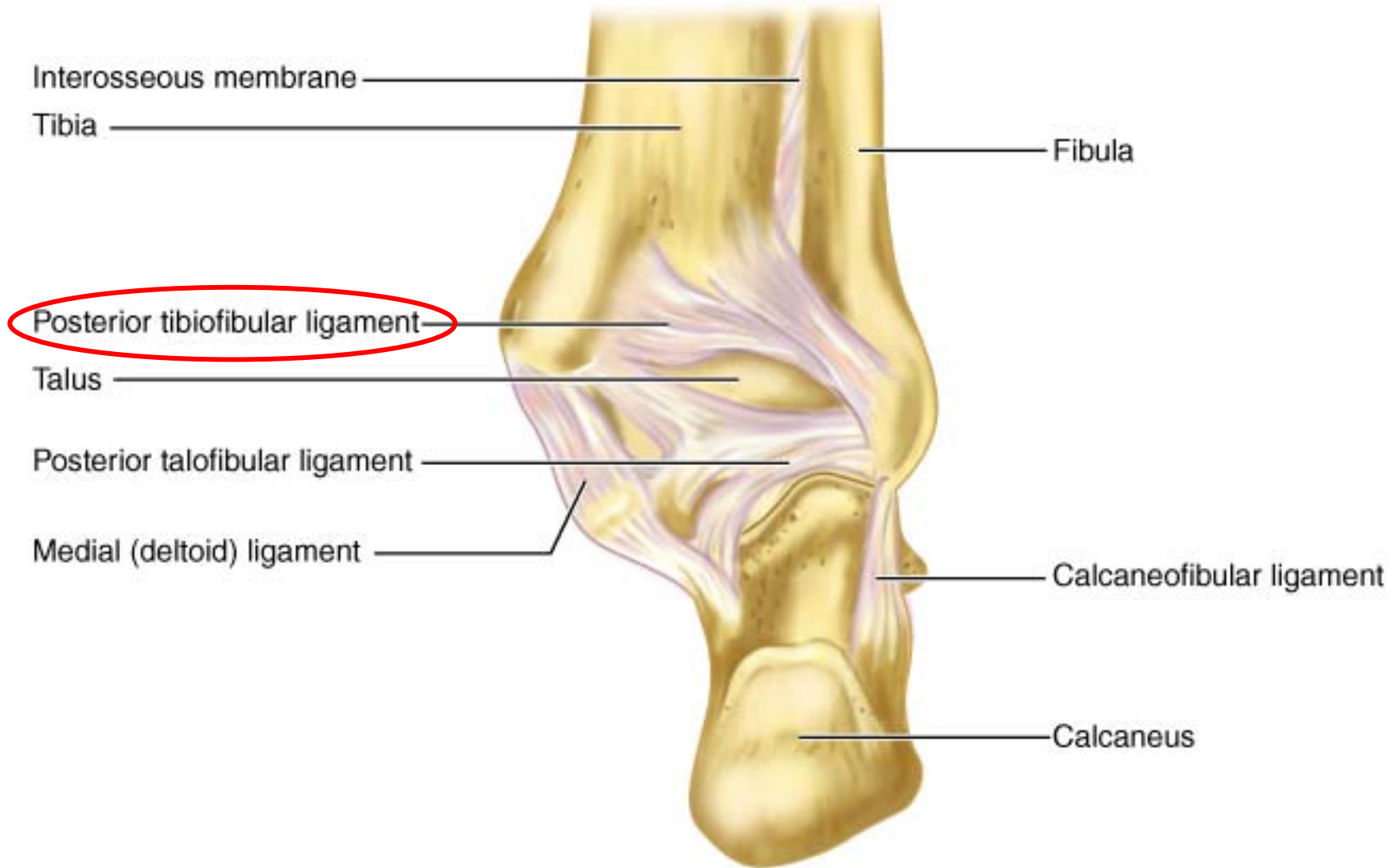
**(c) Lateral view**



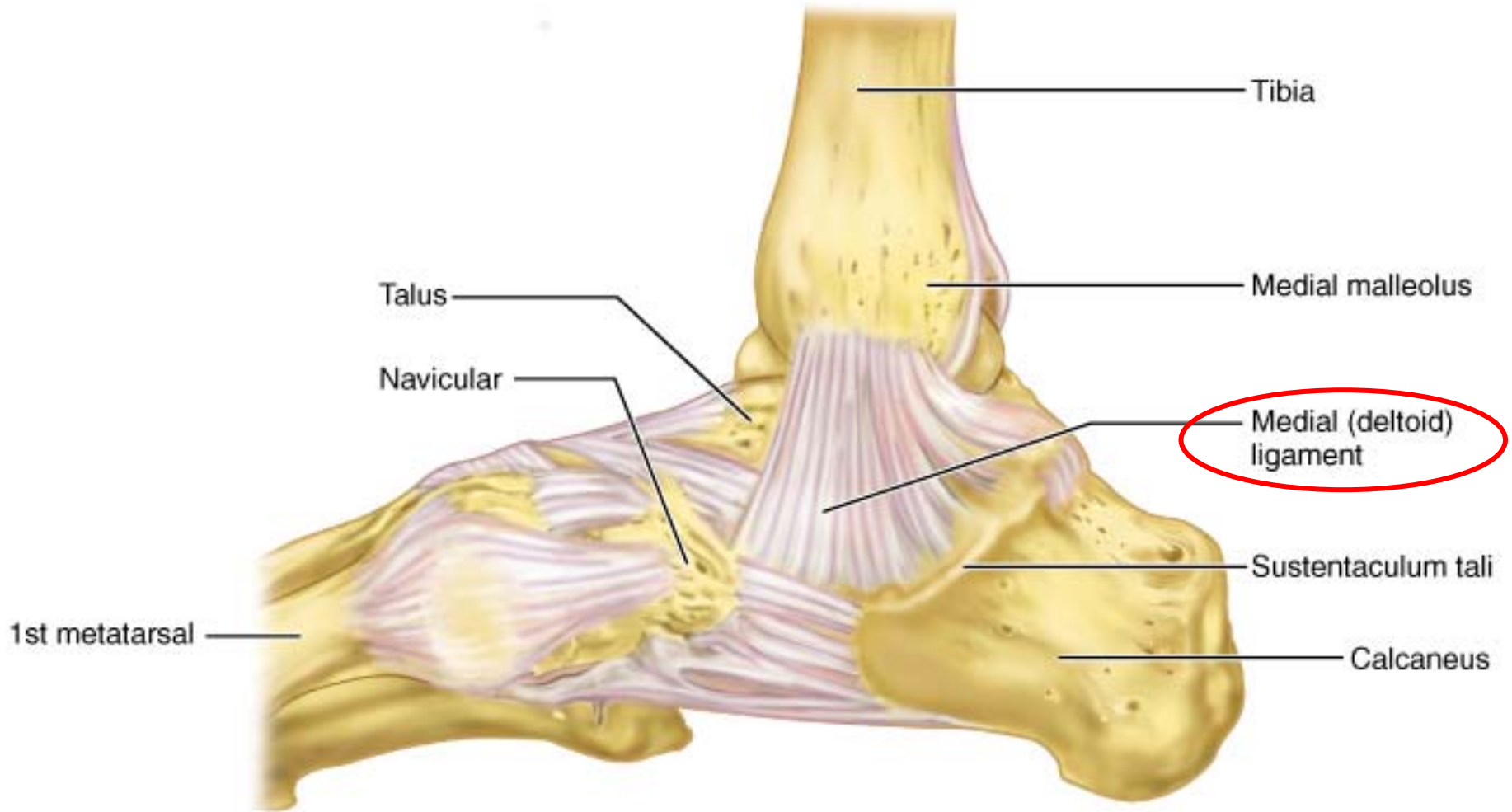
# Lateral view



# Posterior view



# Medial view



# Lateral view

