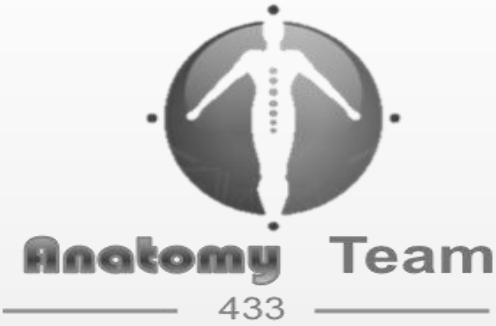
King Saud University
College of medicine
Musculoskeletal block



Popliteal fossa, Posterior Leg Compartment, and Sole of the Foot

22

Objectives

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

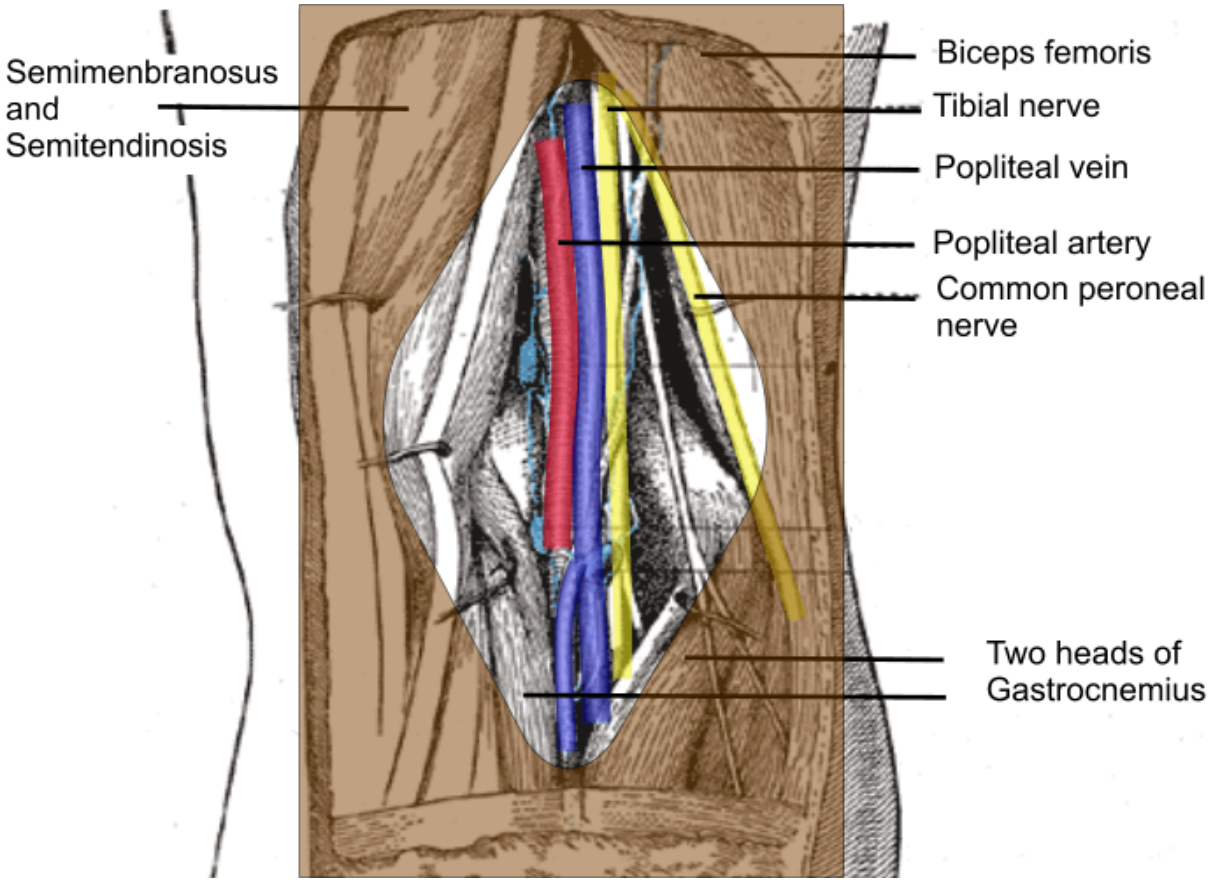
Color Index

- Red :Important.
- Violet: Explanation.
- Gray: Additional Notes.

Other colors are for Coordination

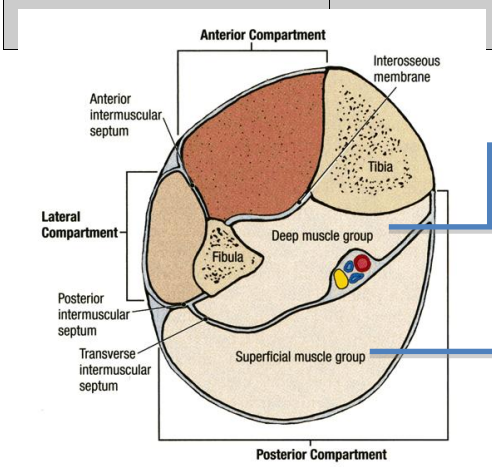
Popliteal fossa boundaries		
	Above	**Below**
Laterally	Biceps femoris Below	lateral head of gastrocnemius &plantaris
Medially	semitendinosus & semimembranosus	medial head of gastrocnemius

Popliteal fossa content
3 nerves + 2 vessels + 1 CT and LN = 6
1) Common peroneal nerve
2) Tibial nerve
3) Posterior cut (nerve from thigh)
4) Popliteal vessels
5) Small saphenous vein
6) Connective tissue & lymph nodes



Posterior compartment is divided to Deep and superficial groups by **The deep transverse fascia**

Deep group			
Muscle	Origin	Insertion	Movement
Poplitus	Lateral condyl of femur (intra-capsular)	Posterior surface of tibia abovesoleal line	Flexes and unlock knee
Flexor digitorumlongus	Posterior surface of shaft of tibia.	Bases of distal phalanges of lateral 4 toes.	1-Flexes phalanges of lateral 4 toes. 2-Plantar Flexes foot at ankle joint
Flexor hallucislongus	Posterior surface of shaft of fibula.	Base of distal phalanx of big toe.	1-Flexex phalanx of big toe. 2-Plantar flexes
Tibialis posterior	Posterior surface of tibia&fibula +interosseous membrane	All tarsal bones **except talus.**	Plantar Flexes inversion
Superficial group			
Gastrocnemius	1-lateral head lateral condyle of femur. 2-medial head popliteal surface of femur above medial condyle	Via tendo-calcaneus into posterior surface of calcaneum	1-plantar flexes ankle joint 2-flexes knee joint
Plantaris	Lateral supracondylar ridge.	Posterior surface of calcaneum	
soleus	Shaft of tibia & fibula.	Via tendo-calcaneus into posterior surface of calcaneum	plantar flexor ankle joint



1) Popliteus
2) Flexor digitorumlongus
3) Flexor hallucislongus

1) Gastrocnemius
2) Plantaris

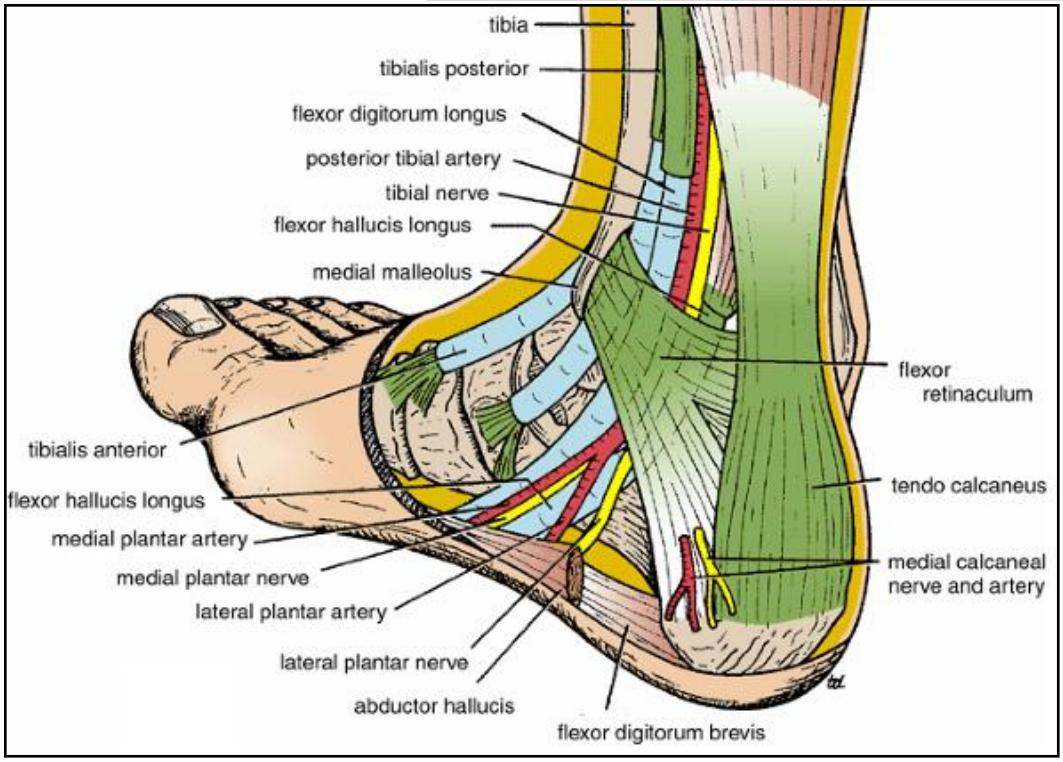
Flexor retinaculum

Extends from back of medial malleolus to medial side of calcaneum

Structures passing Posterior to madial malleolus, deep to flexor retinaculum (Medial to latral

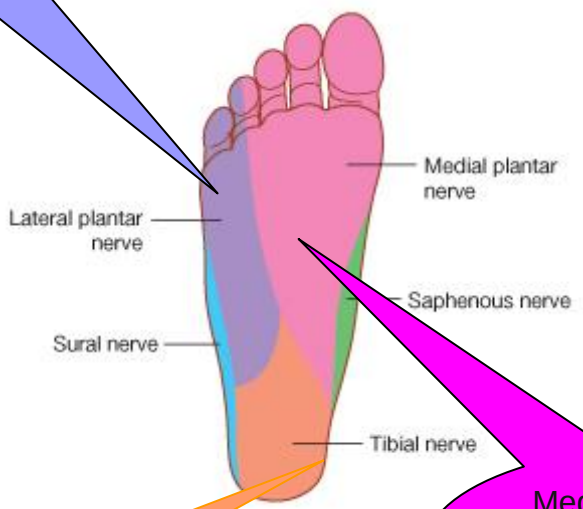
1) Tibialis posterior tendon	2) Flexor digitorum longus tendon	3) Posterior tibial artery (vessle)	4) Tibial nerve	5) Flexor hallucis longus tendon

Mnemonics: Tariq does very nice head (In football)



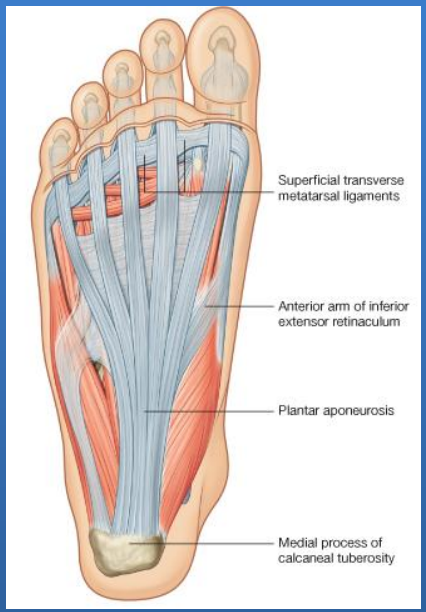
The sensory nerve supply to the skin of the sole of the foot

Lateral plantar nerve innervate the lateral third of the sole



Medial plantar nerve innervate the medial two thirds of the sole

Tibial nerve innervates the medial side of the heel



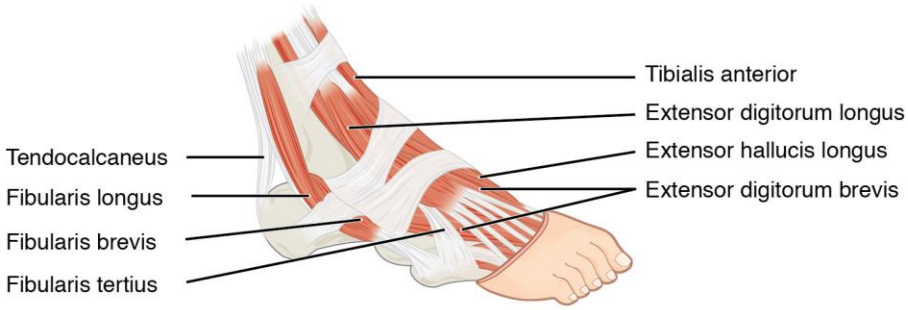
Deep fascia

- The **plantar aponeurosis**(it has the same function of palmar aponeurosisin the hand) 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.

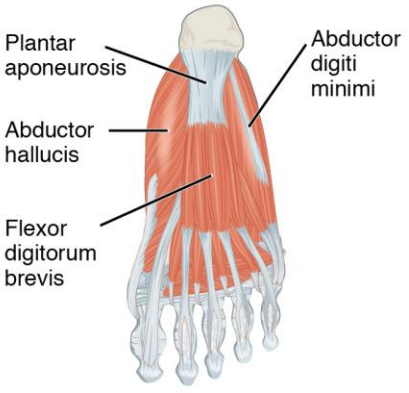
Muscles of the sole of the foot			
1st layer (superficial)	**2nd layer**	**3rd layer**	**4th layer (deep)**
Abductor halluces	Quadratusplantae	Flexor halluces brevis	Interossei
Flexor digitorumbrevis	Lumbricals	Adductor hallucis	Peroneus longus tendon
Abductor digitiminimi	Flexor digitorumlongus tendon	Flexor digitiminimibrevis	Tibialis posterior tendon
	Flexor halluces longus tendon		

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 toe

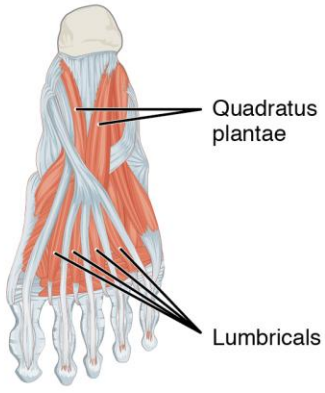
Synovial Flexor sheaths
The tendons of the flexor hallucislongus and the flexor digitorumlongus are surrounded **by synovial sheaths**



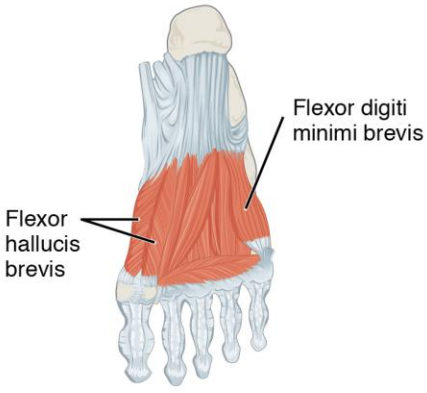
(a) Dorsal superficial muscles of the right foot (lateral view)



(b) Superficial muscles of the left sole (plantar view)



(c) Intermediate muscles of the left sole (plantar view)



(d) Deep muscles of the left sole (plantar view)

Muscles and their movement

Movement	Muscles[a]
Metatarsophalangeal joints	
Flexion (*A*)	**Flexor digitorum brevis** **Lumbricals** **Interossei** **Flexor hallucis brevis** **Flexor hallucis longus** Flexor digit minimi brevis Flexor digitorum longus
Extension (*B*)	**Extensor hallucis longus** **Extensor digitorum longus** **Extensor digitorum brevis**
Abduction (*C*)	**Abductor hallucis** **Abductor digiti minimi** **Dorsal interossei**
Adduction (*D*)	**Adductor hallucis** **Plantar interossei**

[a]Muscles in boldface are chiefly responsible for the movement; the other muscles assist them.

Movement	Muscles[a]
Interphalangeal joints	
Flexion (fig. *A*)	**Flexor hallucis longus** **Flexor digitorum longus** **Flexor digitorum brevis** Quadratus plantae
Extension (fig. *B*)	**Extensor hallucis longus** **Extensor digitorum longus** **Extensor digitorum brevis**

[a]Muscles in boldface are chiefly responsible for the movement; the other muscles assist them.

Additional Notes:-

- Plantaris can be absent in some cadavers.
- The soleus muscle and the gastrocnemius share the same insertion BUT with different tendons.
- Flexor halluces longus takes only from the back of the FIBULA.
- Any muscle with the name “digitorum” gives 4 tendons.
- Inversion and eversion done by the tibialis anterior and the tibialis posterior are done at the level of thesubtailorjoint.

Multiple Choice Questions

1) Which muscle of the following acts on the ankle and has important role in walking?.

a) Poplitus b) Soleus c) Biceps d) semimenbranousus

2) Which muscle of the following is the responsible for unlock knee joint?

a) Poplitus b) Tibialis posterior c) Biceps d) semimenbranousus

3) Which nerve of the following does pass under flexor retinaculum?

a) Tibial nerve b) Peroneal nerve c) sciatic nerve d) deep branch of peroneal nerve

4) In the sole of the foot, which muscle is found in 3rd layer of the following?.

a) Adductor hallucis b) Quadratuspalontea c) Lumbericals d) interossei

5) In which layer is “Abductor halluces” found?

a) 1st b) 2nd c) 3rd d) 4th

6) Which tendon of the following is surrounding by synovial joint?

a) Pronuslongus tendon b) Flexor digitorumlongus tendon
c) Flexor DigitorimBrevis tendon d) Tibialis posterior tendon

Q Ans. :

1-B 2-A 3-A 4-A 5-A6-B

Anatomy Team
433

Good luck

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For any comments

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