

# ANTERIOR & LATERAL COMPARTMENTS OF THE LEG DORSUM OF THE FOOT

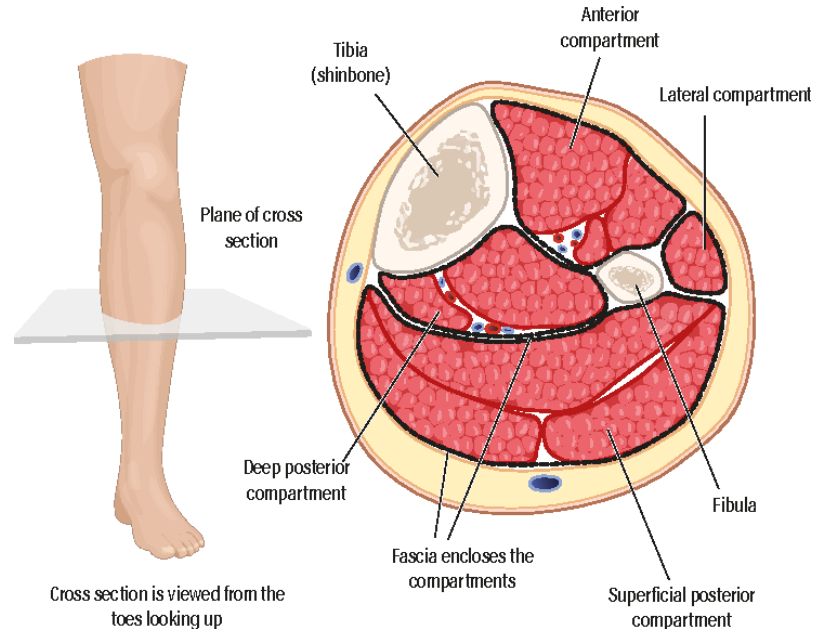
Department of Anatomy

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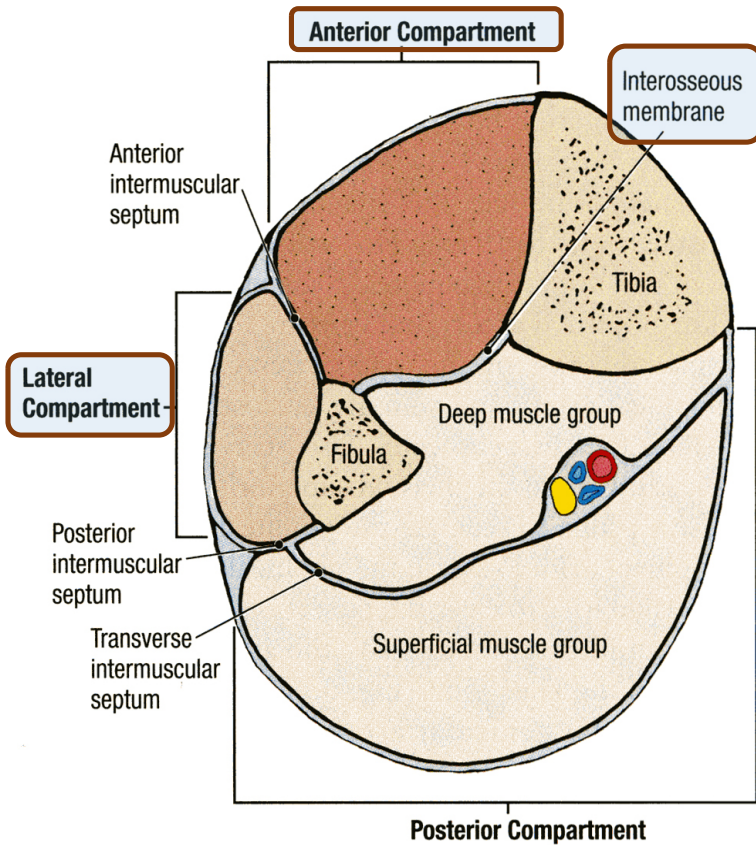


# OBJECTIVES

*At the end of the lecture, student should be able to*

- ? Identify the deep fascia of leg.**
- ? Identify the fascial compartments of the leg.**
- ? Describe the anatomy of the anterior & lateral compartments of the leg (muscles, vessels & nerves).**
- ? Describe the anatomy of the dorsum of the foot (retinacula, muscles, vessels & nerves).**

# Fascia of the Leg



- The deep fascia surrounds the leg & attached to the anterior & medial borders of the tibia.

- Two Intermuscular Septa:**

Pass from the deep aspect of this fascia to be attached to the corresponding margins of fibula: Anterior & posterior borders of the fibula (**Anterior & posterior intermuscular septa**)

- Interosseous membrane:

A thin & strong membrane, that binds the interosseous borders of the tibia & fibula. It binds the two bones and provides attachment for muscles.

# Fascia of the Leg

Together with the interosseus membrane,

the two septa divide the leg into

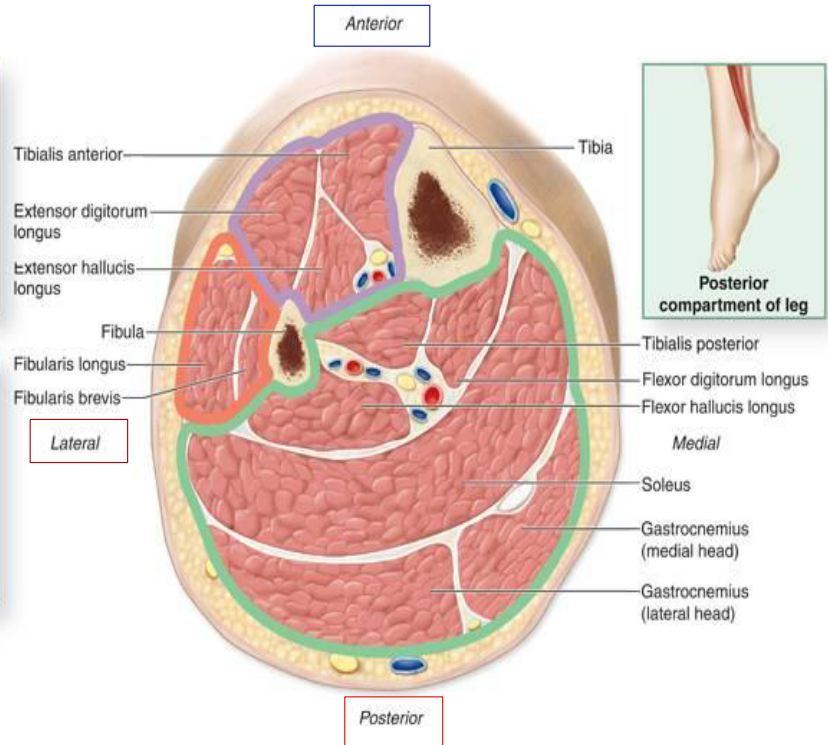
**3 Compartments:**

**1-Anterior**

**2-Lateral (peroneal)**

**3-Posterior**

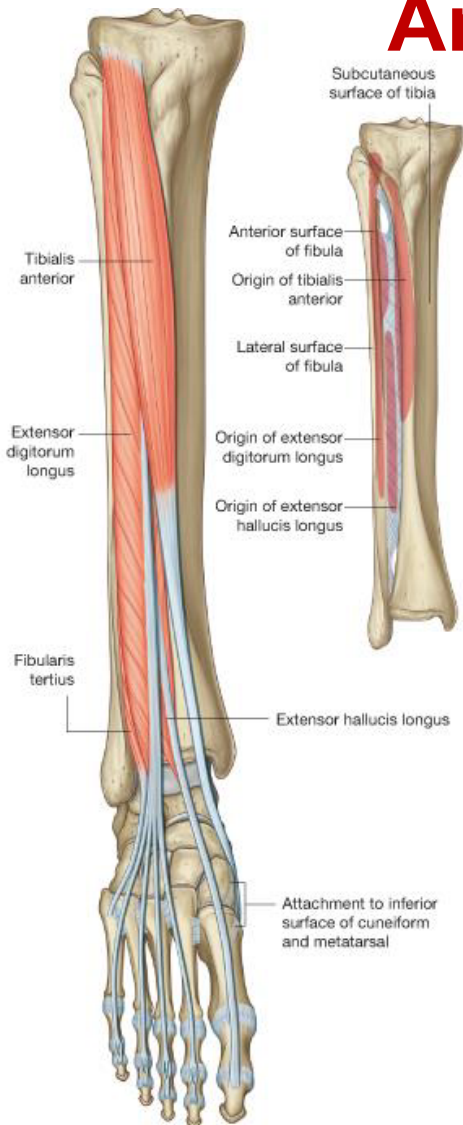
Each one has its own **Muscles** (with specific action), **Blood vessels** and **Nerves**.





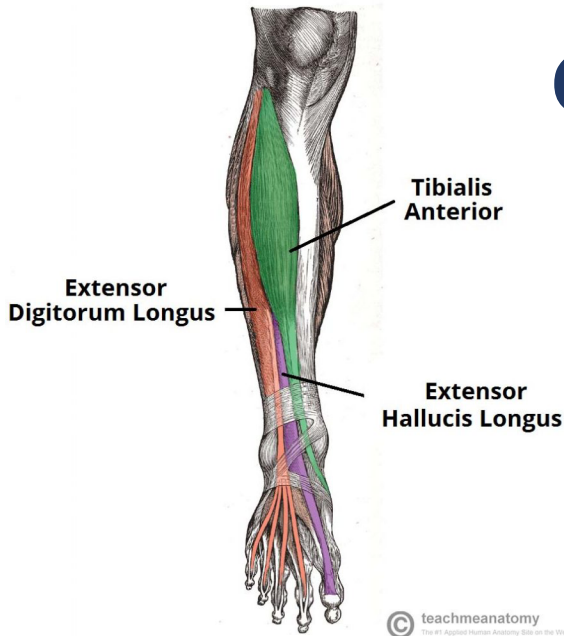
# Anterior Compartment of Leg

## MUSCLES



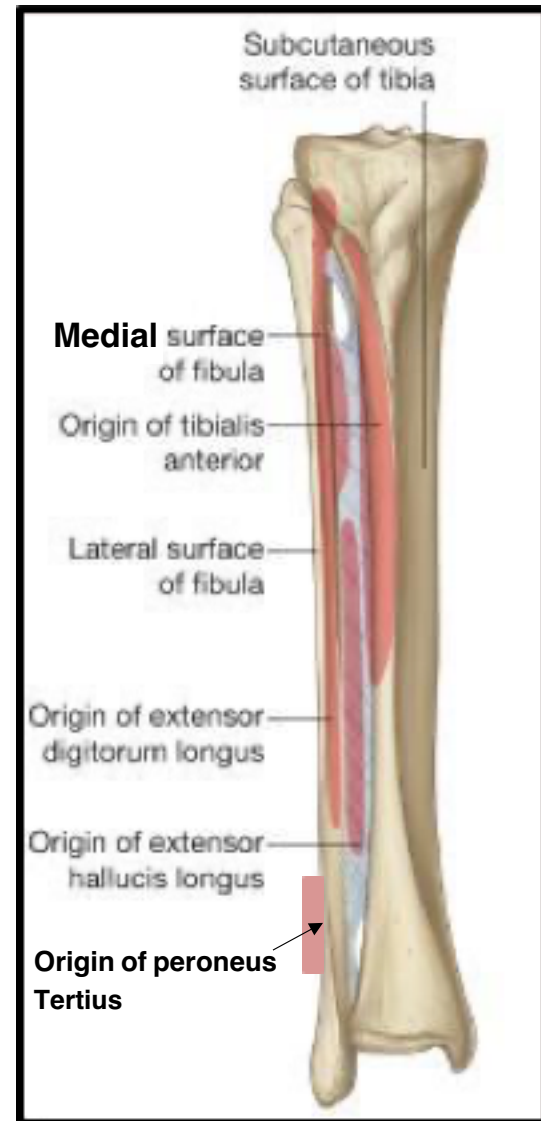
1. **Tibialis Anterior (TA)**
2. **Extensor Hallucius Longus (EHL)**
3. **Extensor Digitorum Longus (EDL)**
4. **Peroneus Tertius (PT)**  
**(may be absent)**

# ORIGINATION



**Tibialis Anterior:**  
Lateral surface of Tibia.

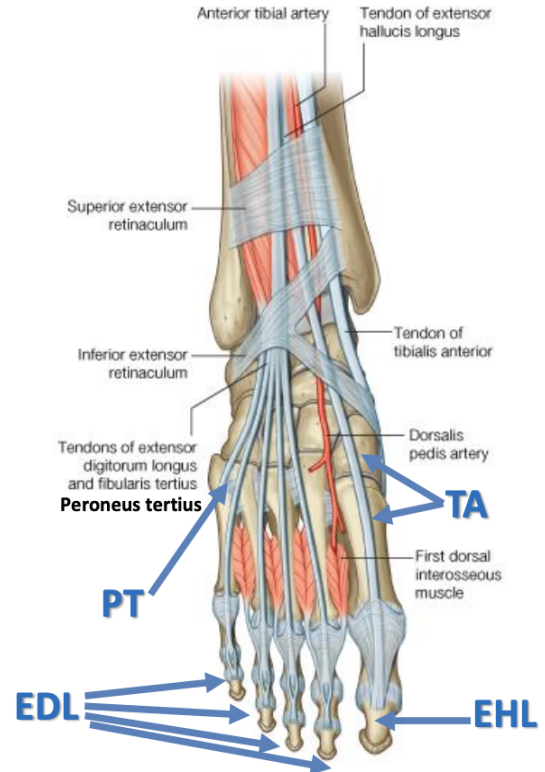
**Extensor Hallucis Longus; Extensor Digitorum Longus & Peroneus Tertius:**  
Medial surface of Fibula.



# INSERTIONS & ACTIONS

## ALL MUSCLES DORSIFLEX THE ANKLE JOINT

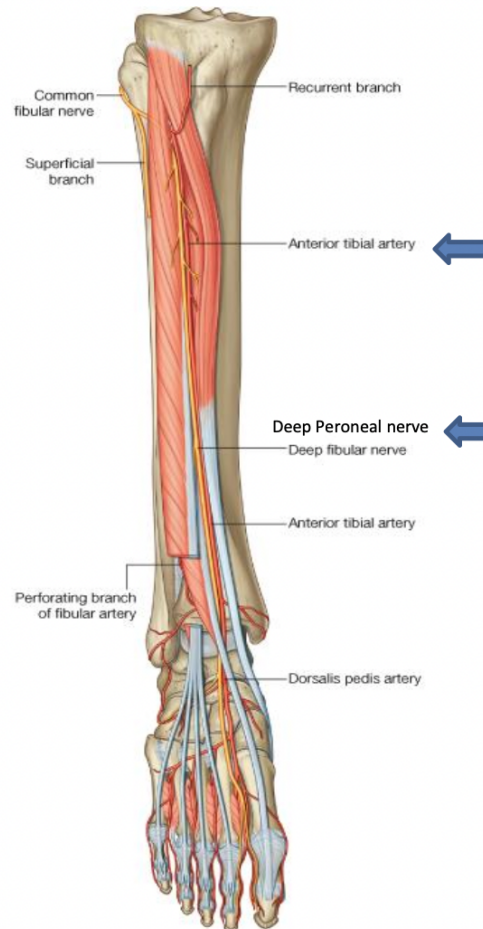
- **Tibialis Anterior: 1<sup>st</sup> metatarsal & medial cuneiform bones (+ inversion of foot)**
- **Extensor Hallucis Longus: dorsum of distal phalanx of big toe (+ extension of all joints of big toe)**
- **Extensor Digitorum Longus: by 4 tendons that form extensor expansions to dorsum of middle & distal phalanges of lateral 4 toes (+ Extension of all joints of lateral 4 toes)**
- **Peroneus tertius: dorsum of 5<sup>th</sup> metatarsal bone (+ eversion of foot)**



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# NERVE & ARTERIAL SUPPLY

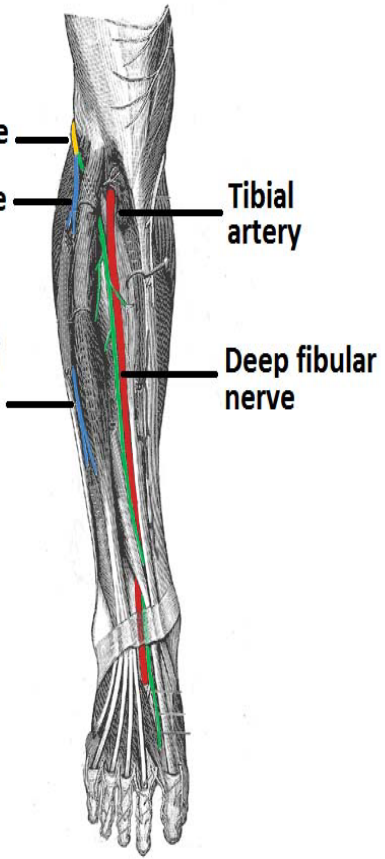
## *Deep peroneal nerve & anterior tibial artery*



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**Prof. Ahmed Fathalla I. El Fouhil**

	<b>Deep peroneal nerve</b>	<b>Anterior tibial artery</b>
<b>Origin</b>	One of 2 terminal branches of common peroneal nerve at lateral aspect of neck of fibula	One of 2 terminal branches of popliteal artery at distal border of popliteus
<b>Termination</b>	Dorsum of foot	Continues as dorsalis pedis in front of ankle joint
<b>Course</b>	Between EHL &	Between tendons of EHL & EDL
<b>Relations</b>	Nerve	Medial to the nerve
<b>Branches</b>	Anterior tibial artery to Extensor digitorum longus (EDL) in the ankle joint. to adjacent sides	1- Muscular to anterior compartment. 2- Articular to both knee and ankle joints.



- **Definition:** A thickening of deep fascia in ankle region keeping extensor tendons in position during action of ankle joint.

- **Superior Extensor retinaculum:**

- **Attached to anterior borders of tibia & fibula above ankle.**

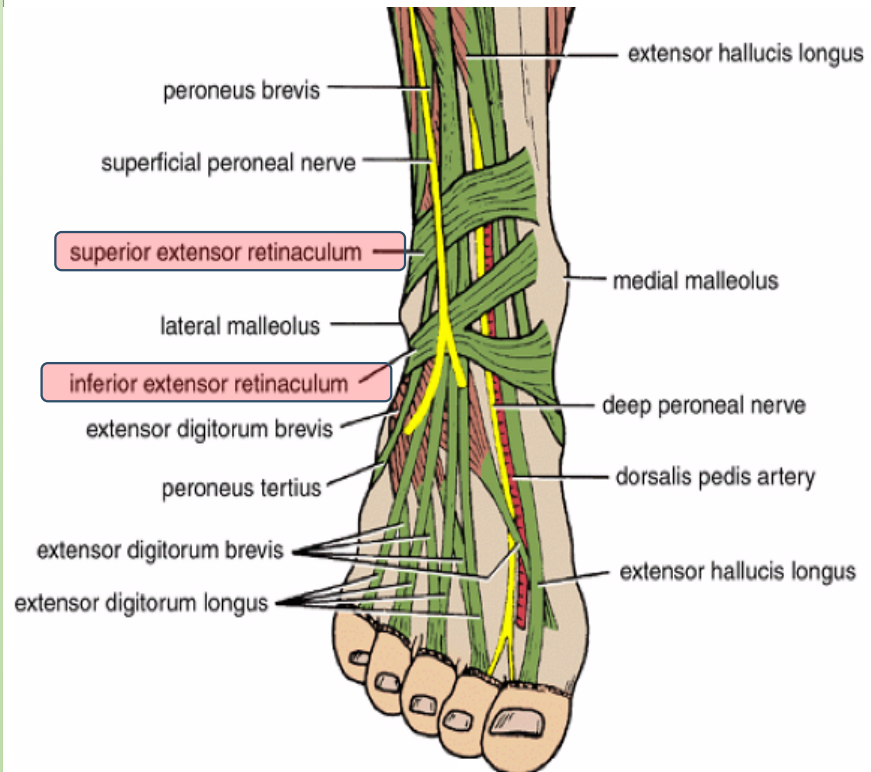
- **Inferior Extensor retinaculum:**

- **Y-shaped band located inferior to ankle.**

- **Stem:** to upper surface of calcaneus, **upper arm:** to medial malleolus, **lower arm** : continuous with planter aponeurosis.

# Dorsum of Foot

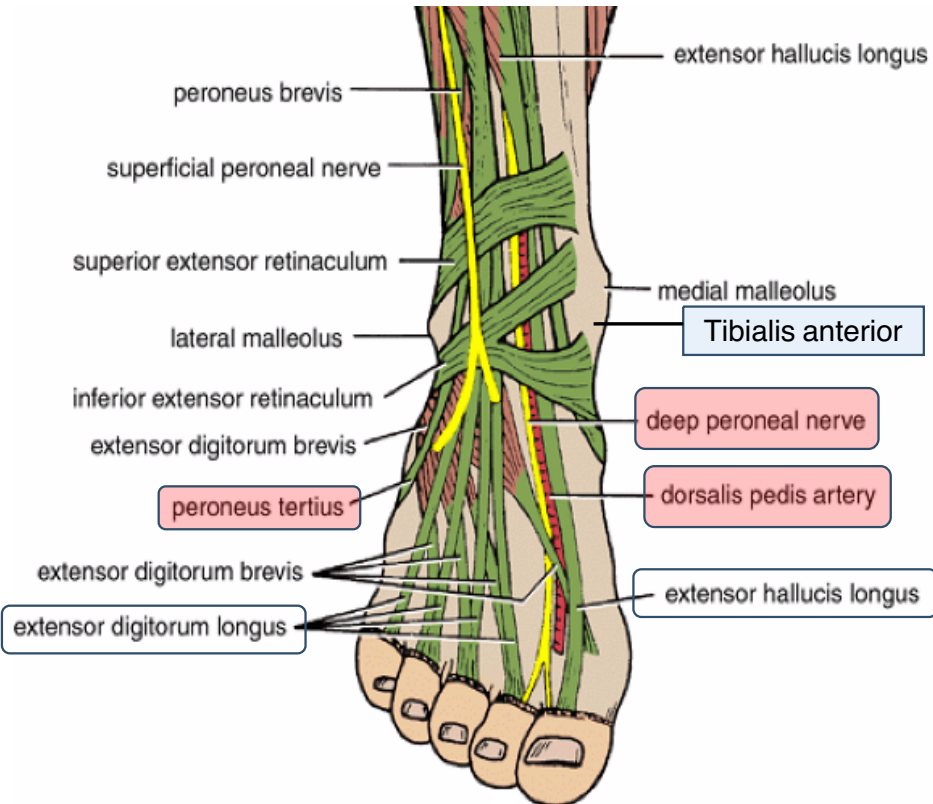
## *Extensor Retinacula*





# Structures Passing Deep to Extensor Retinacula

**Tom Has Very Nice Dog & Pigion**



*From medial to lateral:*

1. Tom (Tibialis Anterior)

2. Has (Exten. Hallucis long.)

3. Very (vessels)

4. Nice (nerve)

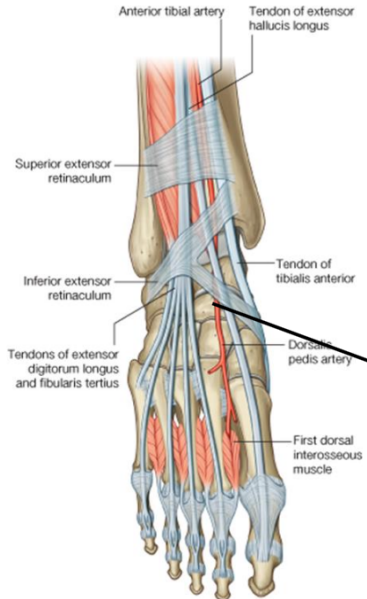
5. Dog (Exten. Digitorum long.) &

6. Pigion (Peroneus Tertius)



# DORSUM OF FOOT

## Dorsalis Pedis Artery



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**Origin:** continuation of anterior tibial artery, in front of ankle joint (between superior & inferior extensor retinacula).

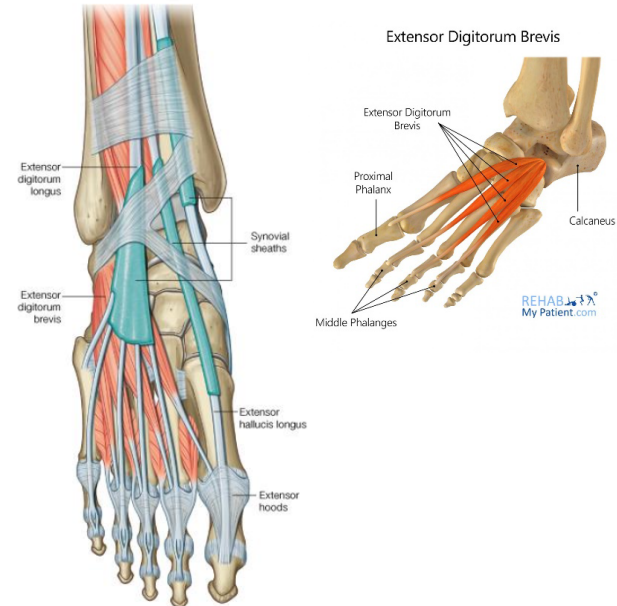
**Termination:** pierces the 1<sup>st</sup> dorsal interosseous muscle & reaches the sole to join the plantar arch.

**Branches:**

1- Muscular: to EDB.

2- Articular: to ankle joint.

## Extensor Digitorum Brevis



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**Origin:** upper surface of calcaneus.

**Insertion:** into the medial 4 toes. The first (*Extensor hallucis brevis*) into proximal phalanx of big toe. The other 3 join extensor expansions of 2<sup>nd</sup>, 3<sup>rd</sup> & 4<sup>th</sup> toes.

**Nerve Supply:** deep peroneal nerve.

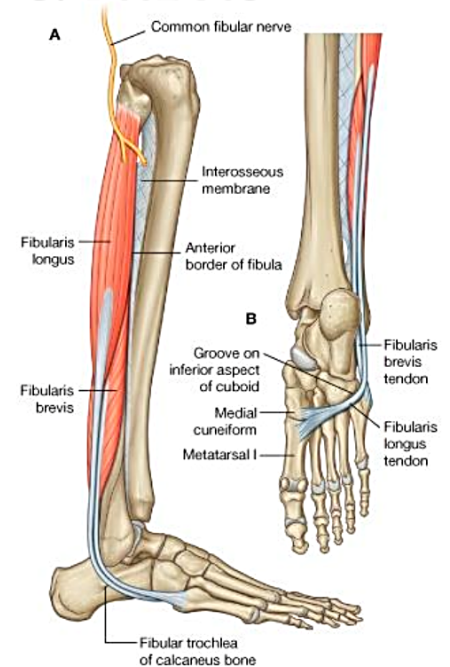
**Action:** Extension of medial 4 toes.

**Pulse palpated  
by pressing it over  
navicular bone between  
tendons of EHL & EDL**

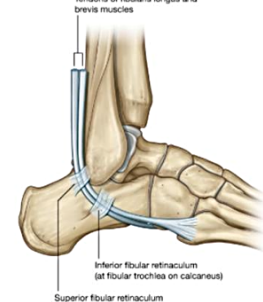
# LATERAL COMPARTMENT OF LEG

## MUSCLES: PERONEUS LONGUS & BREVIS

- **Nerve supply:** Superficial peroneal nerve.
- **Action:** eversion + planter flexion (weak)
- **Origin:** lateral surface of fibula
- **Insertion:** both muscles pass behind then below lateral malleolus, deep to peroneal reticula, then on lateral surface of calcaneus.
- **Peroneus longus:** 1<sup>st</sup> metatarsal & medial cuneiform bones (same bones as tibialis anterior).
- **Peroneus brevis:** tubercle of 5<sup>th</sup> metatarsal bone (same bone as peroneus tertius).



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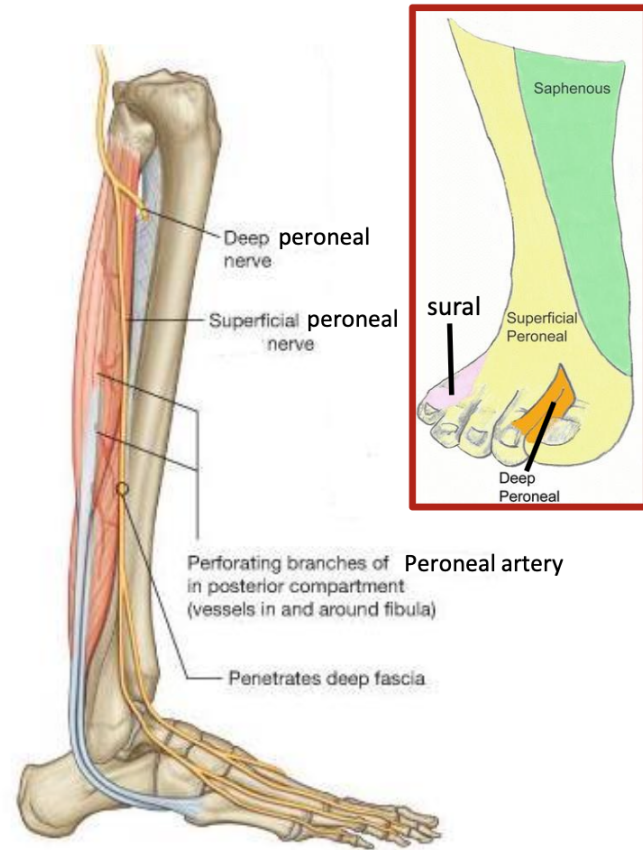
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# NERVE & ARTERIAL SUPPLY

## *Superficial peroneal nerve & peroneal branch of posterior tibial artery*

### Superficial Peroneal Nerve

- **Origin:** One of 2 terminal branches of common peroneal nerve *at lateral aspect of neck of fibula.*
- **Course:** between Peroneus Longus and Peroneus Brevis then pierces deep fascia to become cutaneous.
- **Branches:**
  - **Muscular:** to Peroneus longus & brevis.
  - **Cutaneous:**
    - 1- To lower 1/3 of anterolateral aspect of leg.
    - 2- To all dorsum **EXCEPT:** medial border of foot (saphenous), lateral side of little toe (sural), adjacent sides of big & 2<sup>nd</sup> toes (deep peroneal).



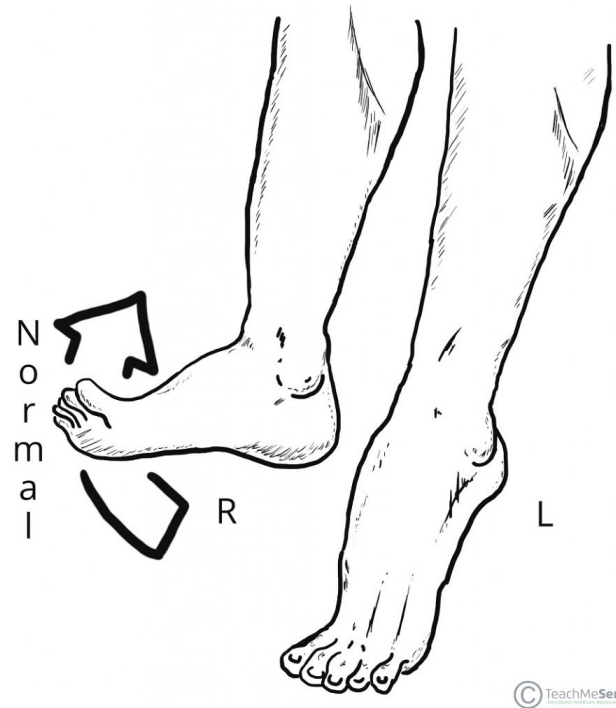
# Clinical Anatomy: Compartment Syndrome

- The anterior compartment of the leg is the most common location for compartment syndrome. These fascial compartments are **inextensible**.
- Any swelling within these compartments as a result of bleeding , infection or venous obstruction produces a rise in the intra compartmental pressure that will hinder its blood supply and produce tender, swollen muscles.



# Clinical Anatomy: **Foot drop**

- Is a clinical sign indicating paralysis of the muscles in the anterior compartment of the leg.
- It occurs as a consequence of damage to the common fibular (peroneal) nerve – from which the deep fibular nerve arises.



- In footdrop, the muscles in the anterior compartment are paralysed. The unopposed pull of the muscles in the posterior leg produce permanent plantarflexion. This can interfere with walking – as the affected limb can drag along the ground. To circumvent this, the patient can flick the foot outwards while walking – known as an ‘eversion flick’.

# MCQs

Which muscle of the anterior compartment of the leg produces eversion at the subtalar joint?

- a) Tibialis anterior
- b) Extensor hallucislongus
- c) Biceps brachii
- d) **Peroneus tertius.**

Under the extensor retinaculum the most lateral structure is:

- e) Sural nerve.
- f) **Peronues tertius.**
- g) Dorsalis pedis artery.
- h) Tibialis Anterior.

Which of the following muscles is a prime mover for inversion of the foot?

- a) **Tibialis anterior.**
- b) peroneus brevis.
- c) peroneus longus.
- d) peroneus tertius.

***THANK YOU & BEST WISHES***