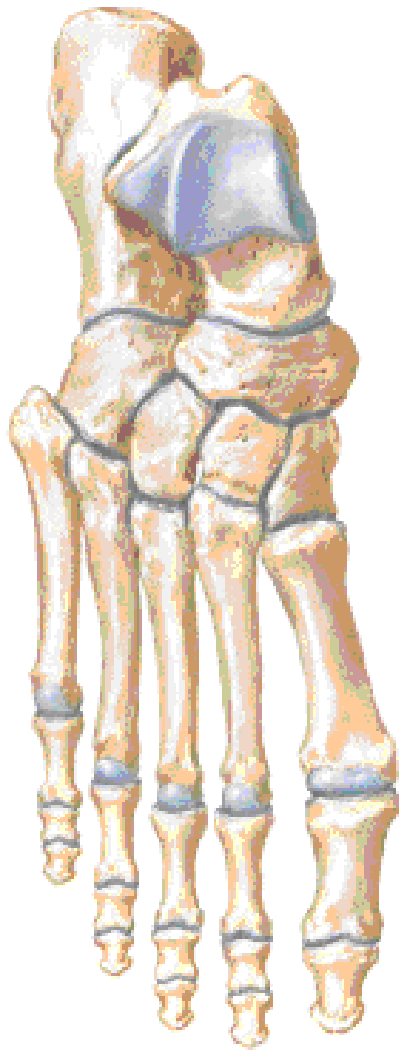
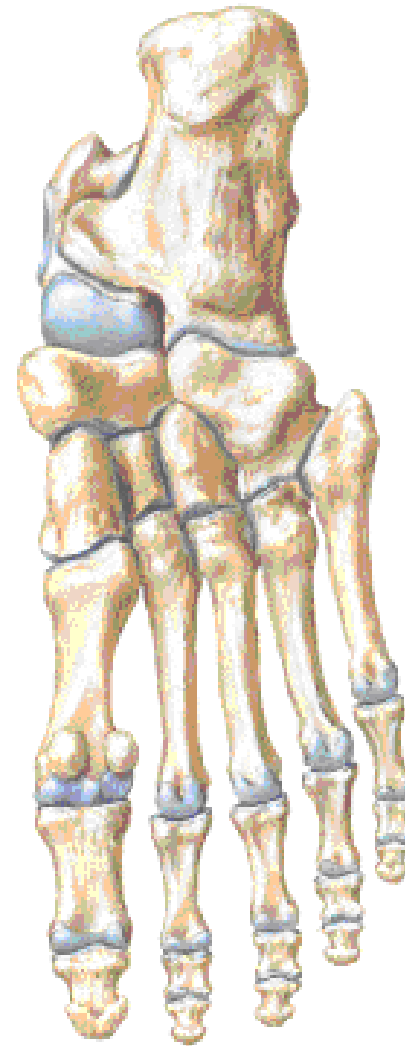


Dorsal View

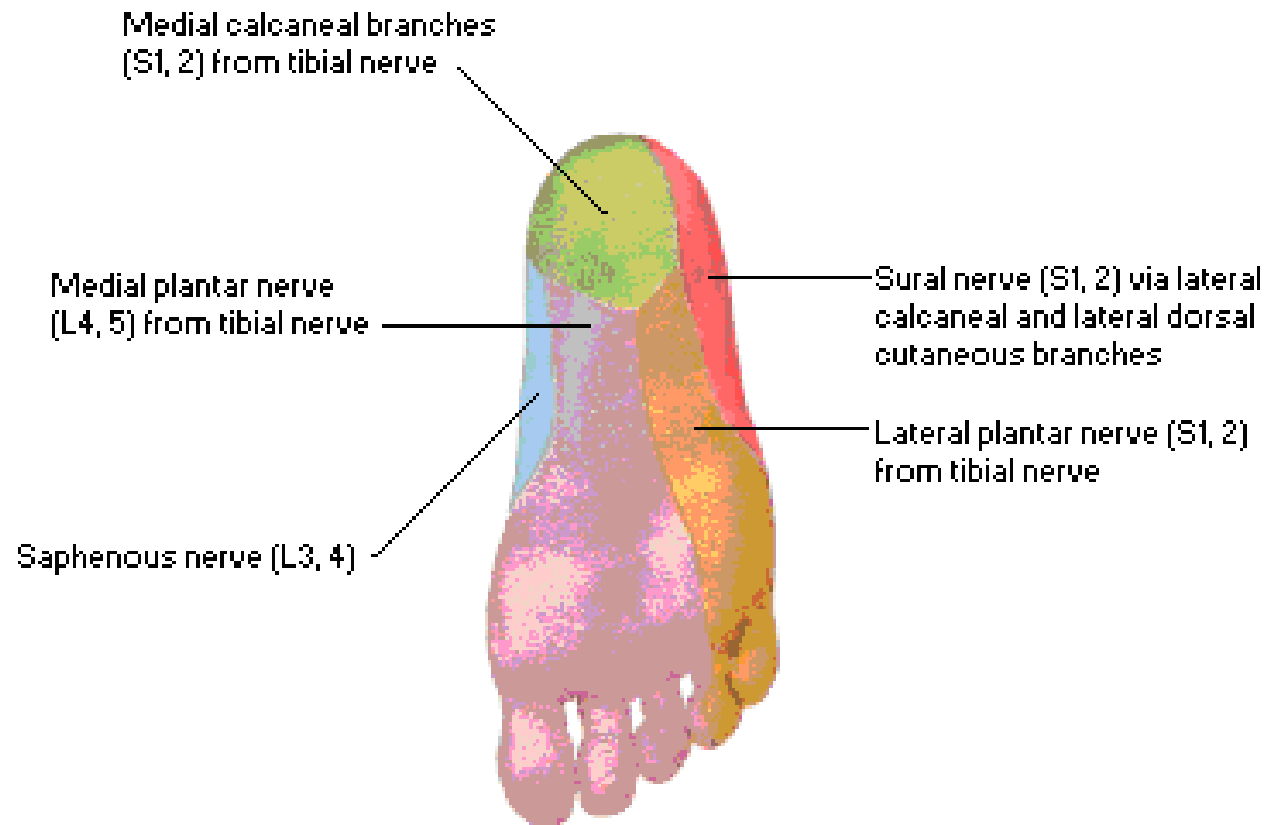


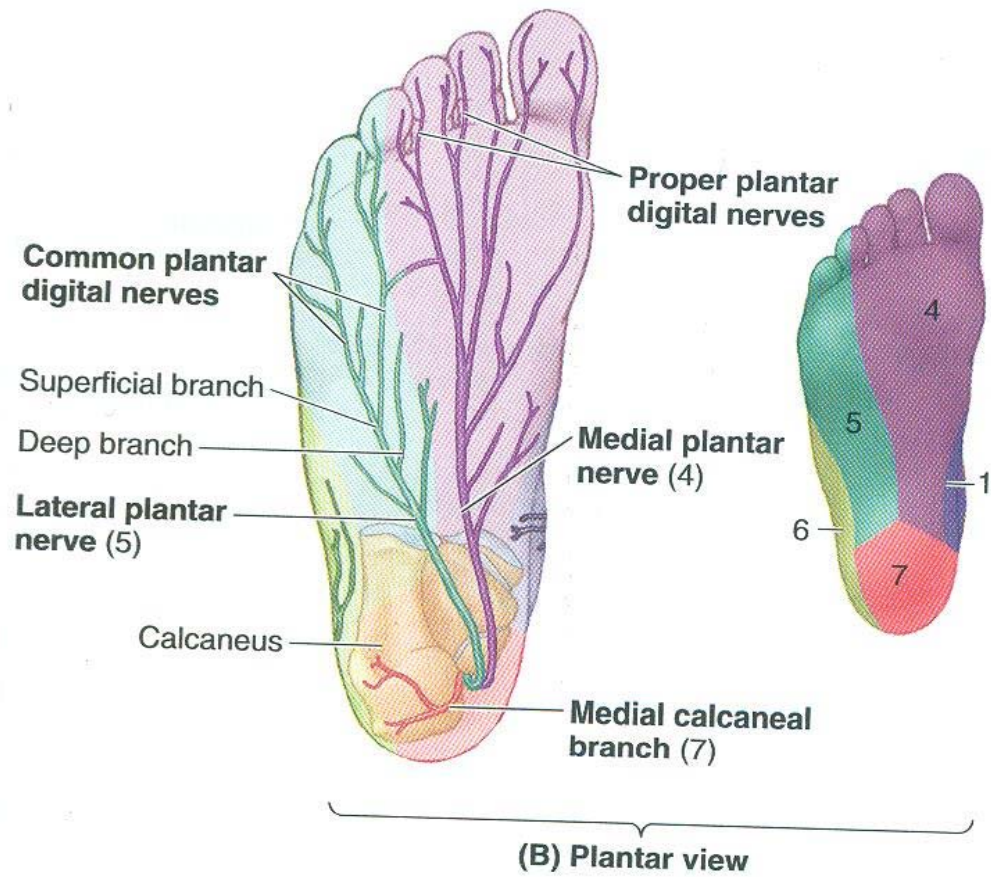
Plantar View



# Tibial Nerve

## Cutaneous Innervation of Sole of Foot





12. Nerves of foot.

## **Intrinsic muscles**

- Arise and insert within foot
- Modify actions of long tendons
- Generate fine movements of toes
- Nerve supply: medial & lateral plantar nerve

### **Flexors**

- Digitorum brevis
- Digiti minimi brevis
- Hallucis brevis
- Accessorius

### **Abductors**

- A. hallucis
- A. digiti minimi

- **Lumbricals**
- **Interossei**



(A) Flexion



(B) Extension



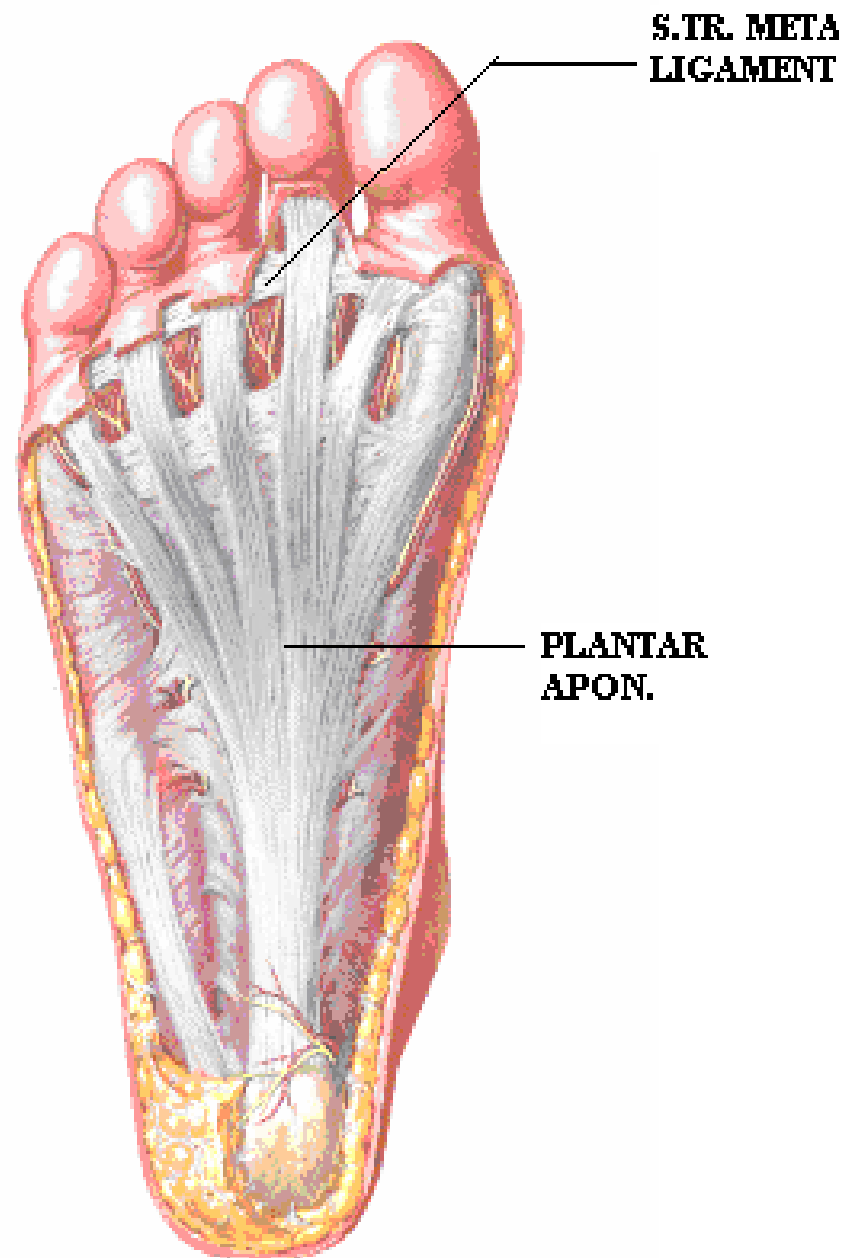
(C) Abduction



(D) Adducted  
(relaxed position)

**FIGURE 5.100.** Movements of joints of forefoot.

## Superficial Dissection



# Plantar Aponeurosis

- Attached to medial & lateral calcaneal tubercles
- Fans out & is inserted by five slips.
- Slips bifurcate for flexor tendons
- Insert in to flexor sheath & transverse ligaments.

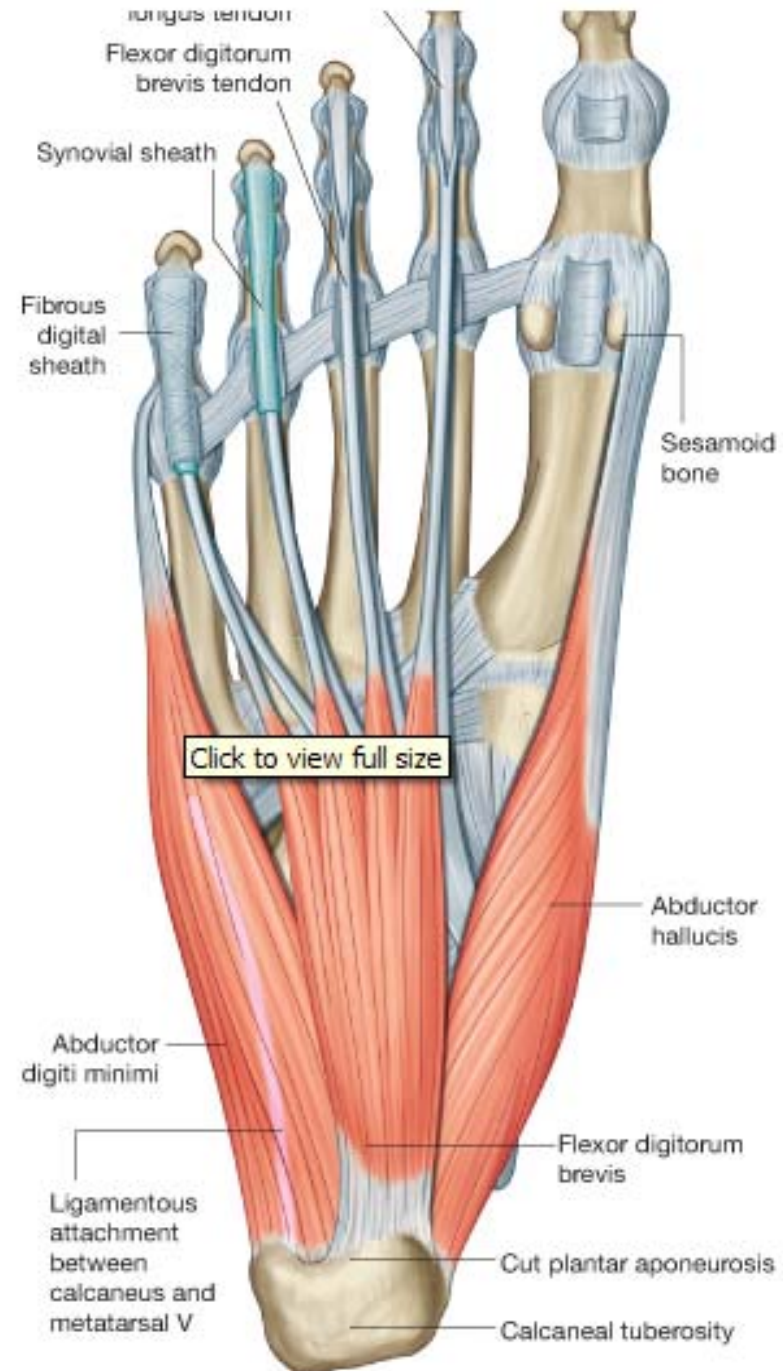
- **1<sup>st</sup> layer** - Short muscles covering the sole.
- **2<sup>nd</sup> layer**- Long flexor tendons, flexor accessorius, lumbricals
- **3<sup>rd</sup> layer**-Short muscle of great & little toes (confined to metatarsal region).
- **4<sup>th</sup> layer**- Interossei- plantar & dorsal tendons of tibialis posterior & peroneus longus.

Plantar nerves & vessels between 1<sup>st</sup> and 2<sup>nd</sup> layer



# First Layer

- Abductor Hallucis
- Flexor digitorum brevis
- Abductor Digiti minimi

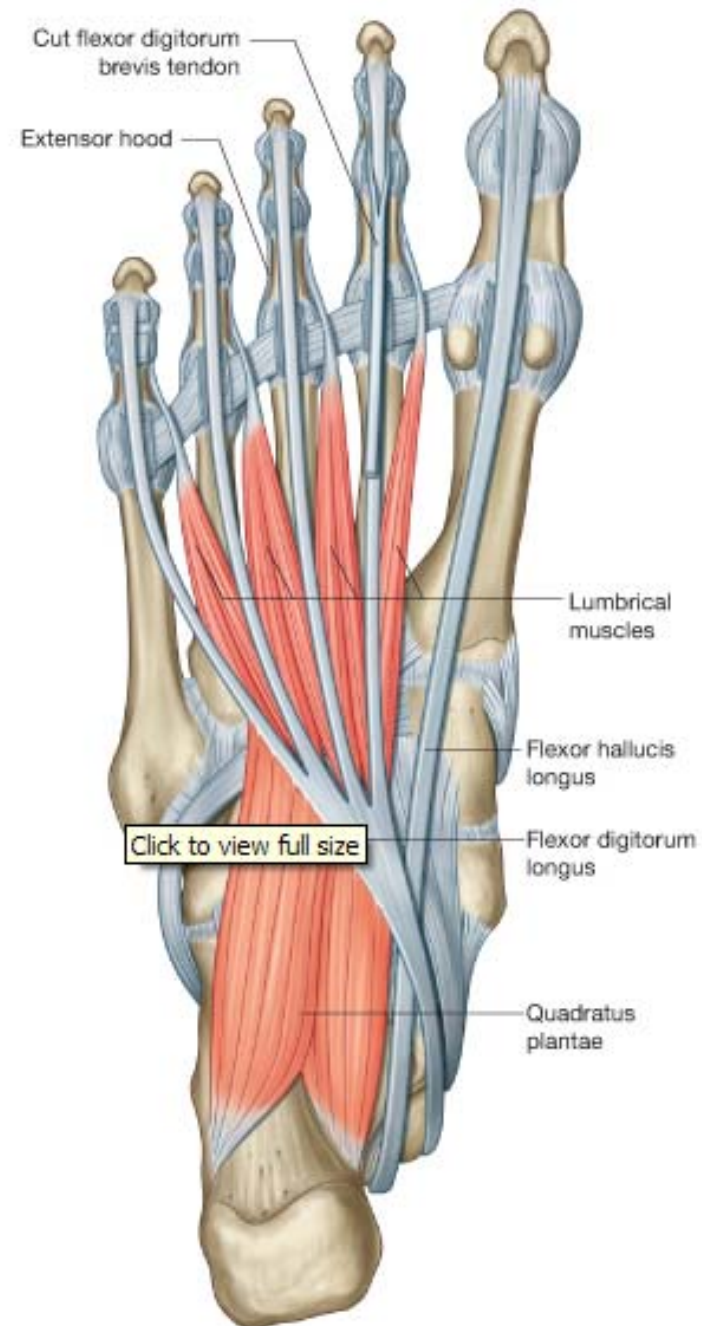


# First Layer

Abductor hallucis	Flexor digitorum brevis	Abductor digiti minimi
<p><b>O</b>- Medial tubercle of calcaneum</p> <p><b>I</b>- Proximal phalanx of great toe.</p> <p><b>A</b>- Abduction of great toe</p> <p><b>N</b>- Medial plantar nerve</p>	<p><b>O</b>- Medial tubercle of calcaneum</p> <p><b>I</b>- four tendons pass to lateral 4 toes – middle phalanx</p> <p><b>A</b>- Flexion of toes</p> <p><b>N</b>- Medial plantar nerve</p>	<p><b>O</b>- Medial &amp; lateral tubercle of calcaneum</p> <p><b>I</b>- proximal phalanx of little toe.</p> <p><b>A</b>- Abduction of little toe.</p> <p><b>N</b>- lateral plantar nerve</p>

# Second layer

- Tendon of flexor dig. Longus
- Lumbricals
- Flexor accessorius



# Second layer

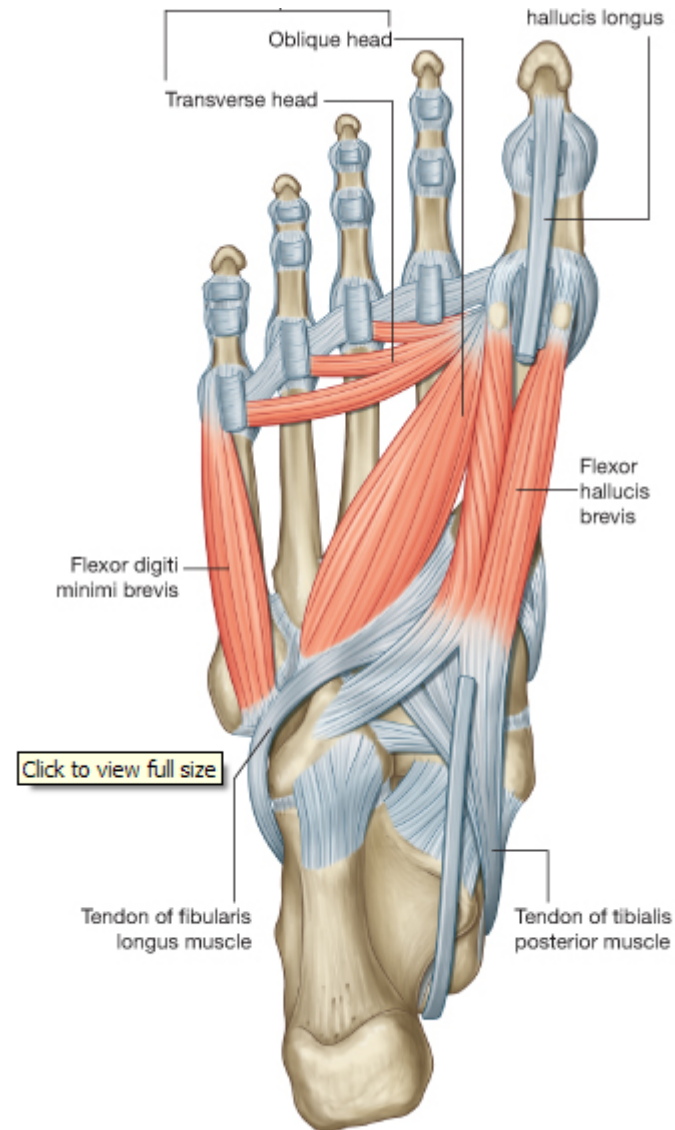
Tendon of flexor hallucis longus	Flexor Accessorius	Tendon of flexor D.L
<ul style="list-style-type: none"> <li>• Lies in a groove below sustentaculum tali</li> <li>• Inserted in to distal phalanx of big toe</li> <li>• Synovial sheath</li> <li>• Sesamoid bones</li> </ul>	<p><b>O-</b> Medial &amp; lateral tubercles of calcaneum</p> <p><b>I-</b> Gets inserted into tendon of F.D.L.</p> <p><b>A-</b> Straightens the pull of F.D.L; flexion</p> <p><b>N-</b> Lateral plantar nerve.</p>	<ul style="list-style-type: none"> <li>• Divides in to four slips</li> <li>• Receives the insertion of flexor accessorius</li> <li>• Gives off lumbricals</li> <li>• Each slip pierces F.D.B. &amp; inserts on distal phalanx of lateral 4 toes</li> </ul>

# Lumbricals

- Arise from the tendons of flexor D.L.  
;each arises by two heads( Except 1<sup>st</sup>).
- Pass on to medial side of metatarso-phalangeal joints of lateral four toes.
- Insert to the extensor expansions.
- N- 1<sup>st</sup> – Medial plantar nerve  
– 2-4 – lateral plantar nerve
- To maintain extension of digits at interphalangeal joints.

# Third layer

- Flexor hallucis brevis
- Adductor hallucis
- Flexor digiti minimi

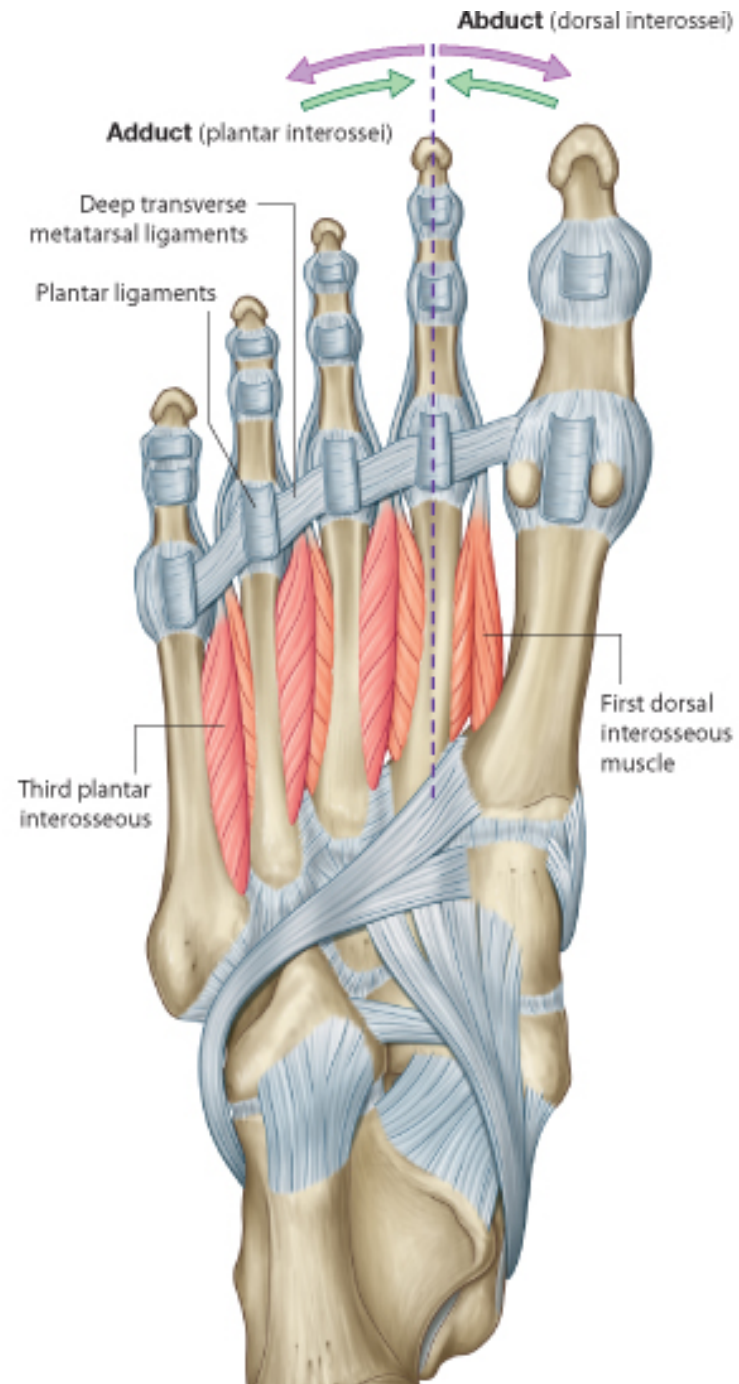


# Third layer

Adductor hallucis	Flexor hallucis brevis	Flexor digiti minimi brevis
<p><b>O-</b> 2,3,4, metatarsal heads &amp; ligaments</p> <p><b>I-</b> Proximal phalanx of big toe (lateral)</p> <p><b>N-</b> Lateral plantar nerve</p> <p><b>A-</b> Maintain the transverse arch</p>	<p><b>O-</b> cuboid &amp; cuneiforms</p> <p><b>I-</b> Proximal phalanx of big toe (two slips)</p> <p><b>N-</b> Medial plantar nerve</p> <p><b>A-</b> flexion of proximal phalanx of big toe</p>	<p><b>O-</b> 5<sup>th</sup> metatarsal</p> <p><b>I-</b> Proximal phalanx of little toe</p> <p><b>N-</b> Lateral plantar nerve</p>

# Fourth layer

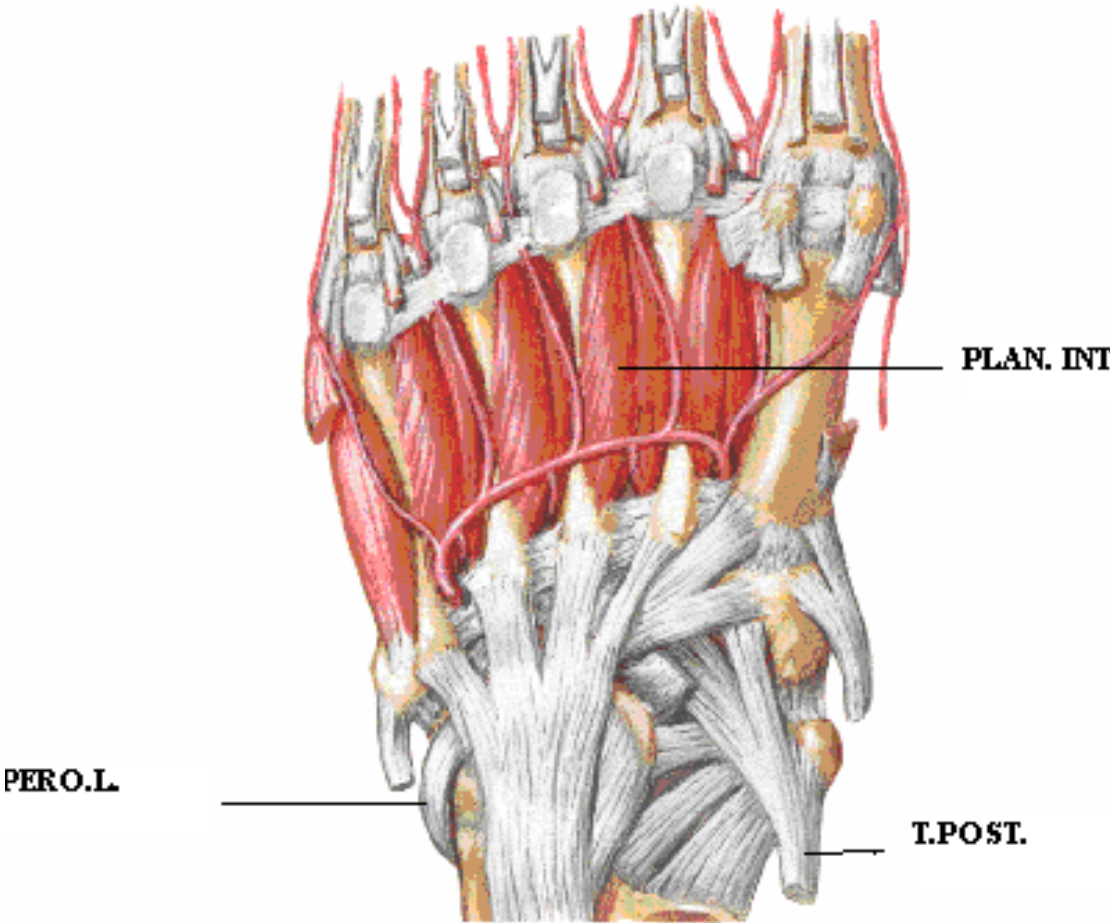
- Interossei
  - Dorsal- 4
  - Plantar- 3
- Tendons of
  - Peroneus longus
  - Tibialis posterior





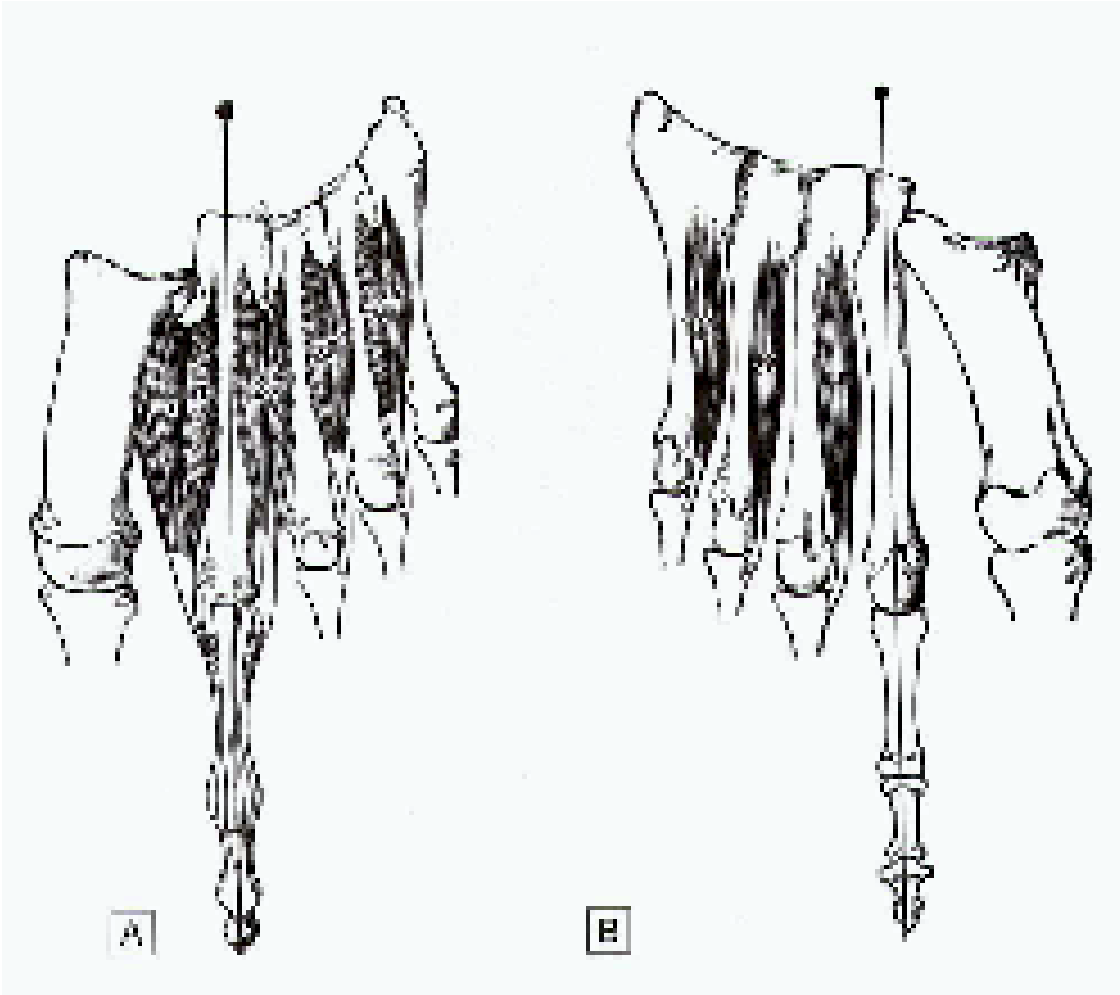
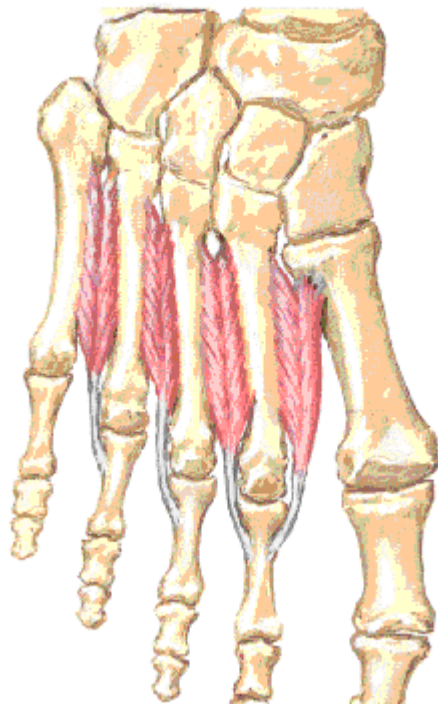
# Interosseous Muscles and Deep Arteries of Foot

## Plantar View



# Interosseous Muscles of Foot

Dorsal View



# Fourth layer

Tendon of peroneus longus	Interosseus Muscles	Tendon of tibialis posterior
<ul style="list-style-type: none"> <li>• Crosses the sole obliquely (lateral to medial)</li> <li>• Inserted at the base of 1<sup>st</sup> metatarsal.</li> </ul>	<ul style="list-style-type: none"> <li>• PAD(3) DAB(4)</li> <li>• <b>O</b>- Plantar from its own metatarsal ,dorsal from two metatarsal</li> <li>• <b>I</b>- Plantar – 3,4,5 digits dorsal extensor expansions</li> <li>• Dorsal-each arises by two metatarsal.               <ul style="list-style-type: none"> <li>- 2 are inserted on 2<sup>nd</sup> toe.</li> <li>- 3,4 are inserted on 3<sup>rd</sup> and 4<sup>th</sup> toe.</li> </ul> </li> <li>- Proximal phalanges &amp; dorsal extensor expansion</li> <li>• <b>N</b>- lateral plantar nerve</li> </ul>	<ul style="list-style-type: none"> <li>• inserted into navicular tuberosity, to three cunifoms cuboid.</li> <li>• 2,3,4, metatarsal base.</li> </ul>

**TABLE 5.19. MOVEMENTS OF JOINTS OF FOREFOOT AND MUSCLES PRODUCING THEM**

Movement (letters refer to Fig. 5.100)	Muscles <sup>a</sup>
Metatarsophalangeal joints	
Flexion ( <i>A</i> )	<b>Flexor digitorum brevis</b> <b>Lumbricals</b> <b>Interossei</b> <b>Flexor hallucis brevis</b> <b>Flexor hallucis longus</b> Flexor digit minimi brevis Flexor digitorum longus
Extension ( <i>B</i> )	<b>Extensor hallucis longus</b> <b>Extensor digitorum longus</b> <b>Extensor digitorum brevis</b>
Abduction ( <i>C</i> )	<b>Abductor hallucis</b> <b>Abductor digiti minimi</b> <b>Dorsal interossei</b>
Adduction ( <i>D</i> )	<b>Adductor hallucis</b> <b>Plantar interossei</b>
Interphalangeal joints	
Flexion (fig. <i>A</i> )	<b>Flexor hallucis longus</b> <b>Flexor digitorum longus</b> <b>Flexor digitorum brevis</b> Quadratus plantae
Extension (fig. <i>B</i> )	<b>Extensor hallucis longus</b> <b>Extensor digitorum longus</b> <b>Extensor digitorum brevis</b>

<sup>a</sup> Muscles in boldface are chiefly responsible for the movement; the other muscles assist them.

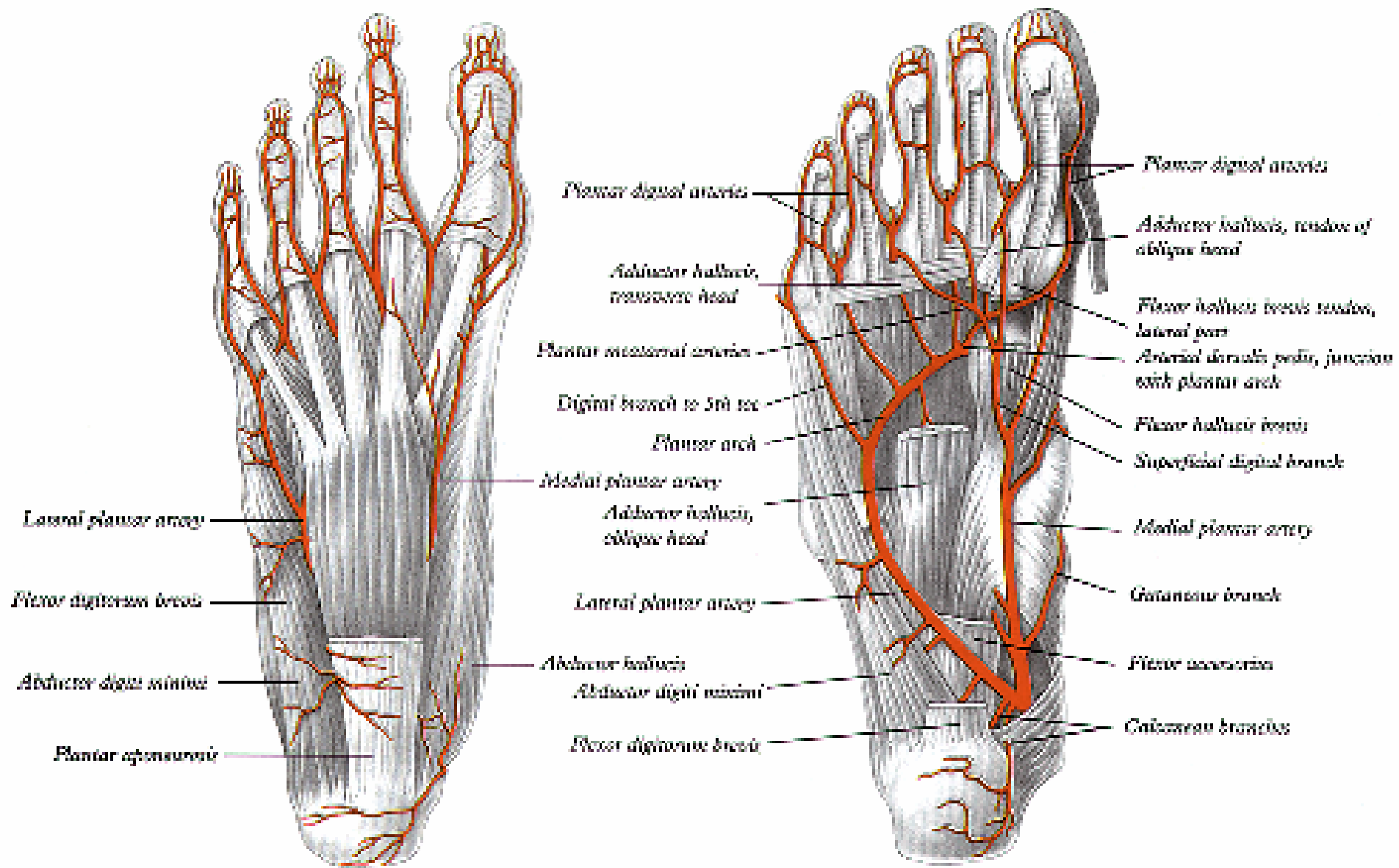
# Vessels and nerves

Arteries: post. Tibial artery

Medial and lateral plantar arteries

Nerves: Tibial nerve- Medial and lateral  
plantar nerves

Plantar arch- lateral plantar and dorsalis  
pedis artery



*Lateral plantar artery*

*Flexor digitorum brevis*

*Abductor digiti minimi*

*Plantar aponeurosis*

*Plantar digital arteries*

*Adductor hallucis, transverse head*

*Plantar metatarsal arteries*

*Digital branch to 3rd toe*

*Plantar arch*

*Medial plantar artery*

*Adductor hallucis, oblique head*

*Lateral plantar artery*

*Abductor hallucis*

*Abductor digiti minimi*

*Flexor digitorum brevis*

*Plantar digital arteries*

*Adductor hallucis, residue of oblique head*

*Flexor hallucis brevis tendon, lateral part*

*Arterial division of pedis, junction with plantar arch*

*Flexor hallucis brevis*

*Superficial digital branch*

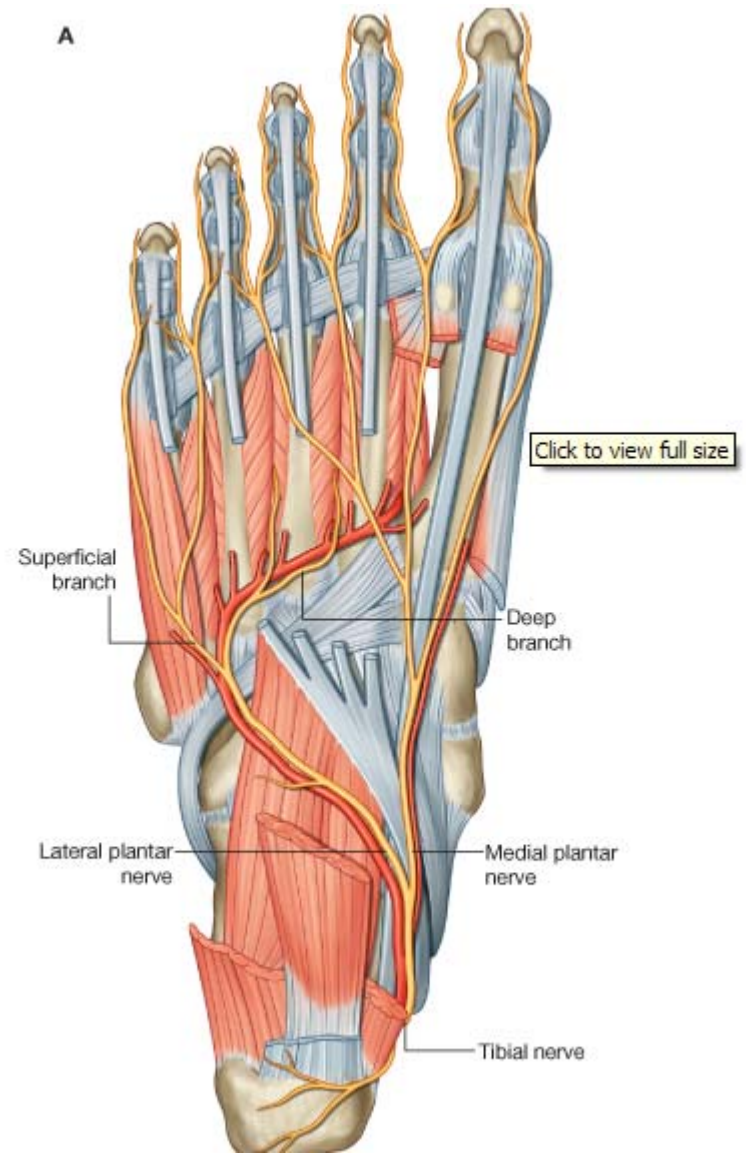
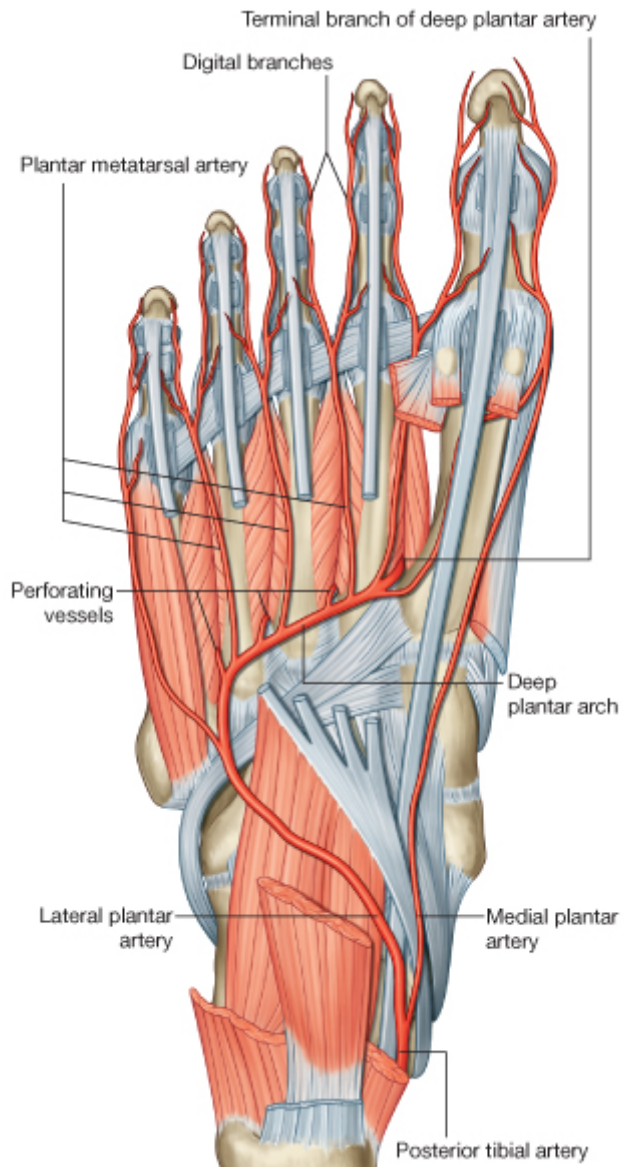
*Medial plantar artery*

*Calcaneus branch*

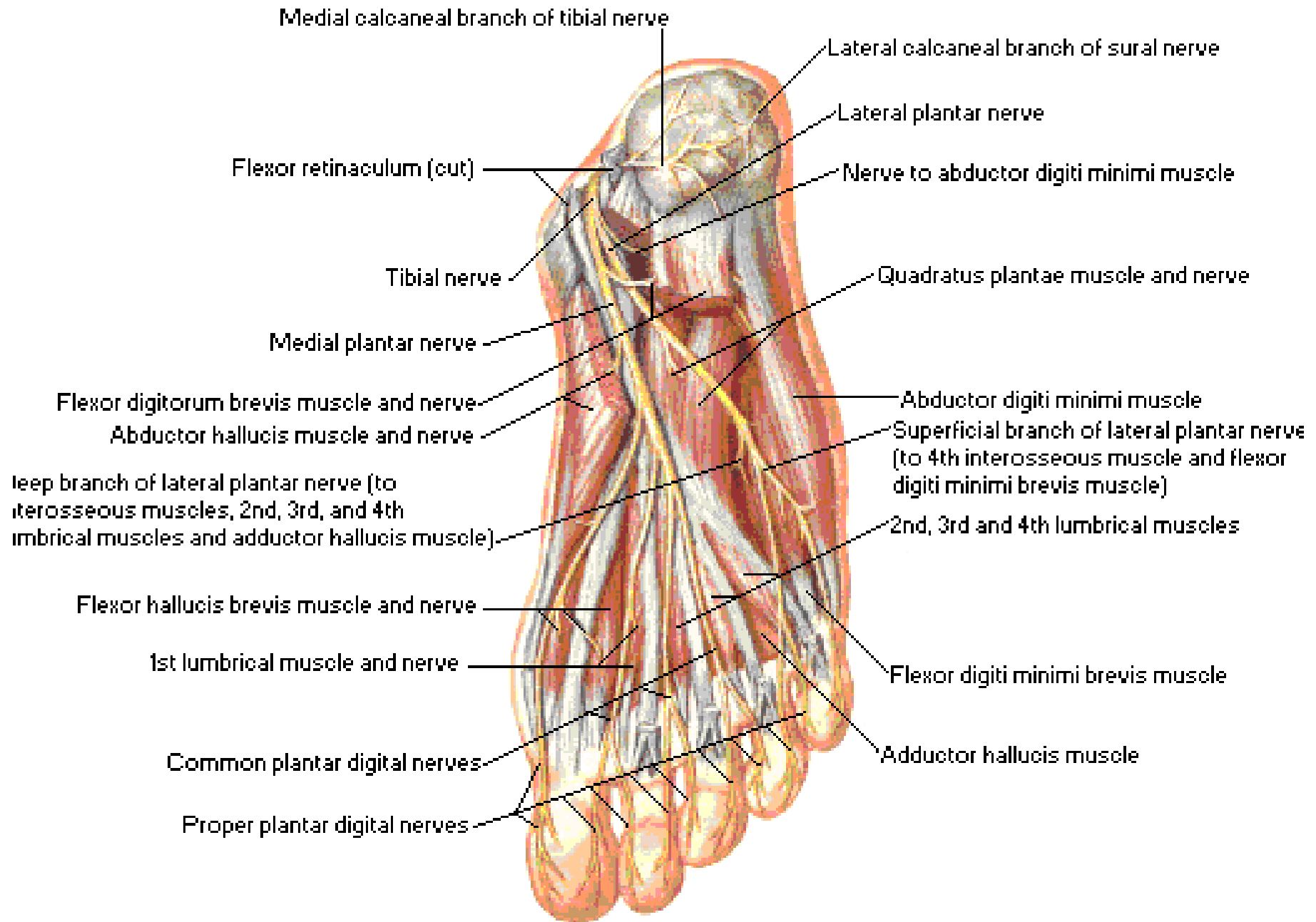
*Fibre accession*

*Calcaneus branches*



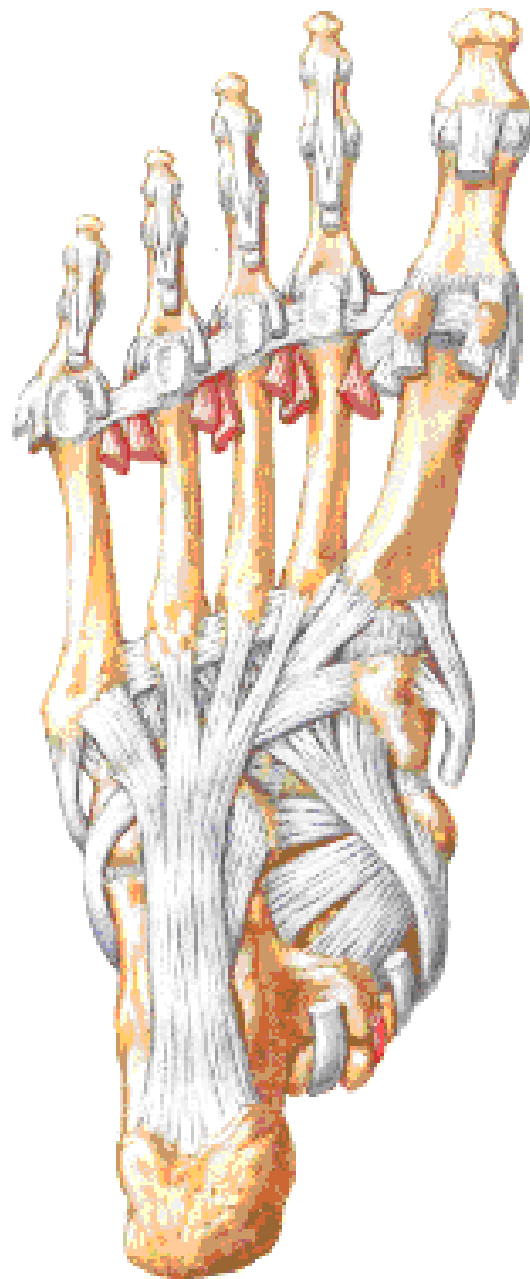


# Plantar View





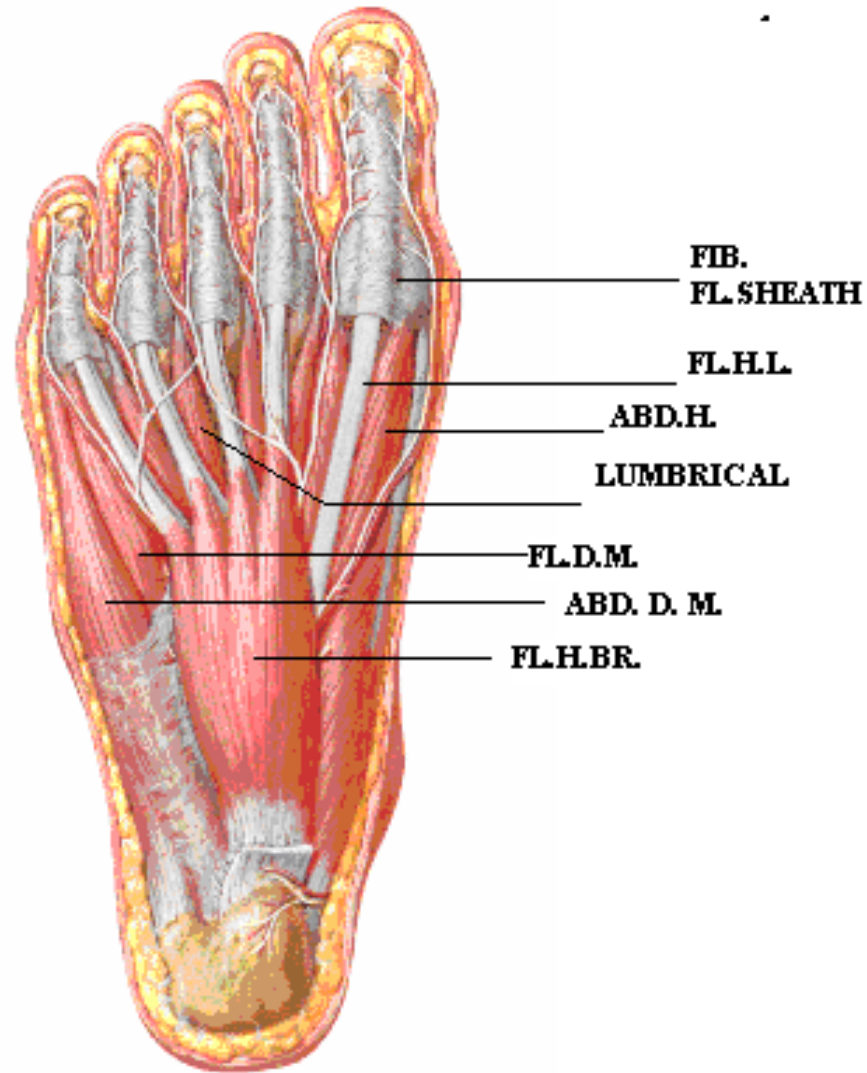
## Plantar View



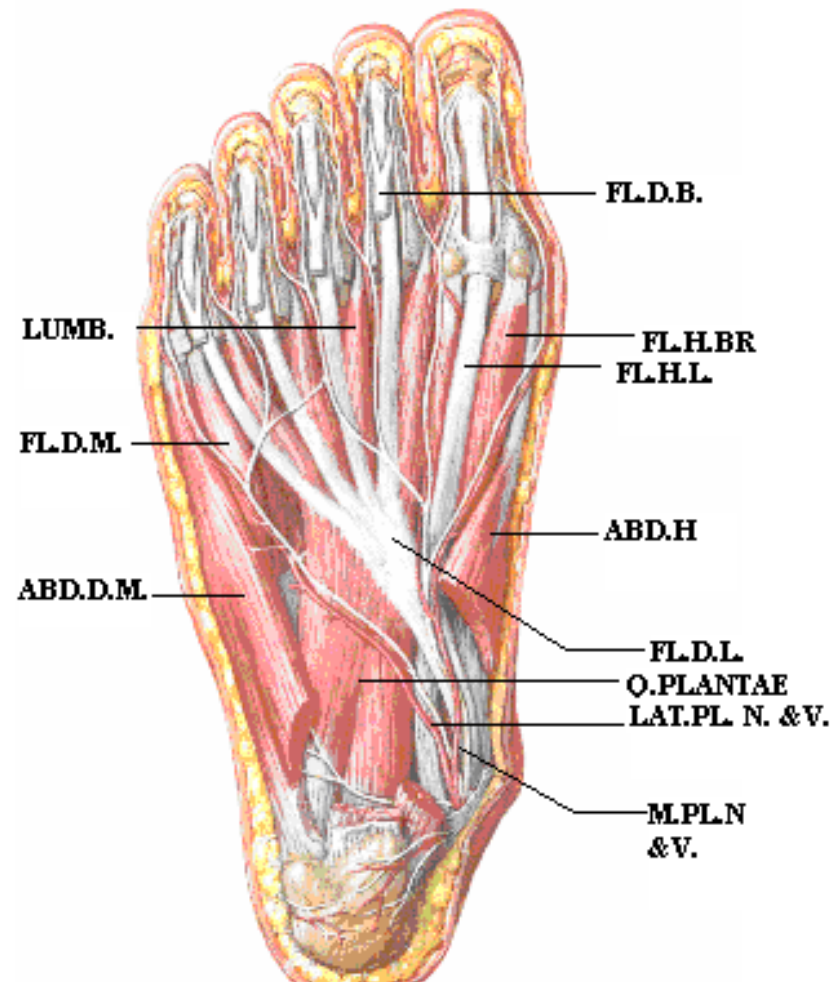
# Applied Anatomy

- Plantar fasciitis
- Calcaneal spur
- Plantar reflex
- Medial plantar nerve entrapment (Jogger's foot)
- Infections / puncture wounds

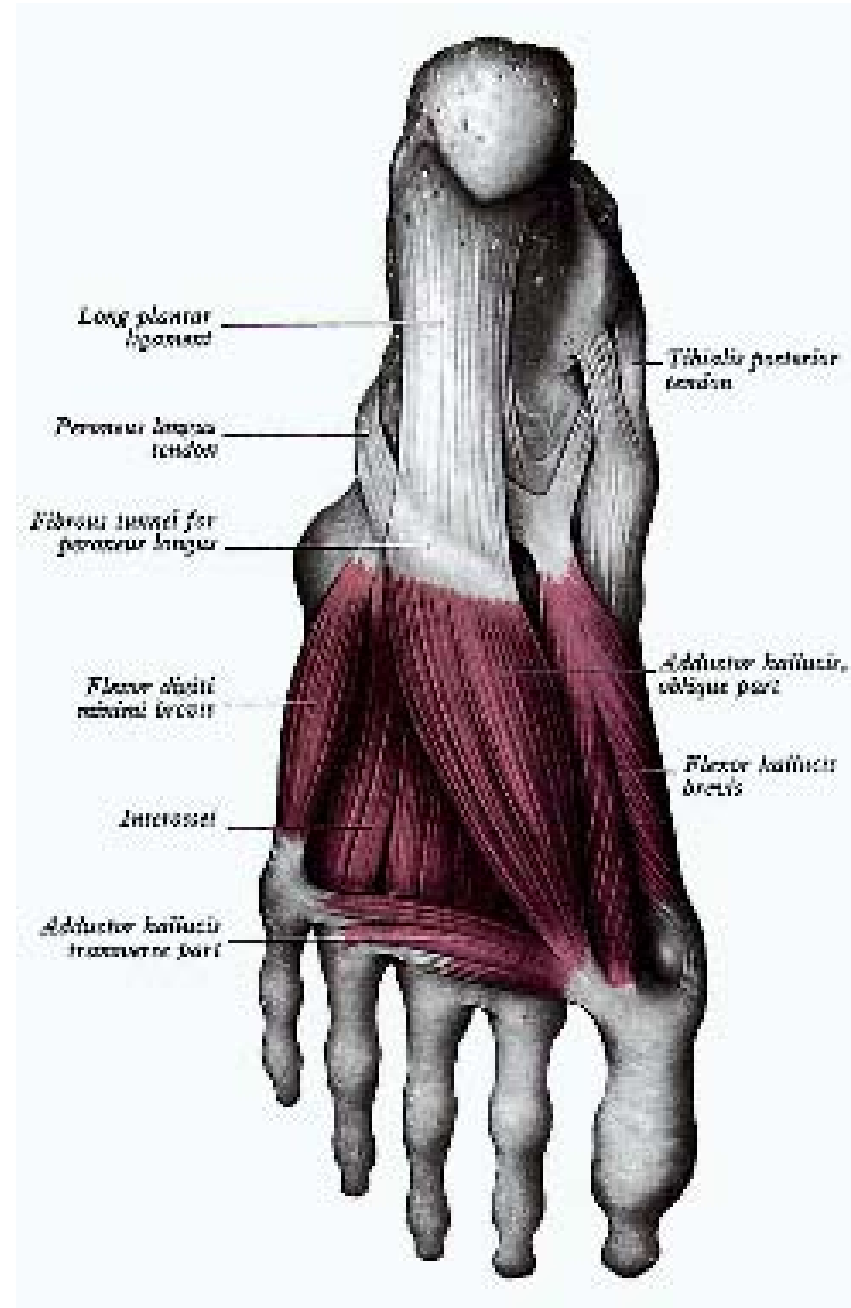
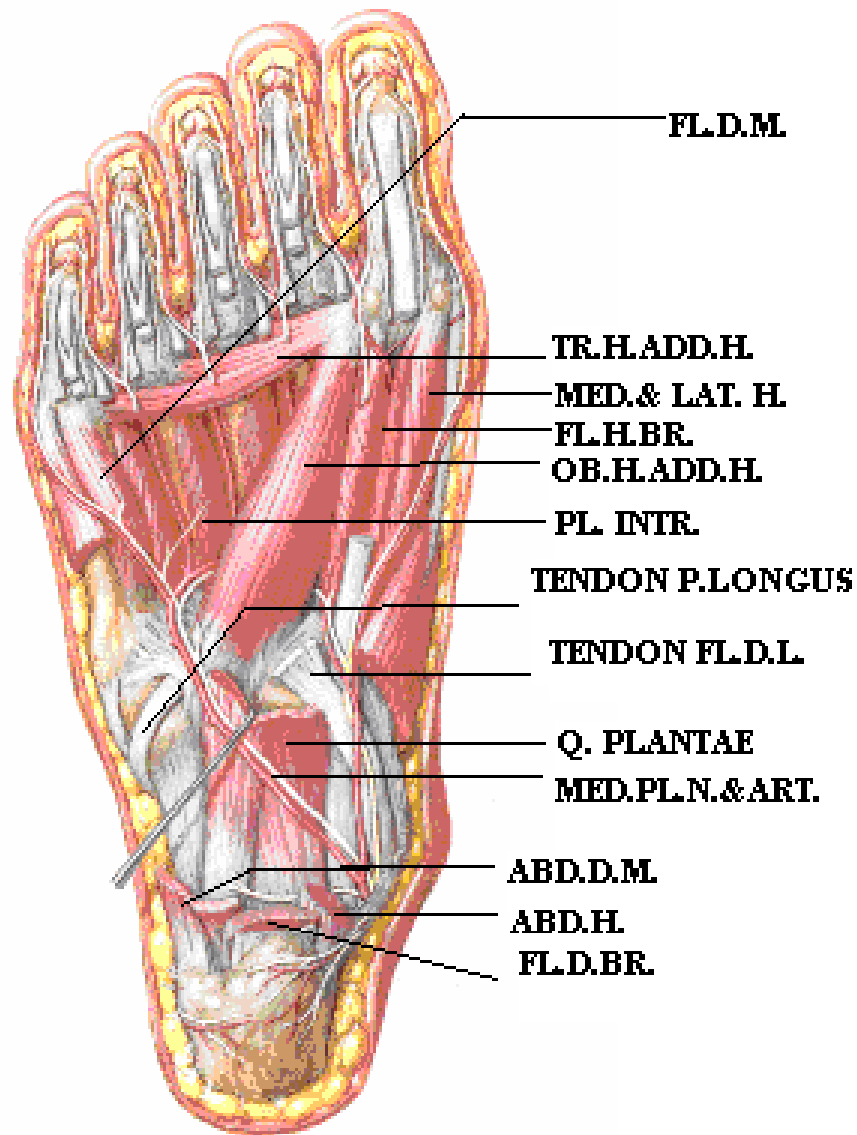
## First Layer



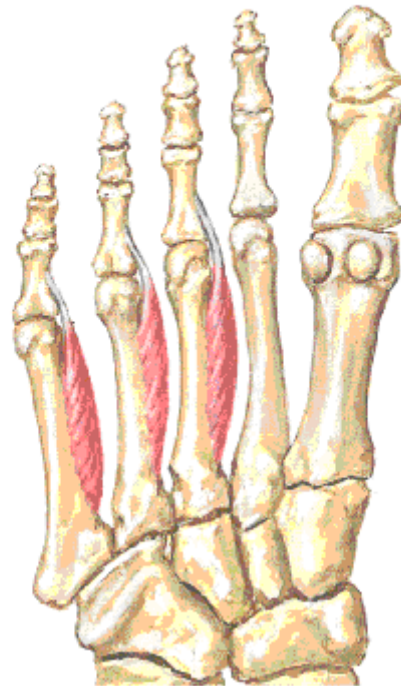
## Second Layer



# Third Layer



**Interosseous Muscles of Foot**  
Plantar View



# Interosseous Muscles and Deep Arteries of Foot

## Dorsal View

