

**Popliteal fossa,  
Posterior compartment of leg  
&  
Sole of foot**

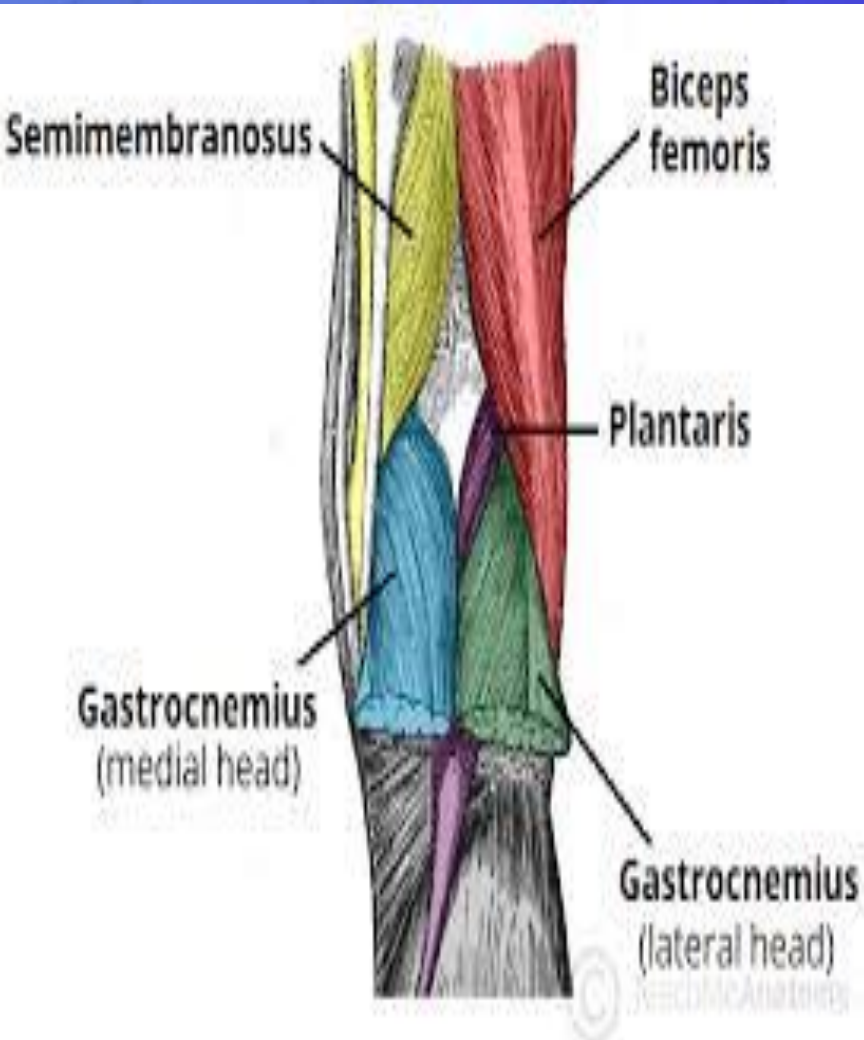
# OBJECTIVES

*At the end of this lecture the students should be able to know:*

- The location, boundaries & contents of the popliteal fossa
- The contents of posterior fascial compartment of Leg.
- The structures held by retinacula at ankle.
- Layers forming in the sole of foot & bone forming the arches of the foot.

# Popliteal Fossa

Is a diamond-shaped intermuscular space at the back of knee



## Boundaries :

**Laterally: *above:*** biceps femoris.

***Below:*** lateral head of gastrocnemius & plantaris

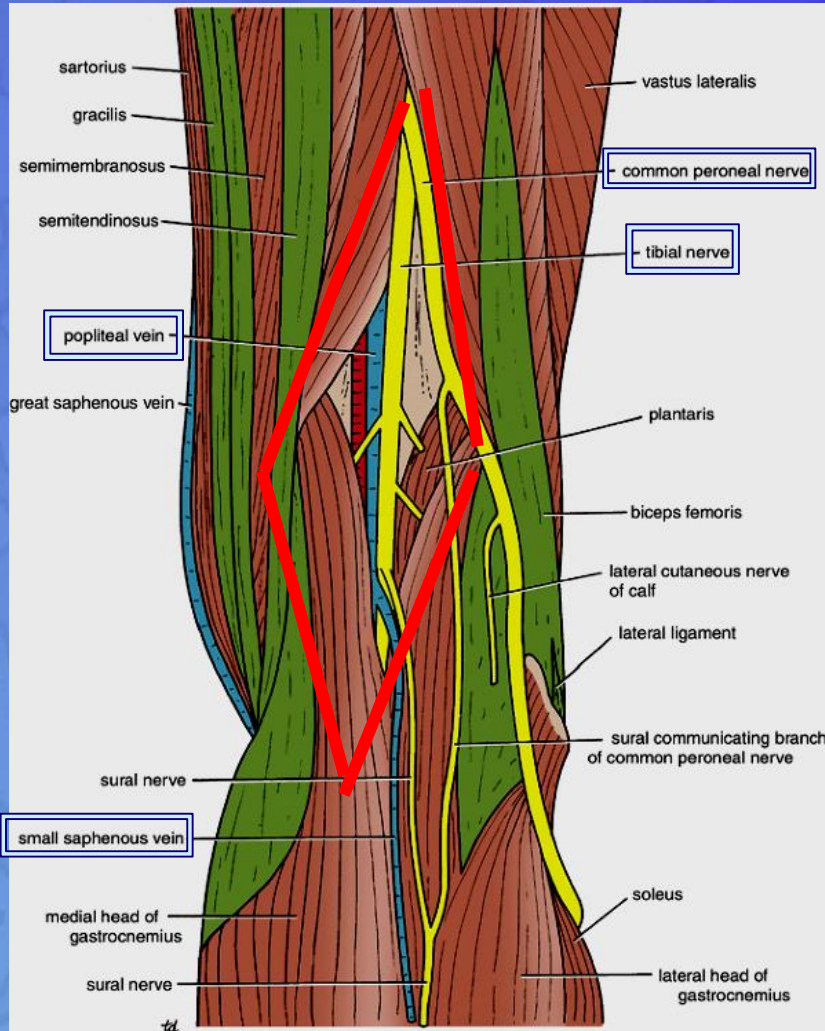
**Medially: *above:*** semimembranosus & semitendinosus.

***Below:*** medial head of gastrocnemius

**Roof:** Skin, superficial fascia and deep fascia of the thigh.

**Floor:** popliteal surface of femur, posterior ligament of knee joint and popliteus muscle.

# Popliteal Fossa



## Contents:

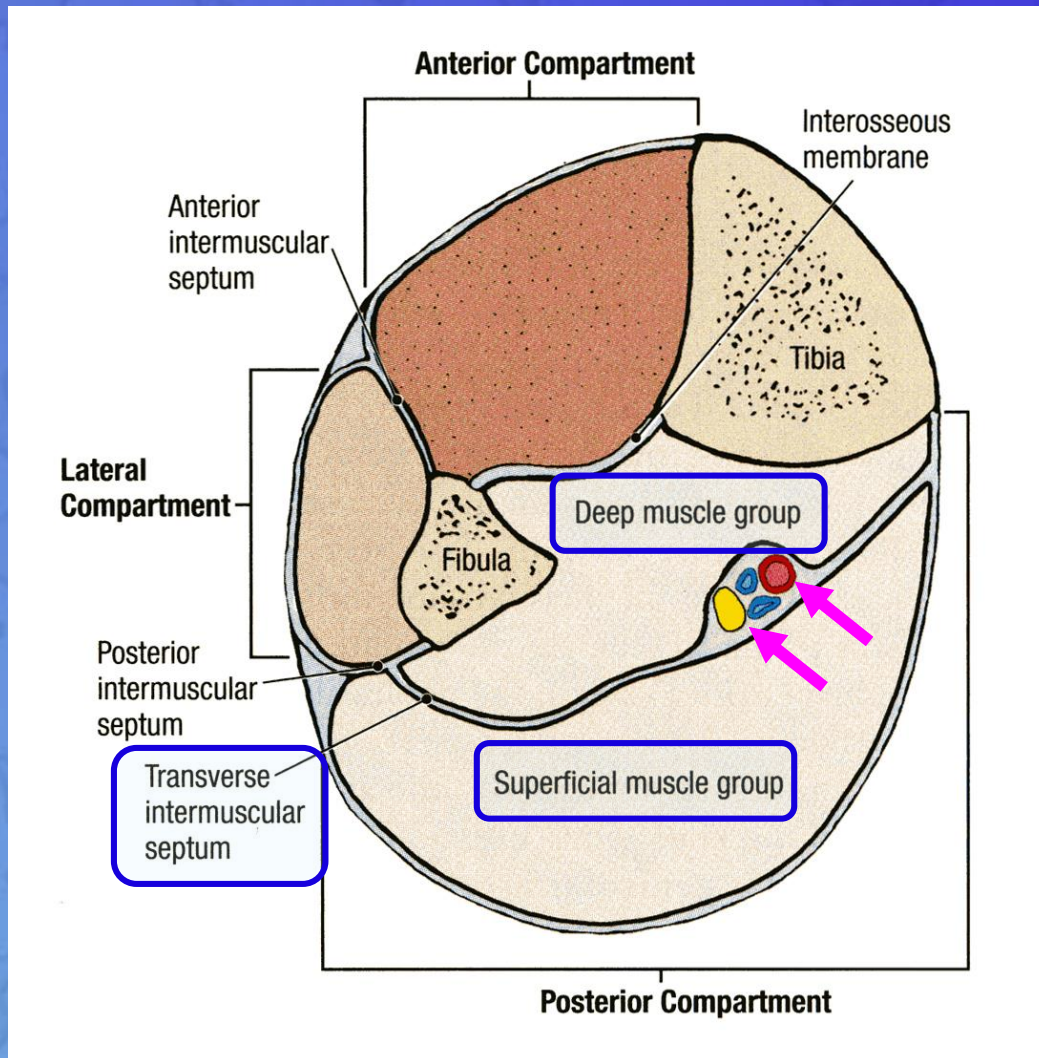
### From medial to lateral

1. Popliteal vessels
2. Small saphenous vein
3. Tibial nerve.
4. Common peroneal nerve.
5. Posterior cut. nerve of thigh.
6. Connective tissue & popliteal lymph nodes.

The deepest structure is **popliteal artery.**



# CONTENTS OF THE POSTERIOR FASCIAL COMPARTMENT OF THE LEG



The transverse intermuscular septum of the leg is a septum divides the muscles of the posterior compartment into superficial and deep groups.

## Contents:

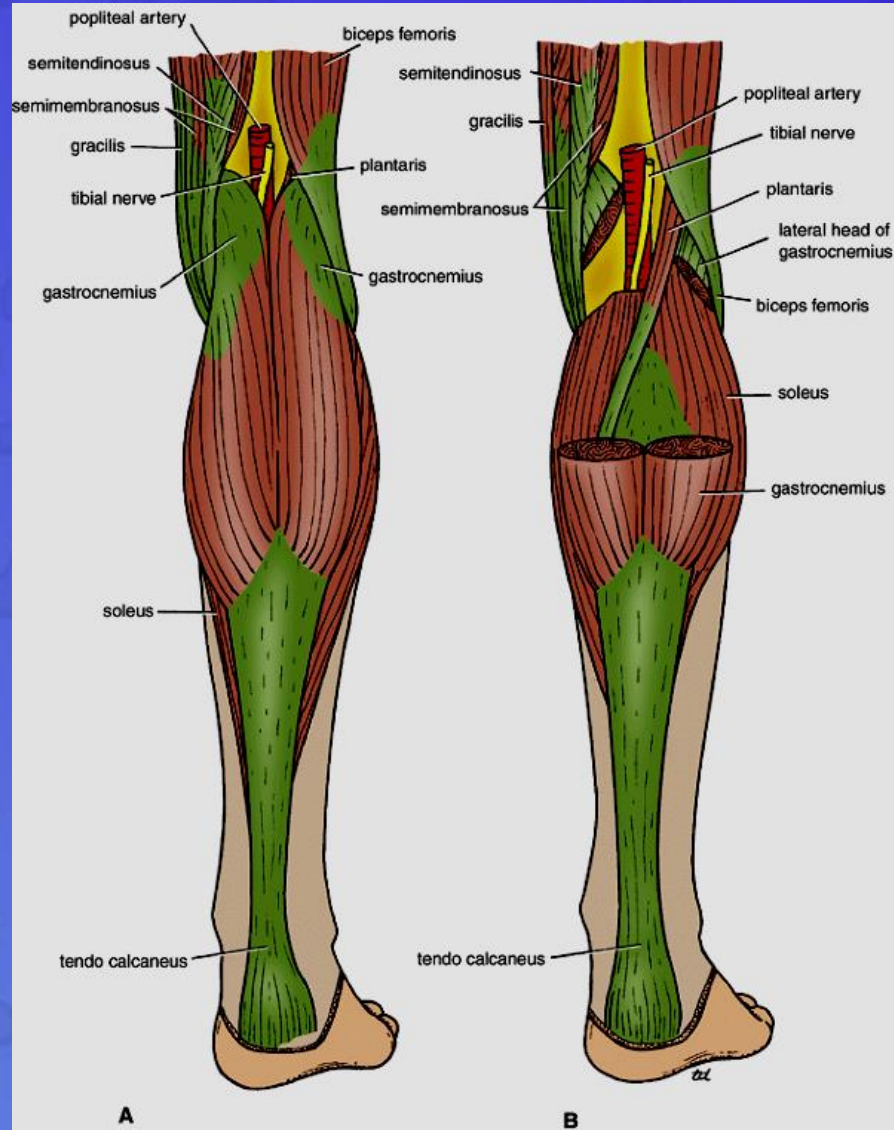
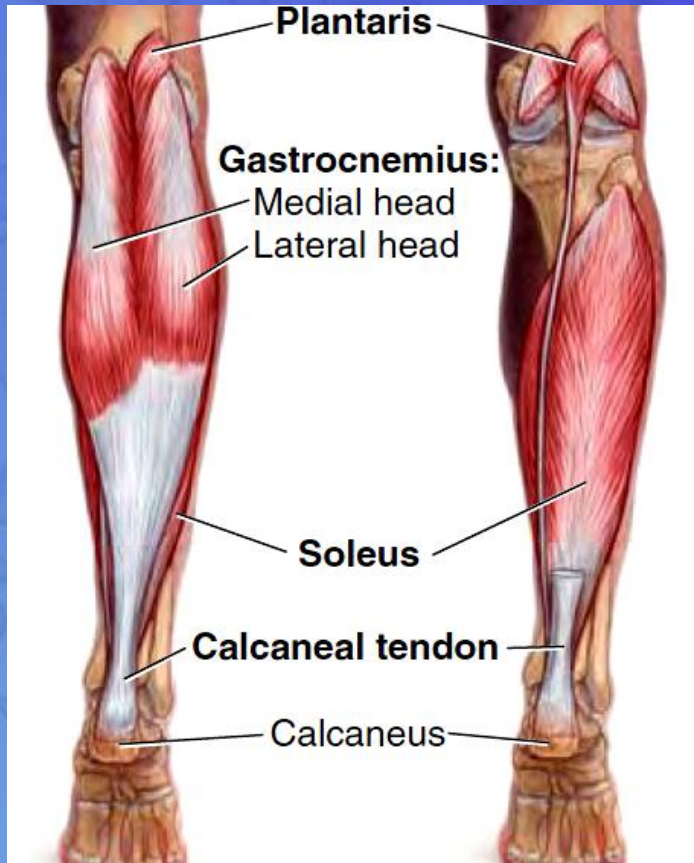
1. Superficial group of muscles
2. Deep group of muscles
3. Posterior tibial artery
4. Tibial nerve

# SUPERFICIAL GROUP

## 1. Gastrocnemius

## 2. Plantaris

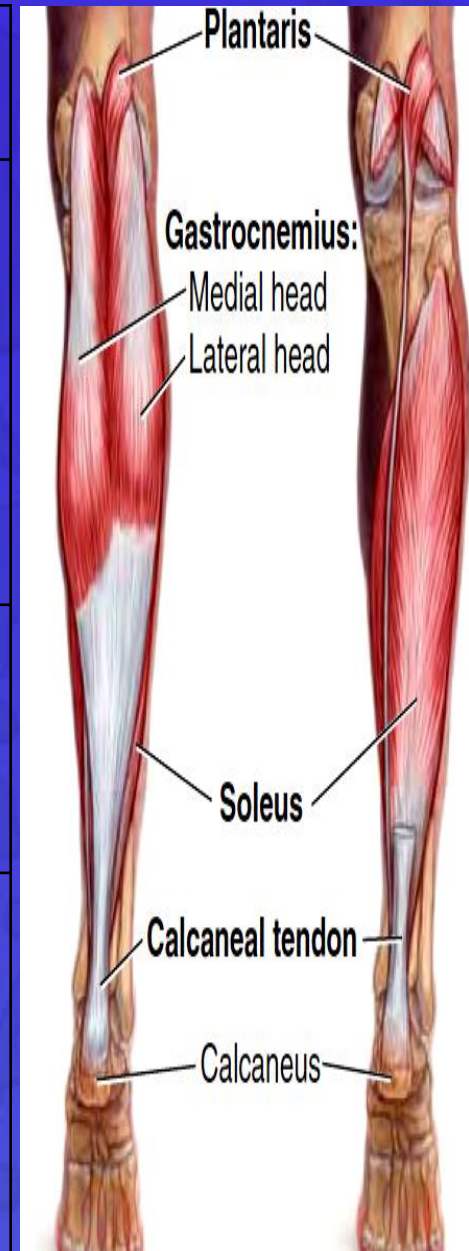
## 3. Soleus





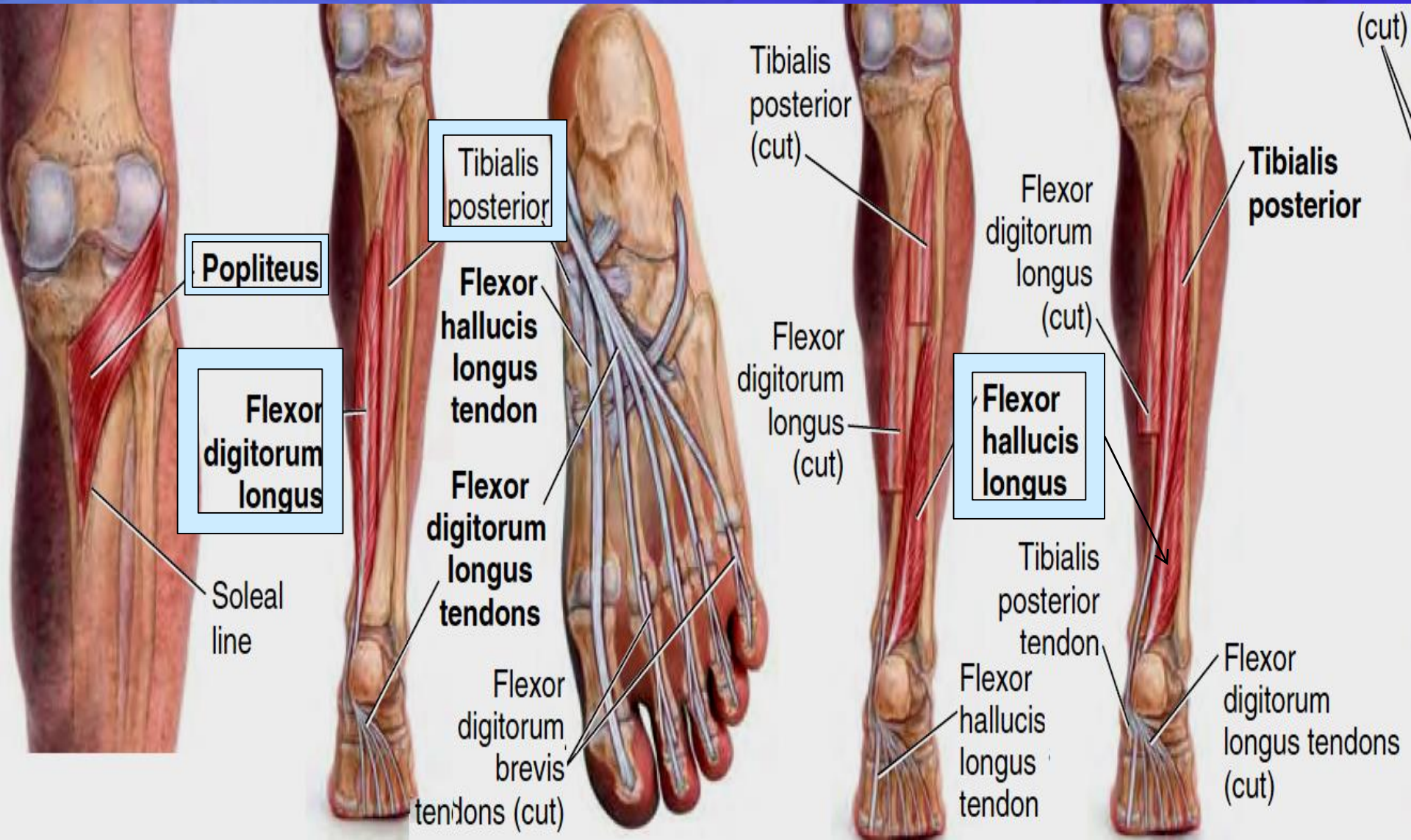
# SUPERFICIAL GROUP

Muscle	Origin	Insertion	Nerve	Action
<b>Gastrocnemius</b>	<b>Lateral head</b> from lateral condyle of femur & <b>medial head</b> from above medial condyle	Posterior surface of calcaneum <b>via tendo calcaneus</b>	Tibial	Plantar flexes foot at ankle joint; flexes knee joint
<b>Plantaris</b>	Lateral supracondylar ridge of femur	Posterior surface of calcaneum	Tibial	Plantar flexes foot at ankle joint; flexes knee joint
<b>Soleus</b>	Shafts of <b>tibia</b> and <b>fibula</b>	Posterior surface of calcaneum <b>via tendo calcaneus</b>	Tibial	Together with gastrocnemius and plantaris is powerful plantar flexor of ankle joint; provides main propulsive force in walking and running



# DEEP GROUP

1. Popliteus
2. Flexor digitorum longus
3. Tibialis posterior
4. Flexor hallucis longus



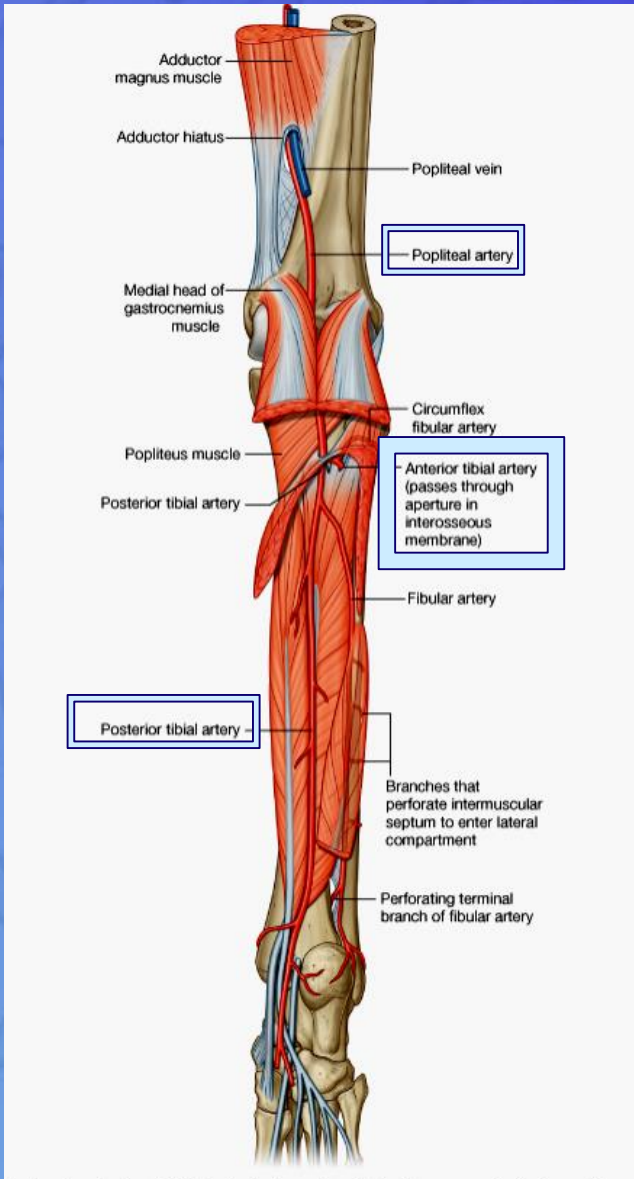


## DEEP GROUP

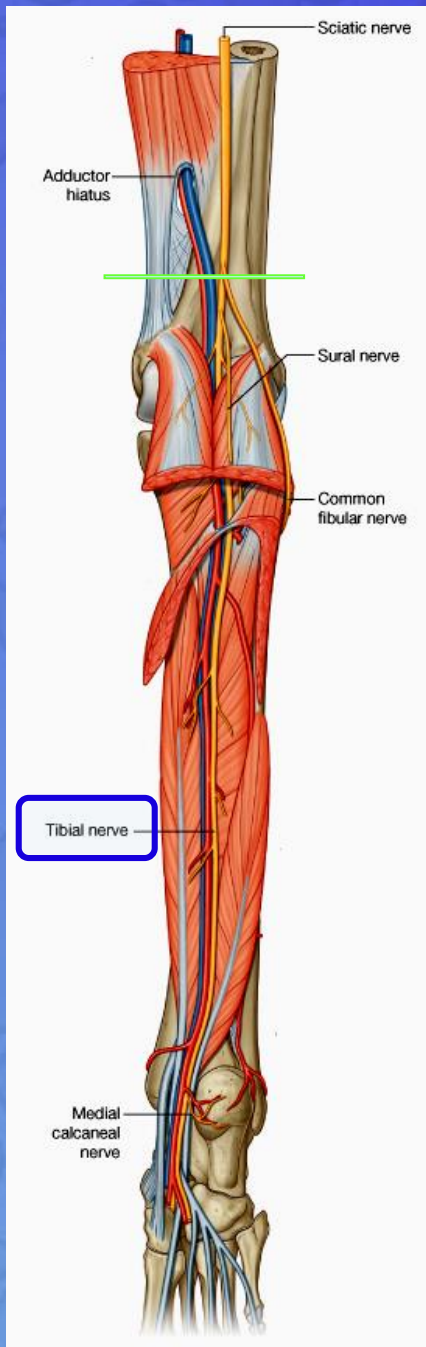
<b>Popliteus</b>	Groove on Lateral surface of lateral condyle of femur (Intracapsular)	Post surface of shaft of tibia <b>above soleal line</b>	Tibial	<u>Flexes knee joint</u> : <u>Unlocks knee joint</u> by lateral rotation of femur on tibia(or slight medial rotation of leg which accompanies the flexion)
<b>Flexor digitorum longus</b>	Posterior surface of shaft of tibia	Bases of <b>distal phalanges</b> of <b>lateral 4 toes</b>	Tibial	<u>Flexes distal phalanges</u> of <u>lateral four toes</u> ; <b>plantar Flexes</b> foot at ankle joint; <b>Supports</b> <u>medial and lateral longitudinal arches</u>
<b>Flexor hallucis longus</b>	Posterior surface of shaft of fibula	Base of <b>distal phalanx</b> of <b>big toe</b>	Tibial	<u>Flexes distal phalanx</u> of <u>big toe</u> ; <b>plantar flexes</b> foot at <b>ankle joint</b> ; <b>supports</b> <u>medial longitudinal arch</u>
<b>Tibialis posterior</b>	Posterior surface of shafts of tibia and fibula and interosseous membrane	Tuberosity of <b>navicular bone</b> and other neighboring <b>tarsal bones.</b>	Tibial	<u>Plantar flexes</u> foot at <b>ankle joint</b> ; <b>inverts</b> foot at subtalar and transverse tarsal joints; <b>supports</b> <u>medial longitudinal arch</u>

# POSTERIOR TIBIAL ARTERY

- It is one of the terminal branches of the popliteal artery.



# TIBIAL NERVE

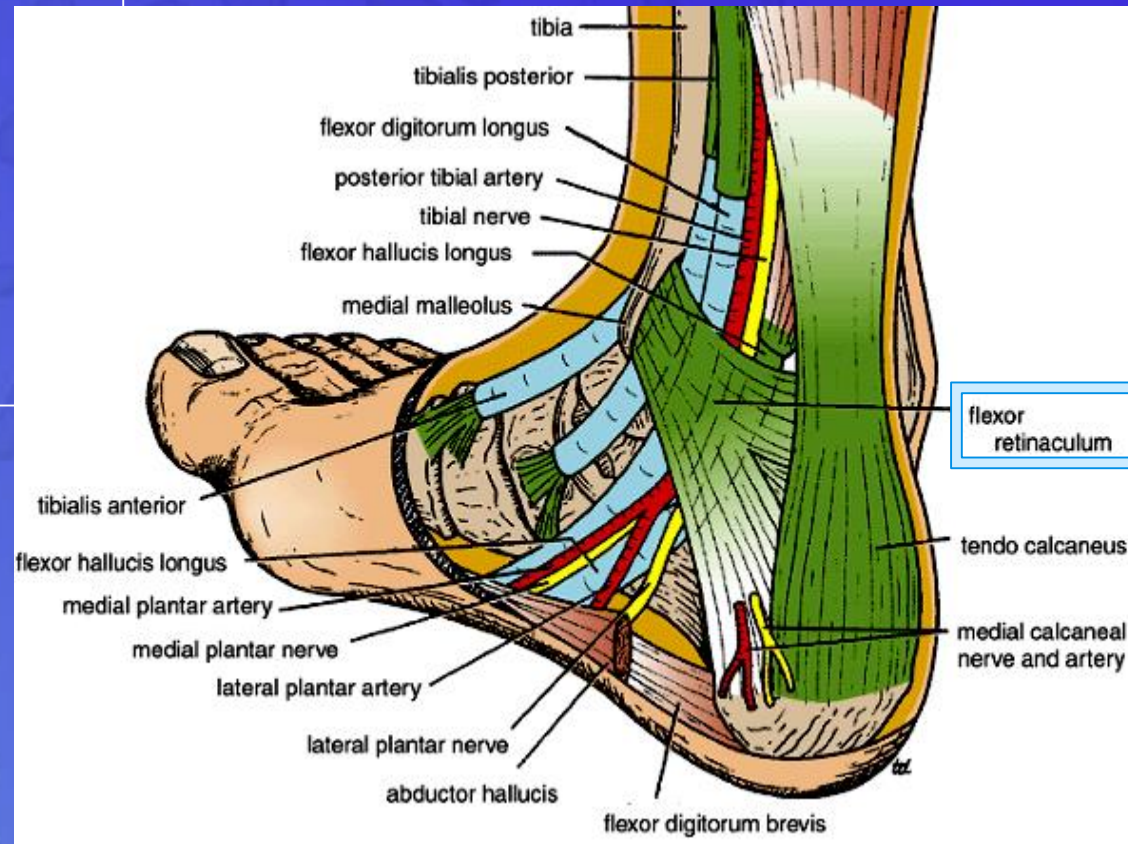


- It is the larger terminal branch of the sciatic nerve in the lower 1/3 of the back of the thigh



# Flexor Retinaculum

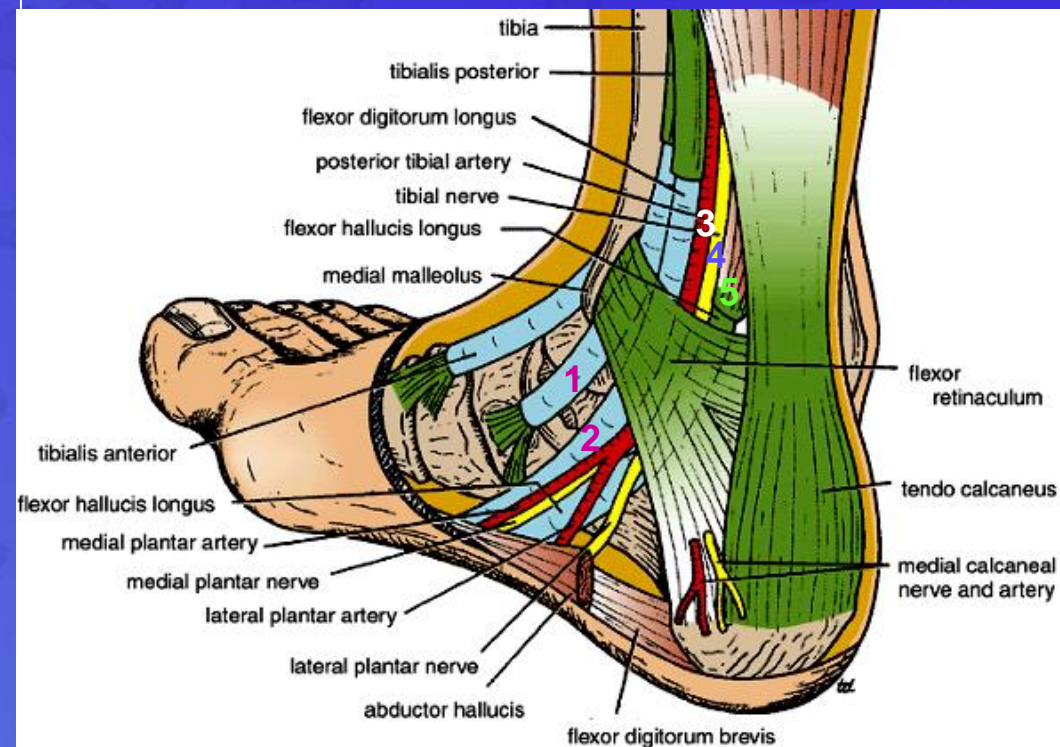
Extends from back of  
medial malleolus of  
tibia to  
medial side of  
calcaneum



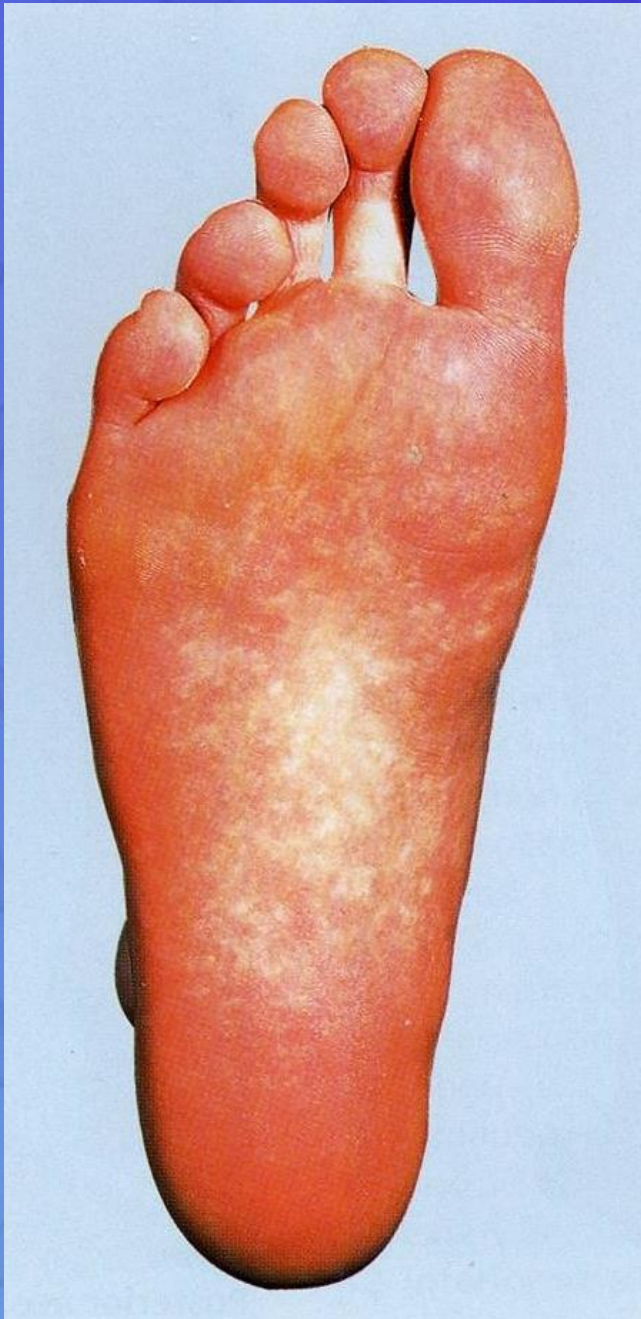
# Structures passing posterior to medial malleolus, deep to flexor retinaculum

- *Medial to lateral*
- Tibialis posterior tendon
- Flexor digitorum longus tendon
- Posterior tibial artery with venae comitantes
- Tibial nerve
- Flexor hallucis longus tendon

*All the tendons are surrounded by a synovial sheath*







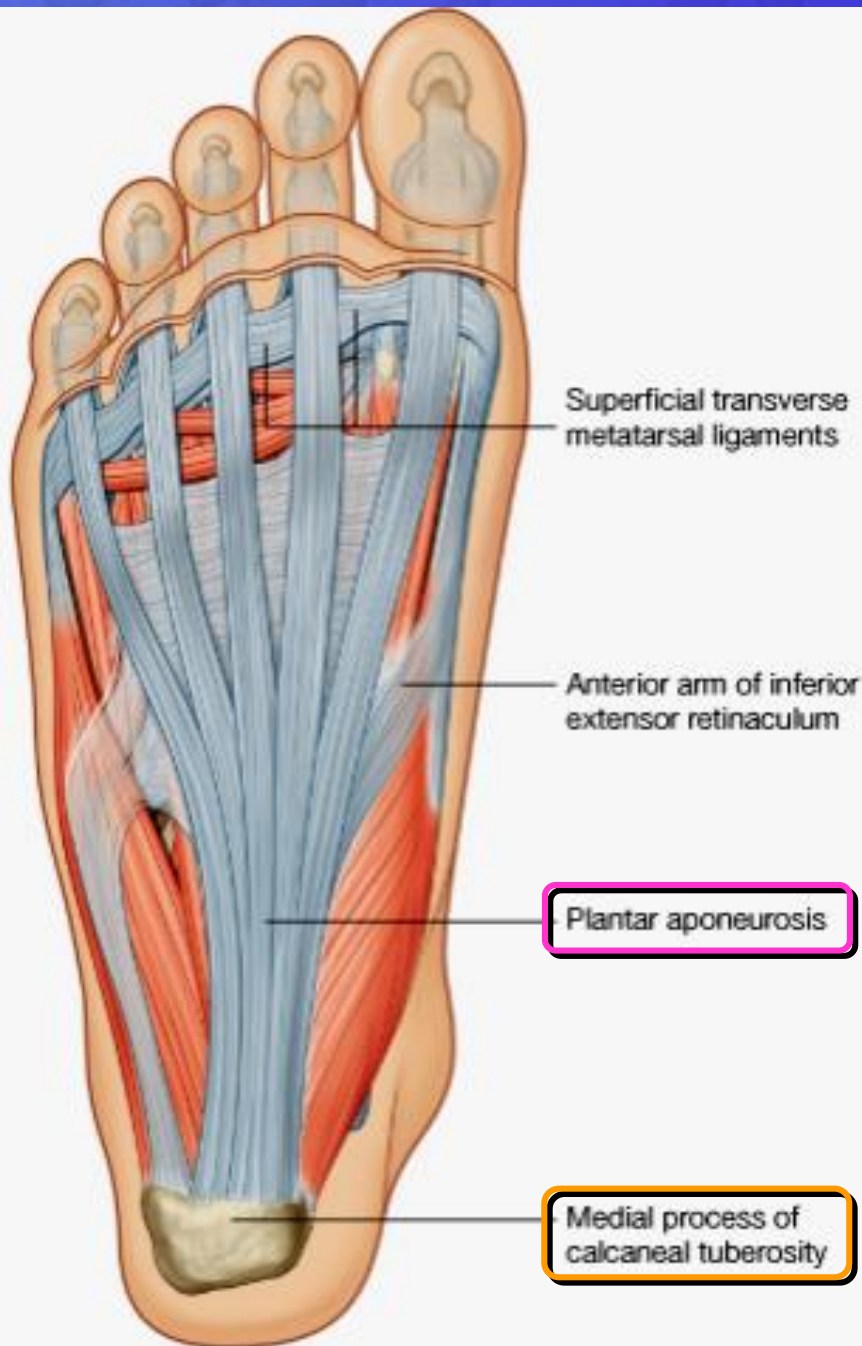
# SOLE OF THE FOOT

- **The skin** of the sole of the foot is **thick and hairless**
- It shows a **few flexure creases** at the sites of skin movement
- **Sweat glands** are present in large numbers



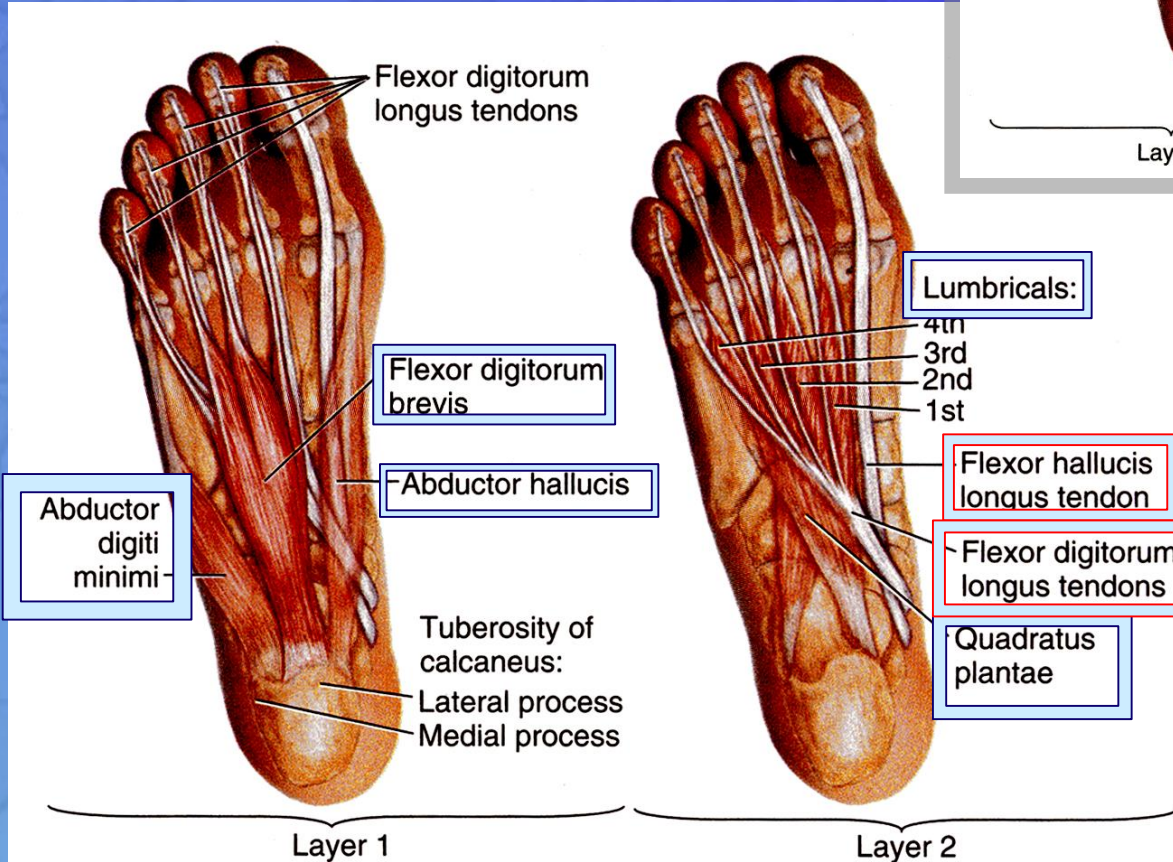
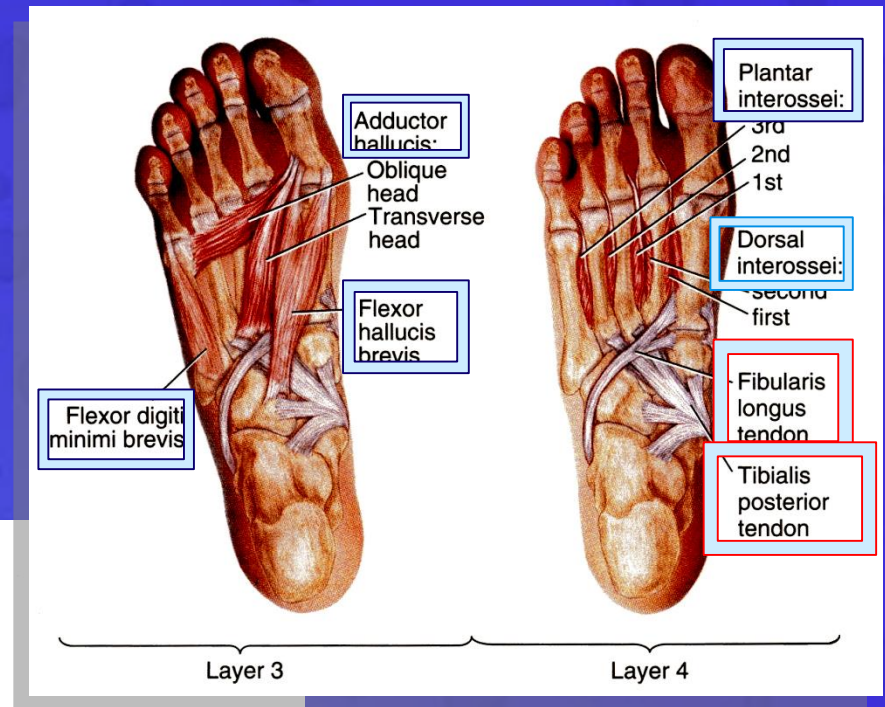
# DEEP FASCIA

- The **plantar aponeurosis** is a triangular thickening of the deep fascia that protects the underlying nerves, blood vessels, and muscles.
- Its **apex** is attached to the *medial and lateral tubercles* of the **calcaneum.**
- The **base** of the aponeurosis divides into **five slips** that pass into the **toes.**

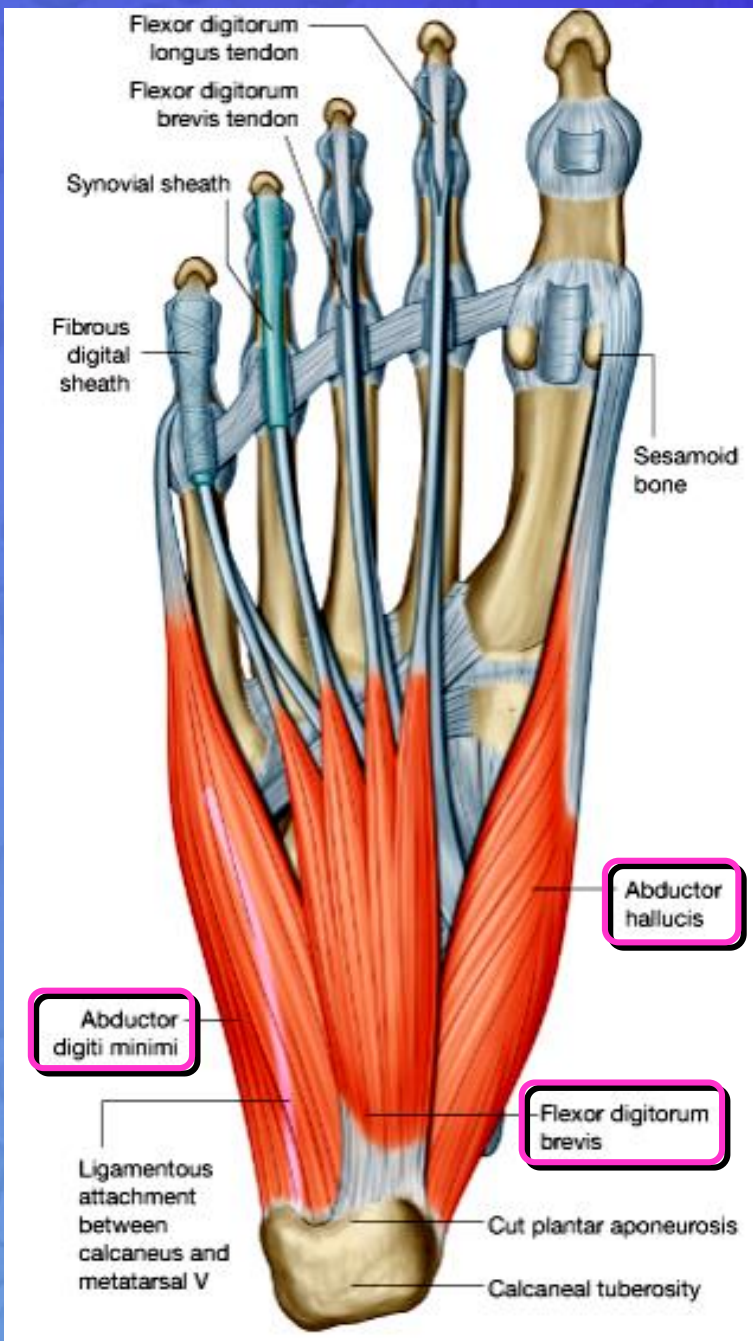


# MUSCLES OF THE SOLE OF THE FOOT

The muscles of the sole are conveniently described in **four layers** from superficial to deep.



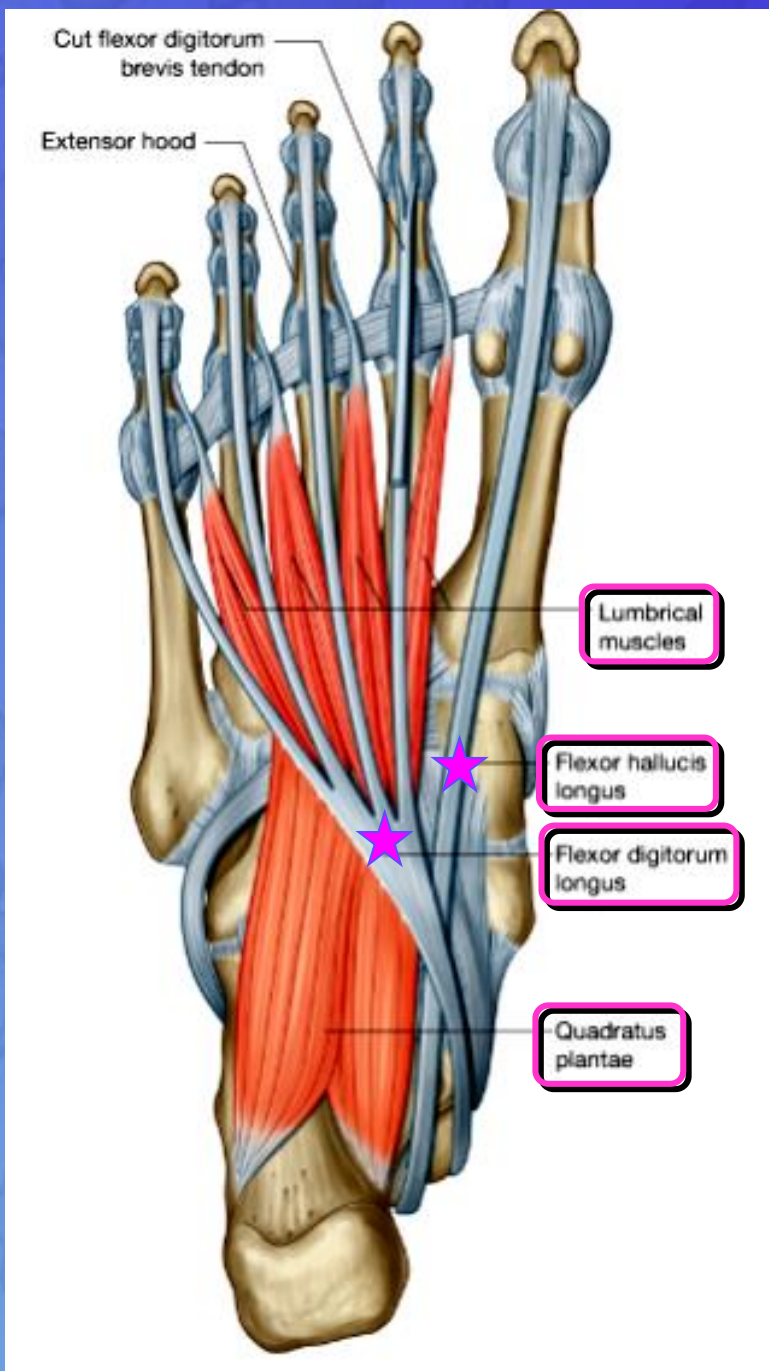




## First Layer

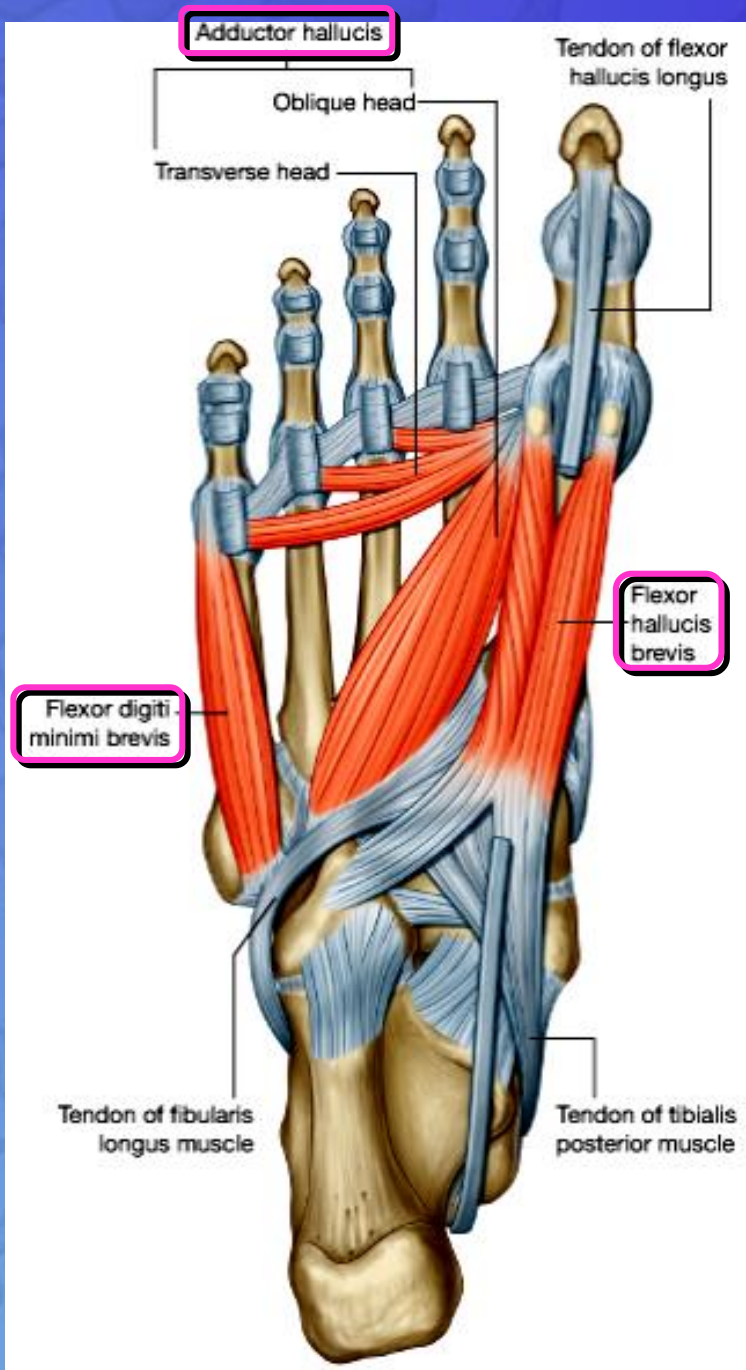
1. Abductor hallucis,
2. Flexor digitorum brevis,
3. Abductor digiti minimi





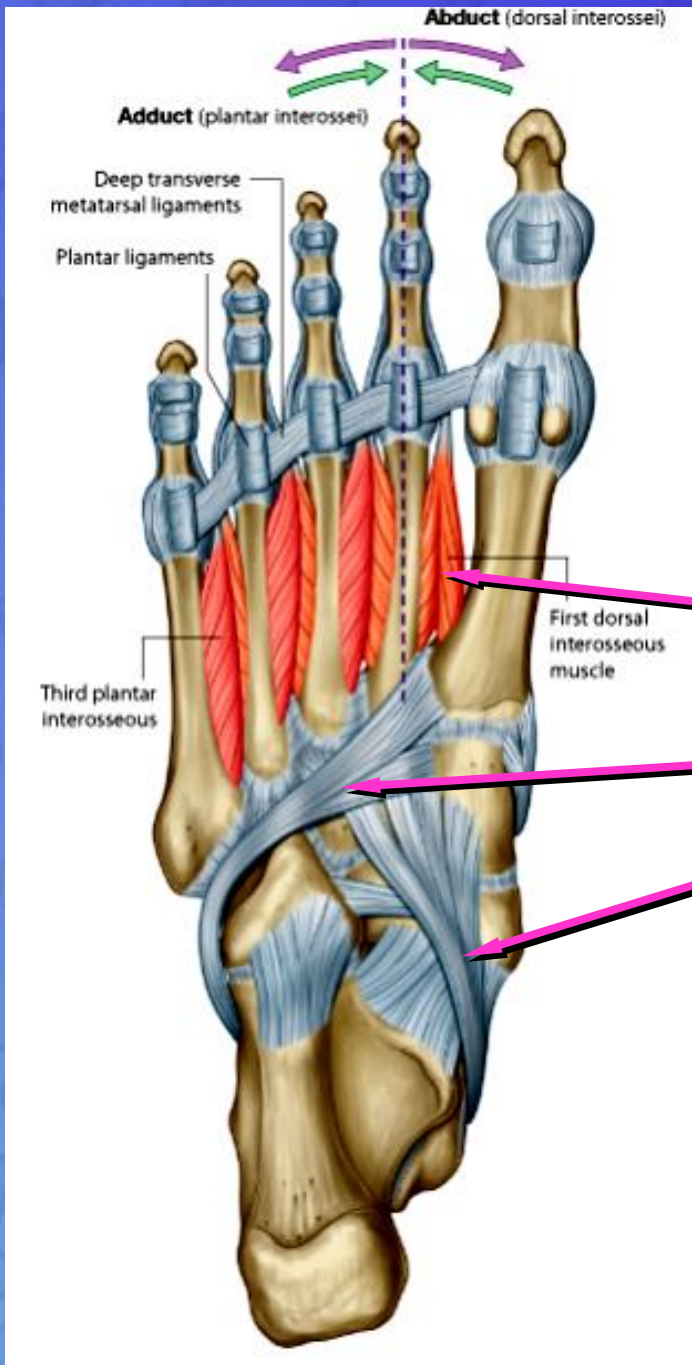
## Second Layer

1. Quadratus plantae,
2. Lumbricals,
3. Flexor digitorum longus tendon,
4. Flexor hallucis longus tendon



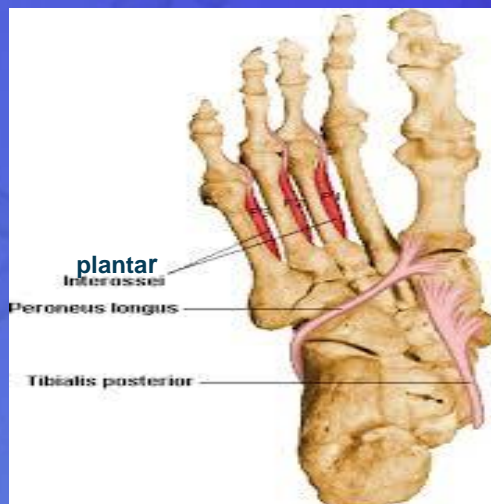
## Third Layer

1. Flexor hallucis brevis
2. Adductor hallucis
3. Flexor digiti minimi brevis



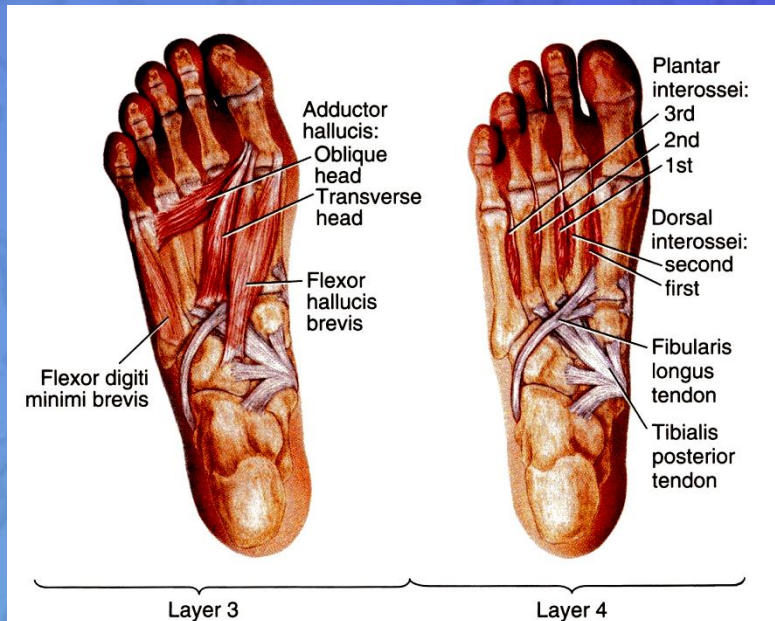
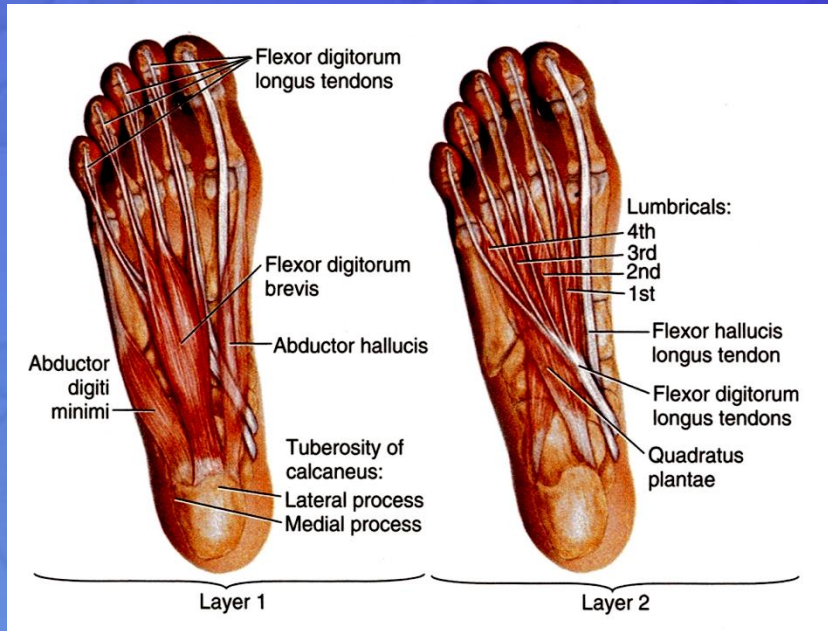
# Fourth Layer

1. Interossei;  
(3 plantar + 4 dorsal).
2. Peroneus longus tendon,
3. Tibialis posterior tendon



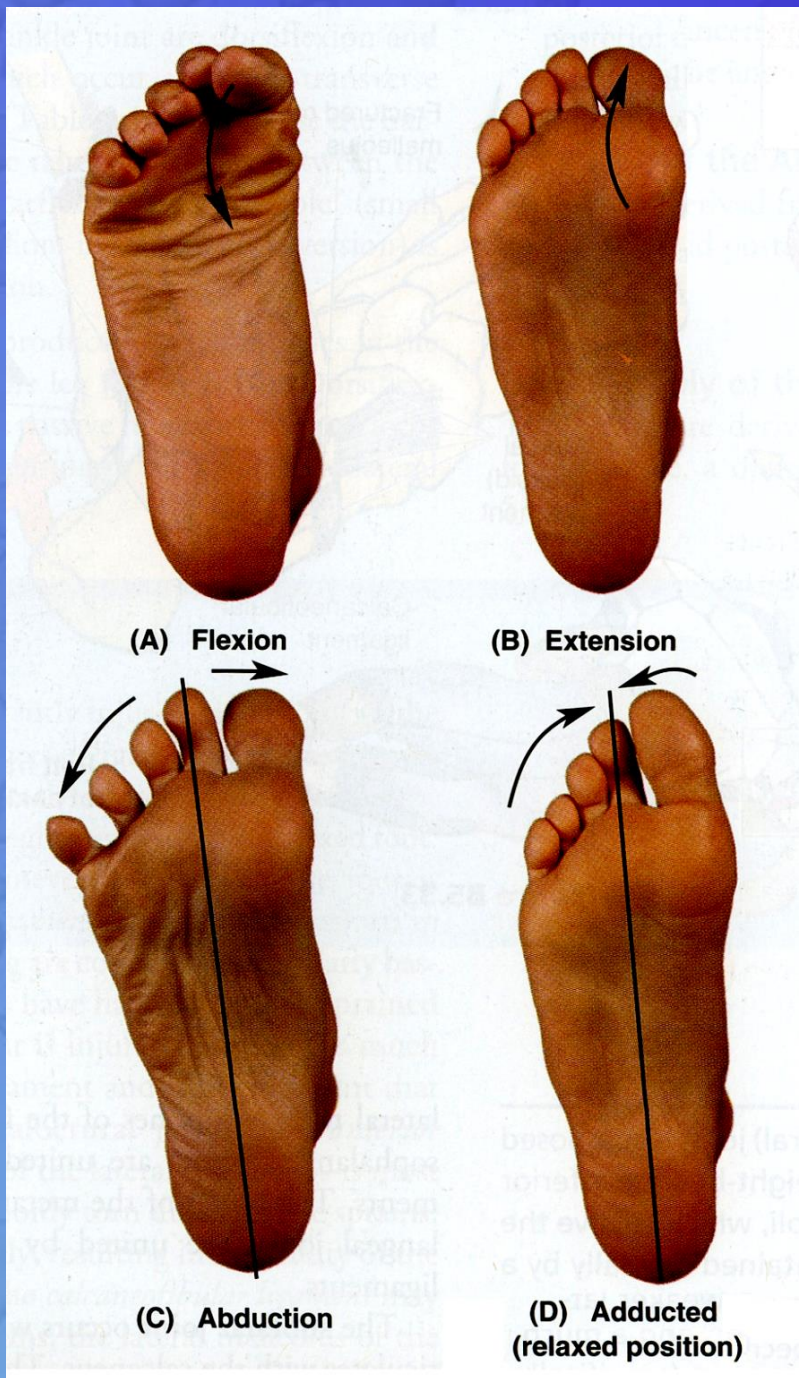


# Function of small muscles of sole of Foot



- Unlike the small muscles of the hand, the **sole muscles** have few delicate functions and are chiefly concerned with supporting the arches of the foot.
- They control movements of individual toes, **this function is rarely used** in most people





Movement	Muscles <sup>a</sup>
Metatarsophalangeal joints	
Flexion (A)	<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 (B)	<b>Extensor hallucis longus</b> <b>Extensor digitorum longus</b> <b>Extensor digitorum brevis</b>
Abduction (C)	<b>Abductor hallucis</b> <b>Abductor digiti minimi</b> <b>Dorsal interossei</b>
Adduction (D)	<b>Adductor hallucis</b> <b>Plantar interossei</b>

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





(A) Flexion

(B) Extension



(C) Abduction

(D) Adducted  
(relaxed position)

Movement	Muscles <sup>a</sup>
Interphalangeal joints	
Flexion (fig. A)	<b>Flexor hallucis longus</b> <b>Flexor digitorum longus</b> <b>Flexor digitorum brevis</b> Quadratus plantae
Extension (fig. B)	<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.



# Arches of Foot



## ➤ Medial longitudinal arch

Is formed of calcaneum, talus, navicular, 3 cuneiform bones, and 3 medial metatarsal bones.

## ➤ Lateral longitudinal arch

Is formed of calcaneum, cuboid & lateral 4<sup>th</sup> & 5<sup>th</sup> metatarsal bones

## ➤ Transverse arch

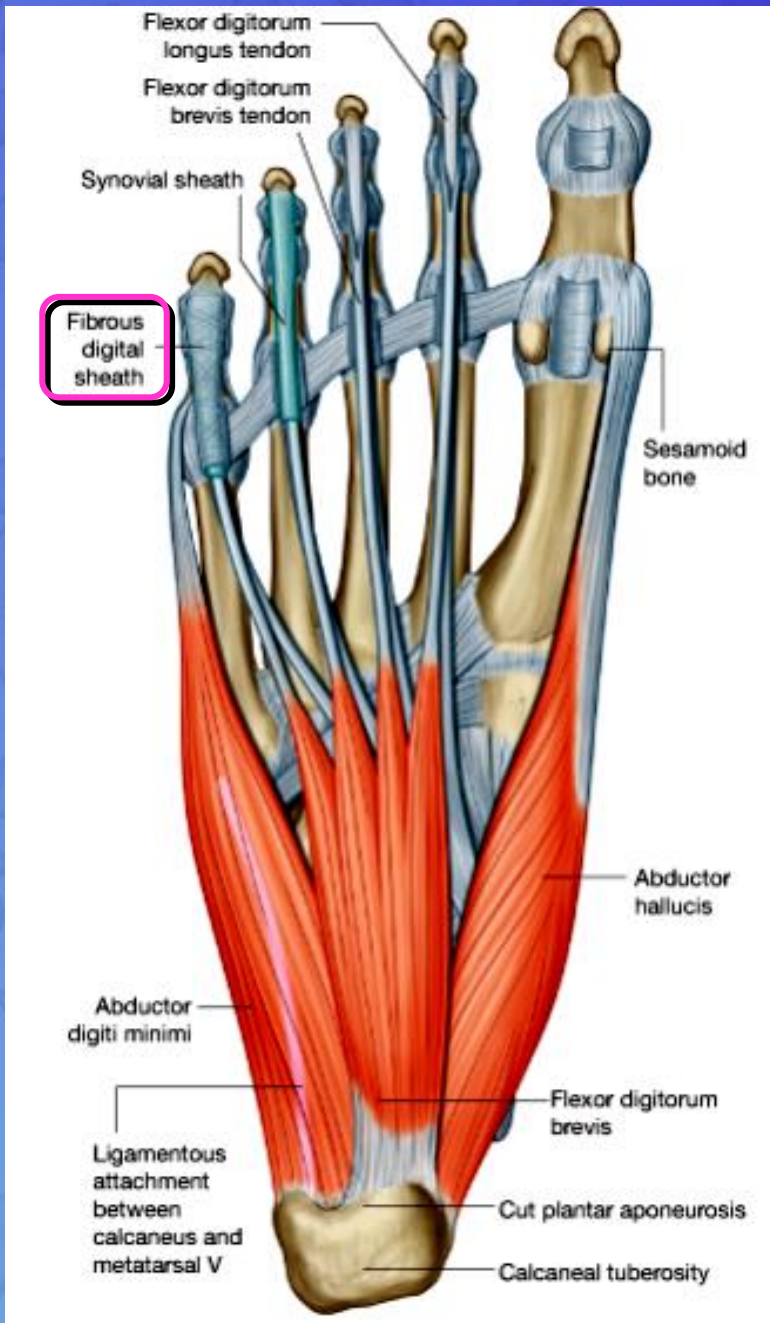
Lies at the level of **tarso-metatarsal joints**, formed of bases of metatarsal bones, cuboid & 3 cuneiform bones.

# Function of Arches of the Foot

- Weight bearing
- Support walking & running
- Provide potential space for neurovascular bundle of the sole
- Act as shock absorber
- *In young child, the foot appears to be flat because of presence of a large amount of subcutaneous fat on the sole of foot*

# Fibrous Flexor Sheaths

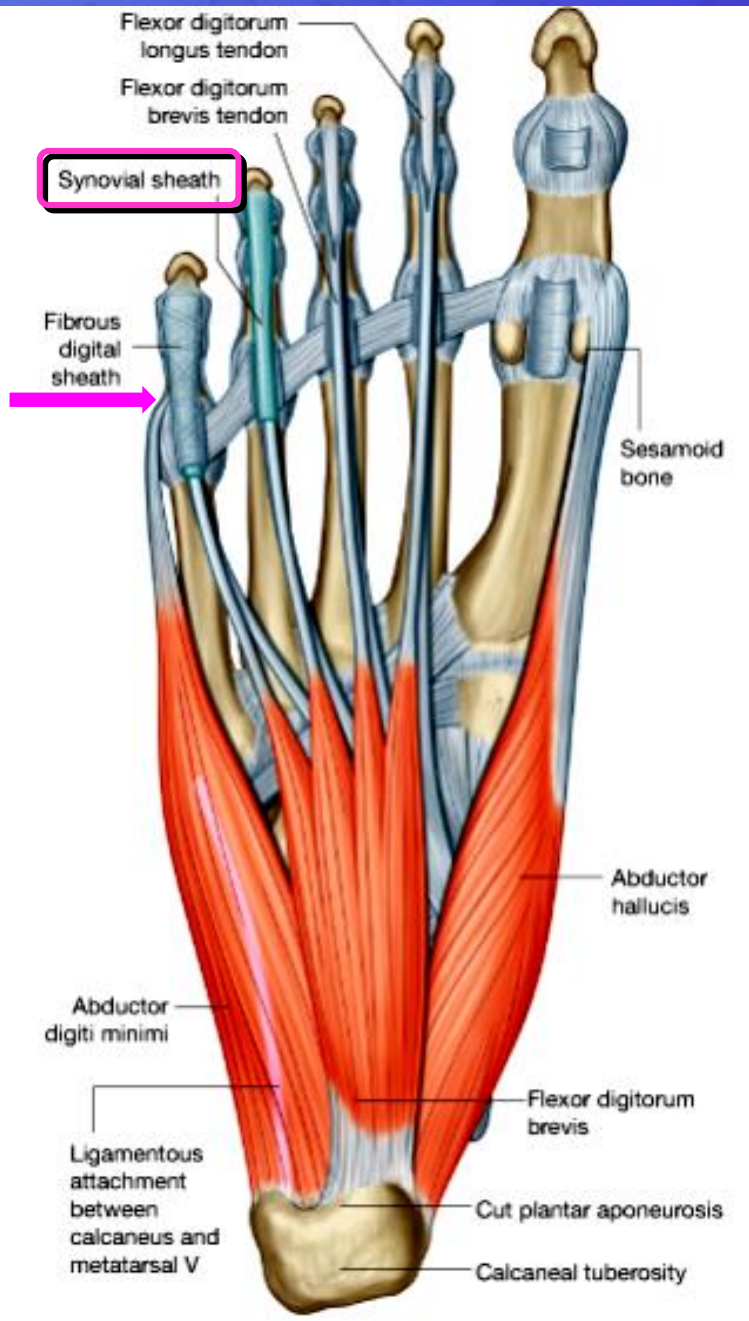
- The inferior surface of each toe, from the head of the metatarsal bone to the base of the distal phalanx, is provided with a **strong fibrous sheath**, which is attached to the **sides of the phalanges**.
- **The fibrous sheath**, together with the inferior surfaces of the phalanges and the interphalangeal joints, **forms a blind tunnel** in which lie the **flexor tendons of the toes**.





# Synovial Flexor Sheaths

The tendons of the **flexor hallucis longus** and the **flexor digitorum longus** are surrounded by **synovial sheaths**



*THANK YOU*