MED439
KING SAUD UNIVERSITY

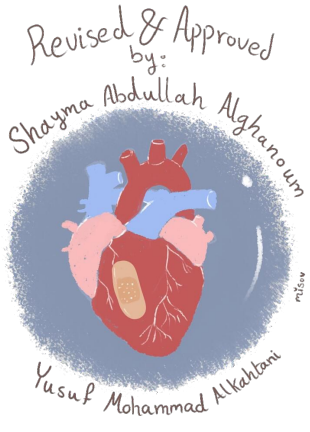
Frontal lateral compartment of the leg and Dorsum foot

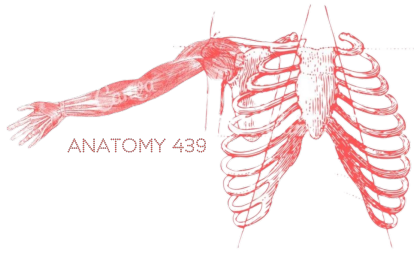
Musculoskeletal Block - Lecture 16

Objective:

✓ Identify the deep fascia of leg
✓ Identify the fascial compartments of the leg
✓ Describe the anatomy of the anterior & lateral compartments
✓ List the contents of each compartment (muscles, vessels & nerves)
✓ Describe the anatomy and contents of the dorsum of the foot

Color index:
Important
In male's slides only
In female's slides only
Extra information, explanation





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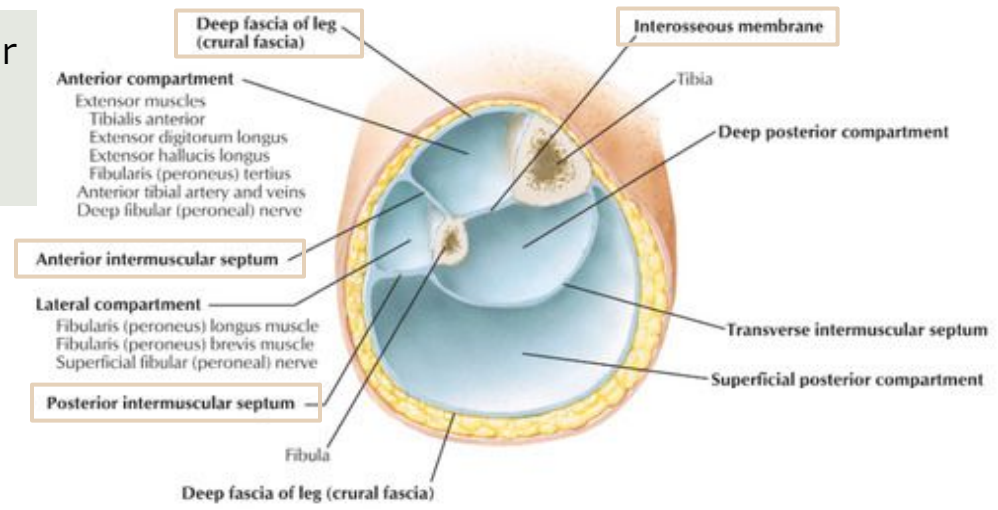
There is a **deep fascia** that surrounds the leg, attaching itself to the anterior and medial borders of the tibia then going around the leg and attaching to the posterior border.

We can see that there are <u>two</u> intermuscular septa that go from the deep fascia to the fibula:

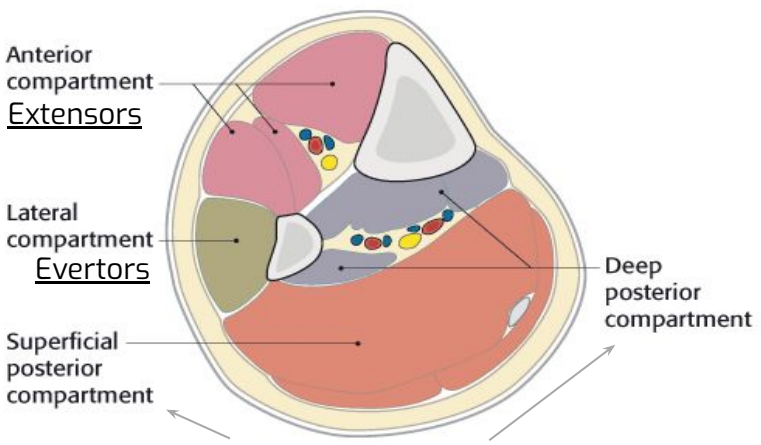
- Anterior intermuscular (fascial) septa (at anterior border of fibula)
- Posterior intermuscular (fascial) septa (at posterior border of fibula)



There is also and **interosseous membrane** A thin & strong membrane, that binds the interosseous borders of the tibia & fibula.
It provides attachment for muscles.

Each compartment has its own muscles, blood vessels and nerve

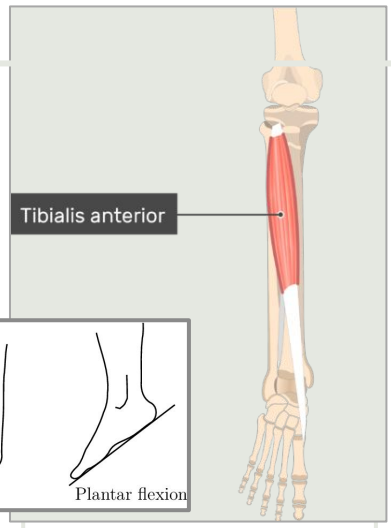
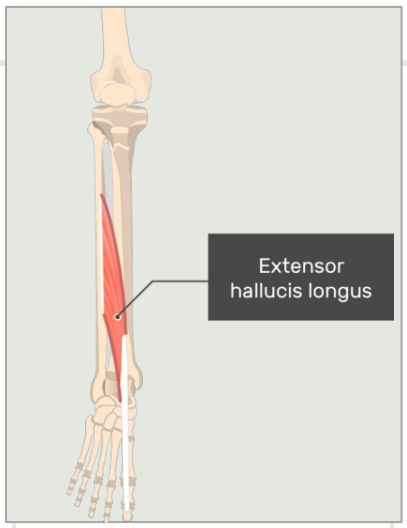
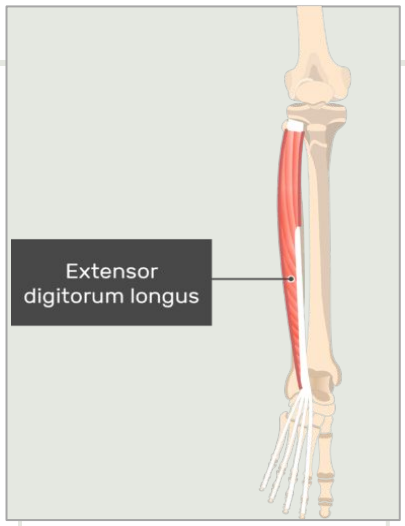
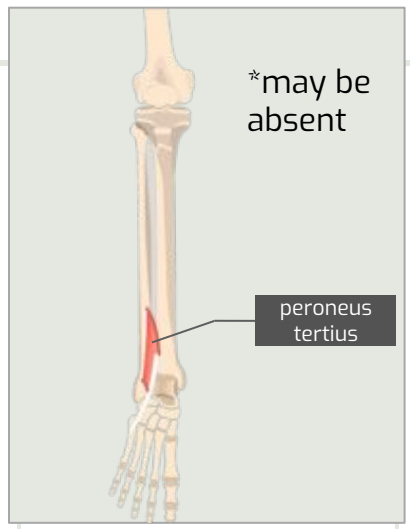
Together, the interosseous membrane and the septa divide the leg into three compartments:



Posterior compartment
<u>Flexors</u>

Anterior compartment

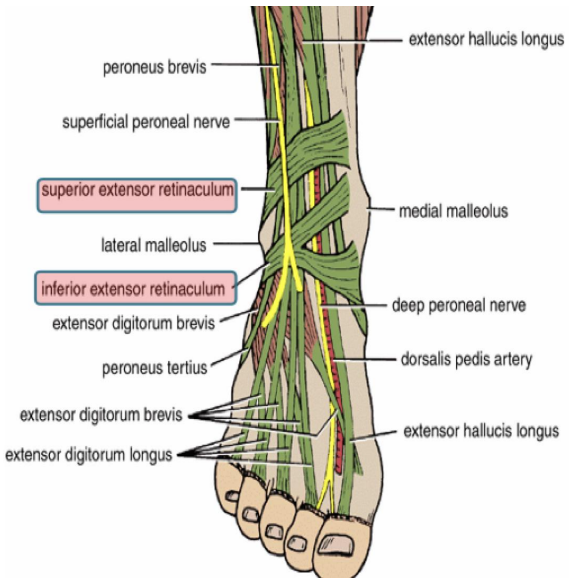
the anterior compartment is **supplied by anterior tibial artery** and **innervated by the anterior tibial (deep peroneal) nerve**

origin	lateral surface of the shaft of tibia and interosseous membrane	anterior surface of the shaft of fibula and interosseous membrane		
				
insertion	medial cuneiform, & base of first metatarsal	base of distal phalanx of big toe	extensor expansion of the 4 lateral toes	base of 5th metatarsal
action	- **Dorsiflexion** (extension of ankle joint) - **Inversion** of foot (subtalar joint) - **Support of medial longitudinal arch of foot**	- **Extension of big toe** - **Dorsiflexion** (Extends foot at ankle joint) - **Inversion of foot at subtalar joints**	- **Dorsiflexion** - **Extension of lateral 4 toes**	- **Dorsiflexion** - **Eversion** of foot (subtalar joint)

Extensor Retinaculum

A thickening band of **deep fascia** that keeps the long tendons around **ankle joint in position.**

Superior Extensor retinaculum	Inferior Extensor retinaculum
Attached to lower part of anterior borders of tibia & fibula above ankle	Y-shaped band located anterior to the ankle.



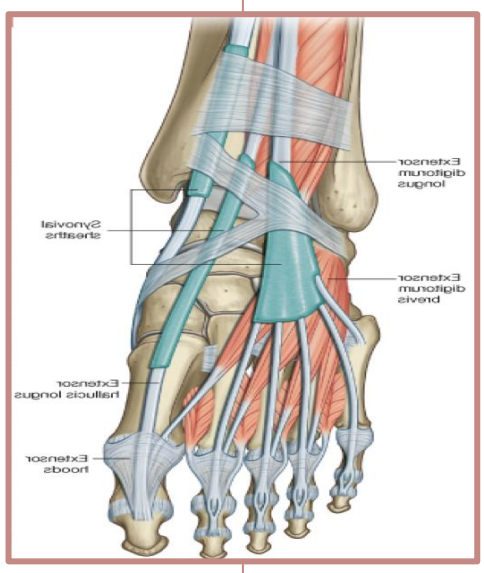
- Structures Passing Deep to Extensor Retinaculum:

  From medial to lateral
  Tom **H**as a **V**ery **N**ice **D**og **P**ig

  1. **T**ibialis Anterior
  2. Extensor **h**allucis longus
  3. Anterior tibial **a**rtery(ATA)
  4. **V**enae commitant of(ATA)
  5. Anterior tibial **n**erve(Deep peroneal nerve).
  6. Extensor **d**igitorum longus
  7. **P**eroneus tertius

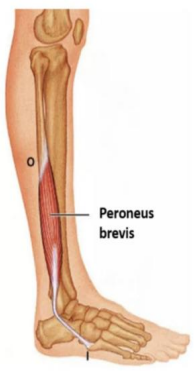
Synovial Sheaths of Extensor Tendons on the Dorsum of Foot

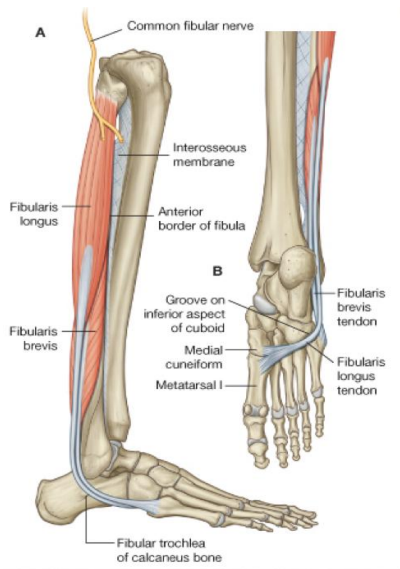
Tibialis anterior & Extensor hallucis longus:
Both have their own synovial sheath

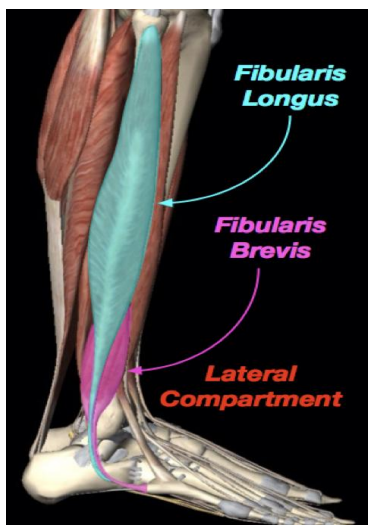


Extensor digitorum longus & Peroneus tertius:
have a common sheath, it extends to the level of Base of 5th Metatarsal bone.

Lateral Compartment of the leg:

Muscle	Origin	Insertion	Nerve supply	Action
Peroneus longus (PL) 	Both arise from the lateral surface of the shaft of the fibula	Base of first metatarsal & medial cuneiform,(as tibialis anterior)	Both are supplies by superficial peroneal (Musculocutaneous), nerve.	1.Plantar flexes foot at ankle joint; 2. Everts foot at subtalar joints. 3. Supports the lateral longitudinal & Transverse arches.
Peroneus brevis (Pb) 		Base of fifth metatarsal bone		1.Plantar flexes foot at ankle joint. 2. Everts foot at subtalar joint. 3. Supports the lateral longitudinal arch of foot.



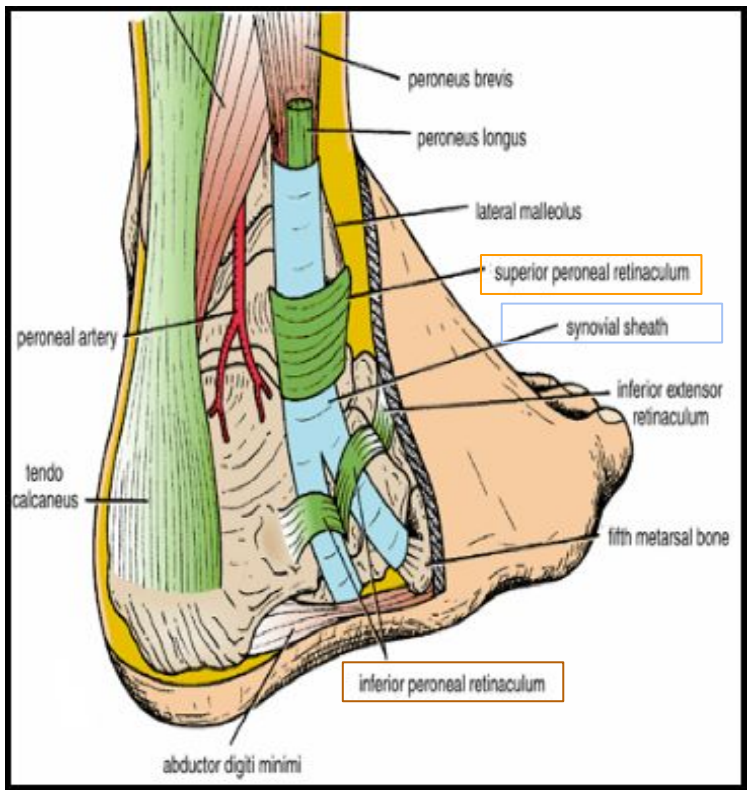


Peroneal Retinaculum

- **Superior peroneal retinaculum Connects the lateral malleolus to calcaneum & holds the tendons of peroneus longus & brevis,**

- **Inferior peroneal retinaculum.**

  binds the tendons of the peroneus longus and brevis muscles to the lateral side of the calcaneum.



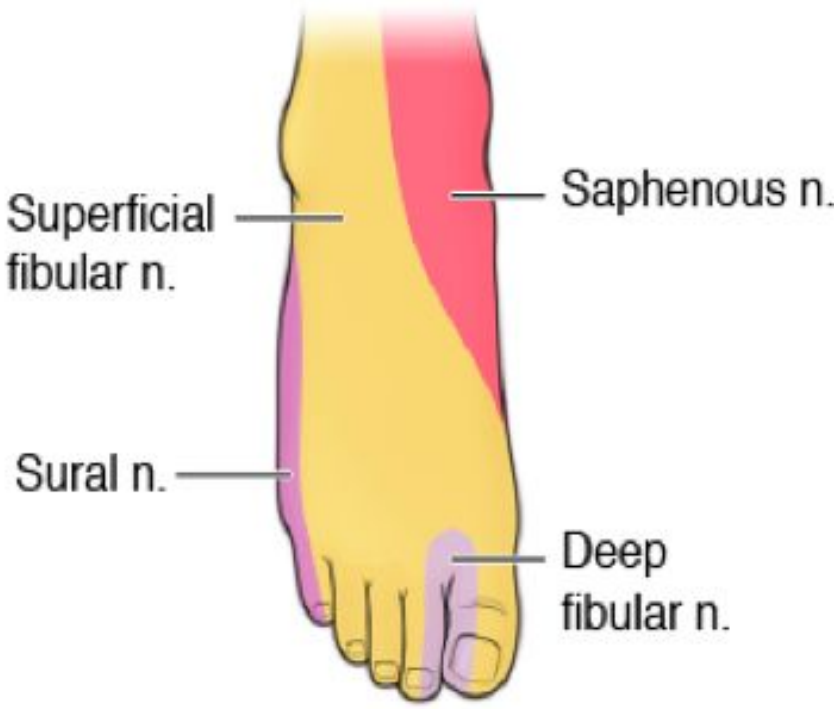
Synovial Sheaths of Peroneal Longus & Brevis:

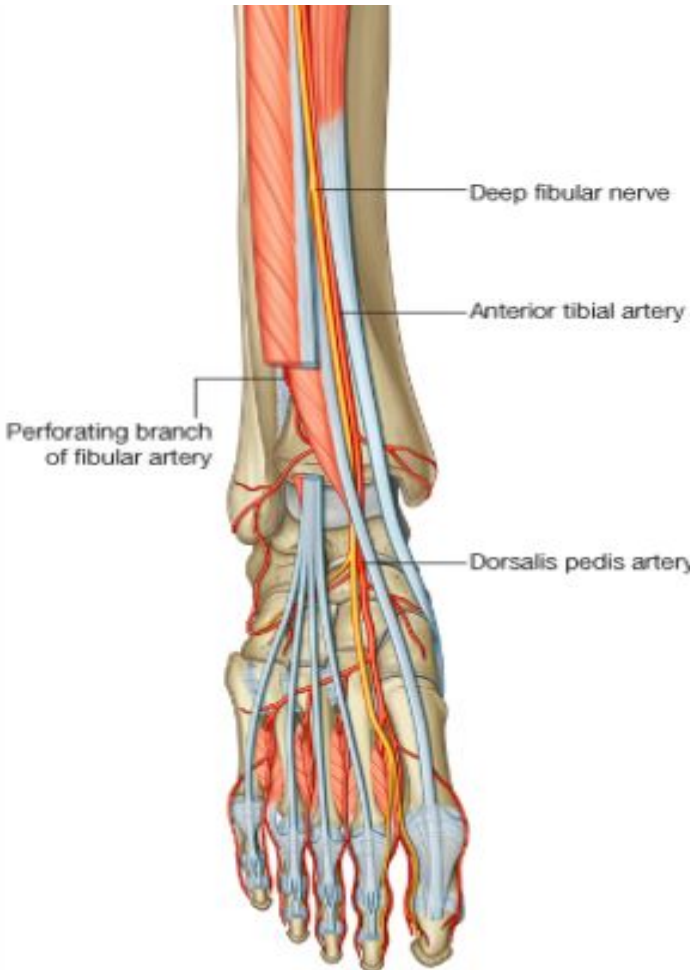
Deep the superior peroneal retinaculum tendons of 2 peronei are surrounded by a single common tubular synovial sheath

- **deep to inferior peroneal retinaculum, they have separate sheaths**

Dorsum of Foot:

- **Blood vessles:** Dorsalis Pedis artery.
- **Nerves**: Deep & Superficial Peroneal nerves.



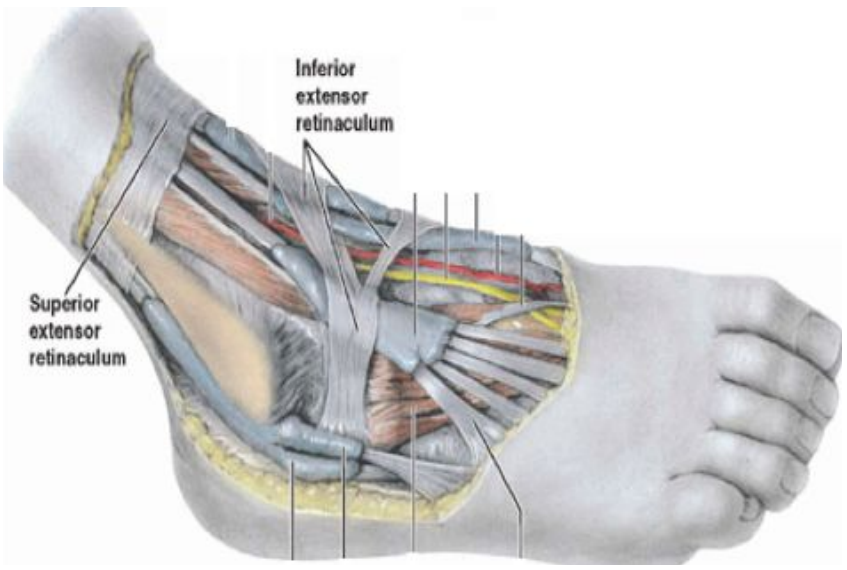


Doctor note : (from 438)

- medial side of big toe= superficial peroneal
- medial side of the foot =saphenous
- lateral side of the small toe =sural
- lateral side of the foot= sural
- Adjacent side of first two toe =deep peroneal

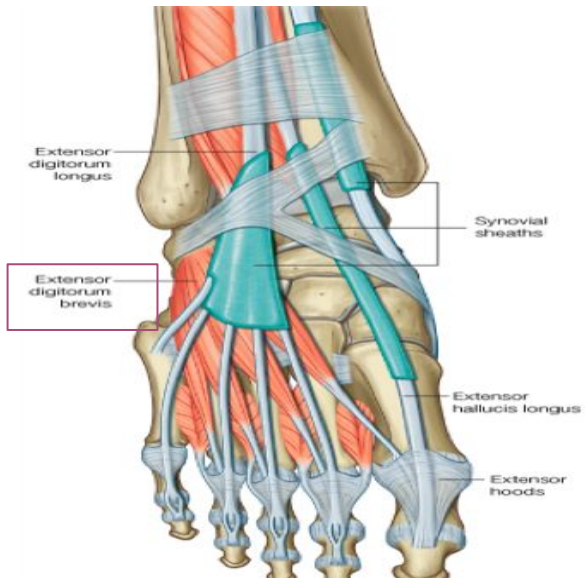
Deep Fascia of Dorsum of Foot

It is very **thin**, but just distal to ankle joint, it is thickened to form **Inferior extensor retinaculum.**



Extensor Digitorum Brevis

Muscle	Origin	Insertion	Action
Extensor Digitorum Brevis	- Anterior part of upper surface of the calcaneum. - And from inferior extensor retinaculum	By 4 tendons into the proximal phalanx of big toe. Extensor expansion of 2nd, 3rd and 4th toes	Extend the toes.



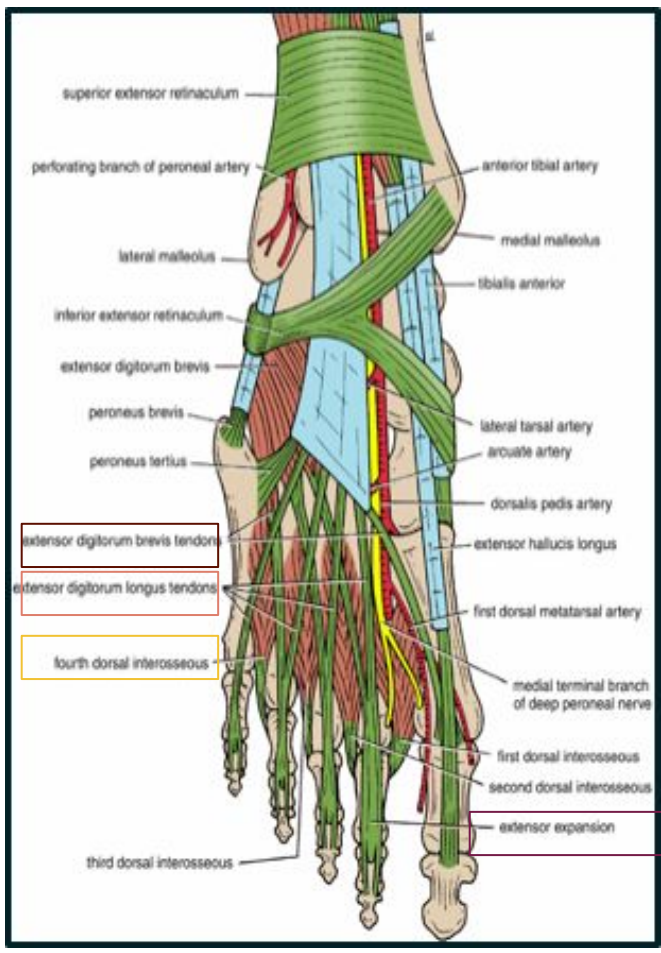
Insertion of Long Extensor Tendons:

- The **tendons of Extensor digitorum longus** pass to the lateral four toes.
- Each tendon to the **2nd, 3rd & 4th** toes is joined on its lateral side by a tendon of **Extensor digitorum brevis.**
- The extensor tendons form:
  a Fascial Expansion (**Extensor Expansion**) on the dorsum of each toe.
- The expansion divides into (**3**) parts:-

  Central part: inserted into the Base of Middle phalanx

  Two Lateral parts: inserted into the Base of Distal phalanx.

  The (Extensor Expansion) receives insertion of : Interossei & Lumbrical muscles.



MCQs

Q1: Which one of the following is Attached to lower part of anterior borders of tibia & fibula above ankle ?

A.Superior Extensor retinaculum
B.Extensor Digitorum Brevis
C.Extensor Digitorum longus
D.Inferior Extensor retinaculum

Q2: What's the nerve supply peroneus longus ?

A.Musculocutaneous
B.Femoral nerve
C.Sciatic nerve
D.Median nerve

Q3:Where is the insertion of peroneus brevis ?

A.Base of first metatarsal
B.medial cuneiform
C.Base of distal phalanx of big toe
D.Base of fifth metatarsal bone

Q4: Connects the lateral malleolus to calcaneum & holds the tendons of peroneus longus & brevis

A.Extensor Digitorum longus
B.inferior peroneal retinaculum
C.superior peroneal retinaculum
D.Extensor Digitorum brevis

Q5: extensor digitorum brevis action is:

A.Flex the toes
B.Rotate the toes
C. Adduct the toes
D.Extend the toes

Q6: The nerves of the lateral side of the small toe and the lateral side of the foot is called:

A. superficial nerves
B. sural nerves
C. deep nerves
D. median nerves

Q7: The tibialis anterior insert to:

A. Base of distal phalanx of big toe
B. Base of 5th metatarsal
C. navicular tuberosity
D. medial cuneiform & base of 1st metatarsal

Q8: The anterior compartment is innervated by

A. Common peroneal nerve
B. Deep peroneal nerve
C. Saphenous nerve
D. Sural nerve

Q9: The muscle that originates from the anterior surface of the shaft of fibula and interosseous membrane and its sheath extends to the base of 5th metatarsal bone is:

A. peroneus longus
B. Extensor digitorum longus
C. Flexor digiti mini brevis
D. Extensor hallucis brevis

1: A
2: A
3: D
4: C
5: D
6: B

7: D
8: B
9: B

SAQs

Q1:What is the action of peroneus longus ?

Q2: Name the origin of Extensor Digitorum Brevis ?

Q3: what separates the leg into different compartments?

Q4: what are the functions of the tibialis anterior?

Q4- Dorsiflexion, Inversion of foot,
Support of medial longitudinal arch of foot

Q3- The deep fascia, the interosseous membrane,
anterior and posterior intermuscular septa

- And from inferior extensor. retinaculum.

Q2: Anterior part of upper surface of the calcaneum.

Q1-Plantar flexes foot at ankle joint
-Everts foot at subtalar joints
-Supports the lateral longitudinal & Transverse arches

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