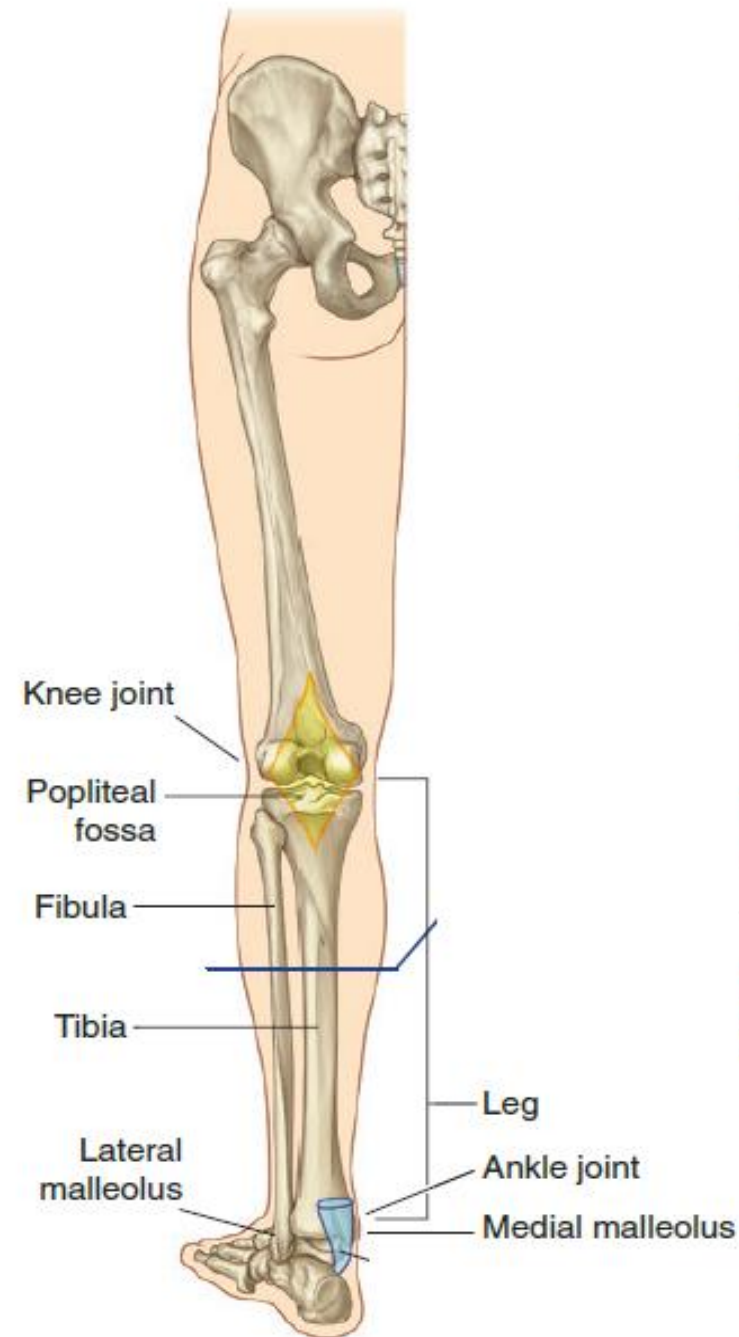
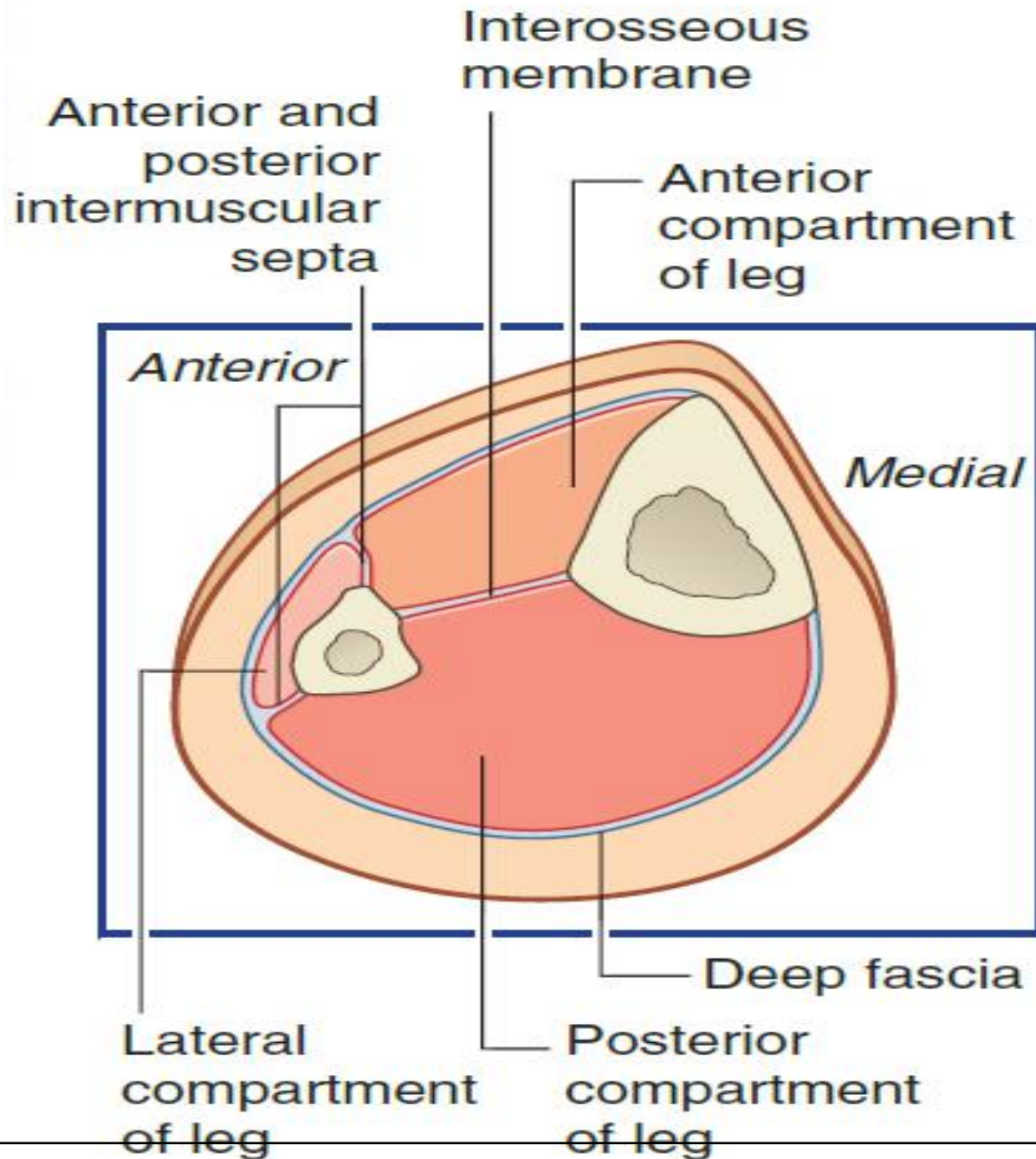


- The leg is that part of the lower limb between the knee joint and ankle joint.
- The bony framework of the leg consists of two bones, the tibia and fibula, arranged in parallel.
- Tibia → weight-bearing bone lies on the medial side of leg
- Fibula → smaller than the tibia lies on the lateral side of the leg



- The leg is divided into
 - anterior (extensor)
 - posterior (flexor) and
 - lateral (fibular) compartments by:→
- Interosseous membrane
- Two intermuscular septa →Anterior
→Posterior



ANTERIOR (EXTENSOR) COMPARTMENT OF THE LEG

- **Boundaries**→

Anterior: Deep fascia of the leg.

Medial: Lateral surface of the shaft of the tibia.

Lateral: Anterior intermuscular septum.

Posterior: Interosseous membrane

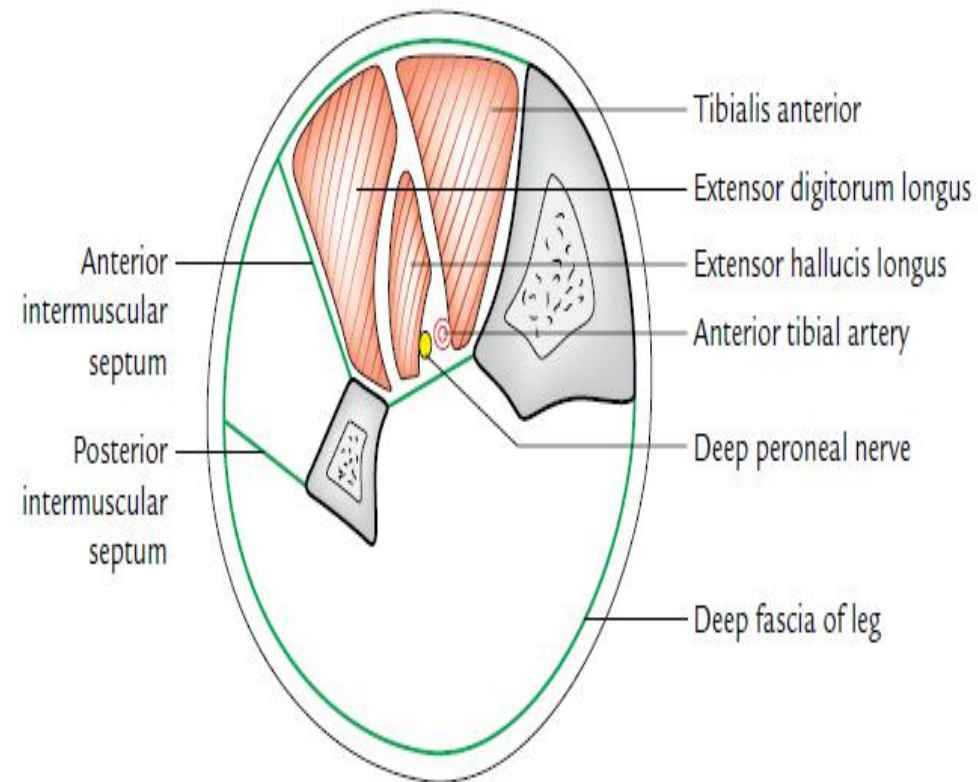
• Contents →

Muscles:

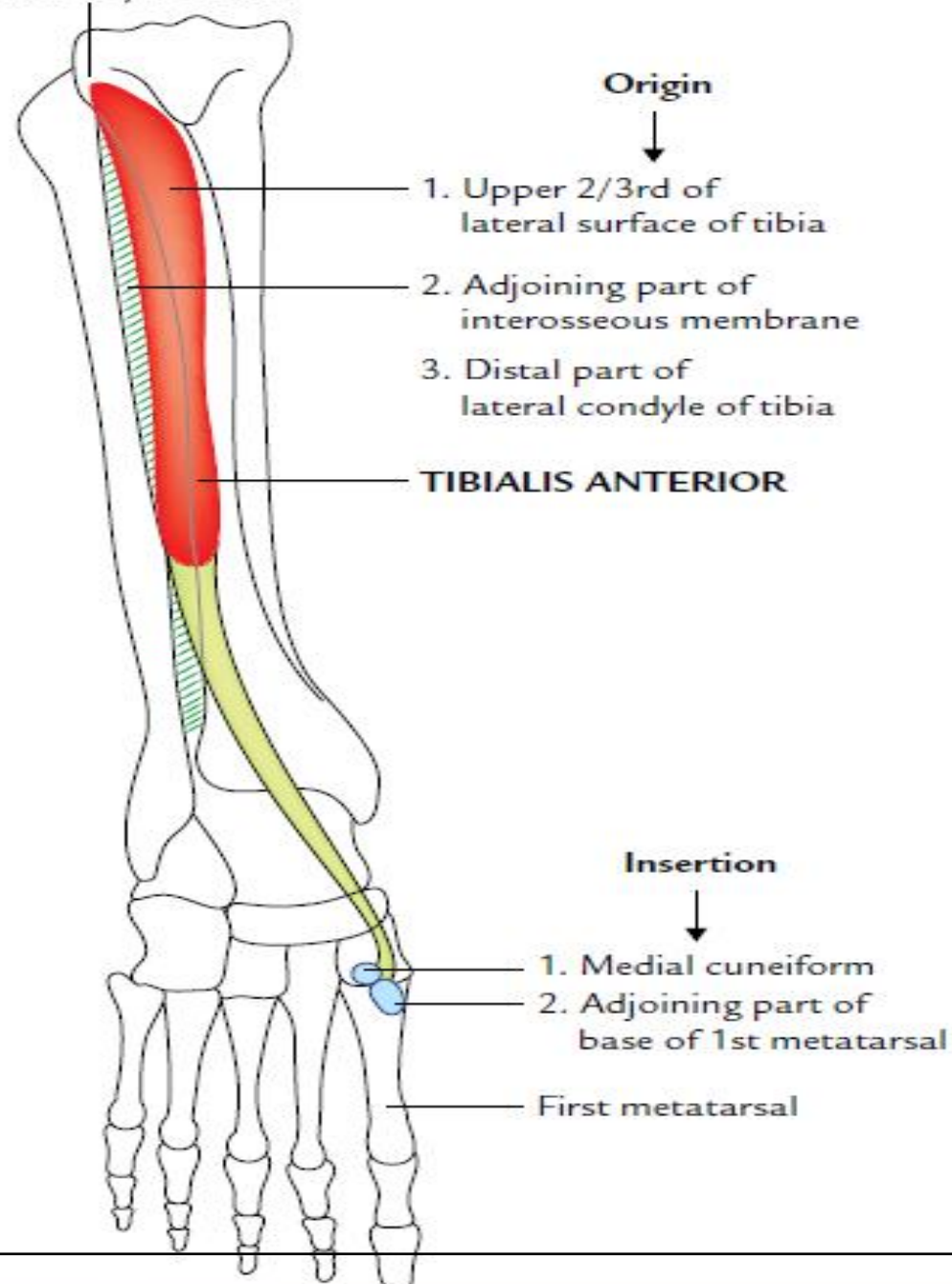
Tibialis anterior,
Extensor hallucis longus,
Extensor digitorum longus,
Peroneus tertius.

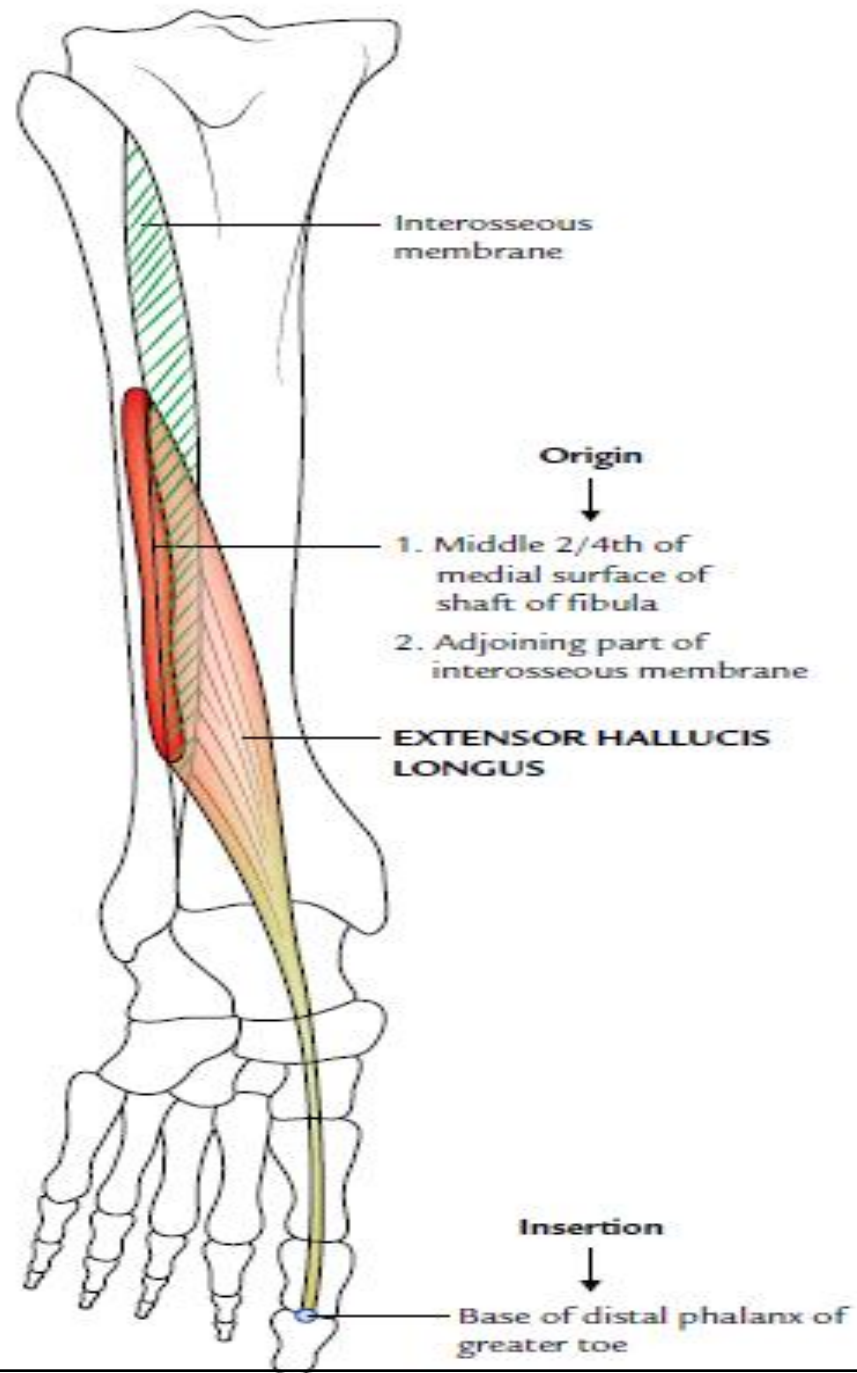
Artery: Anterior tibial artery.

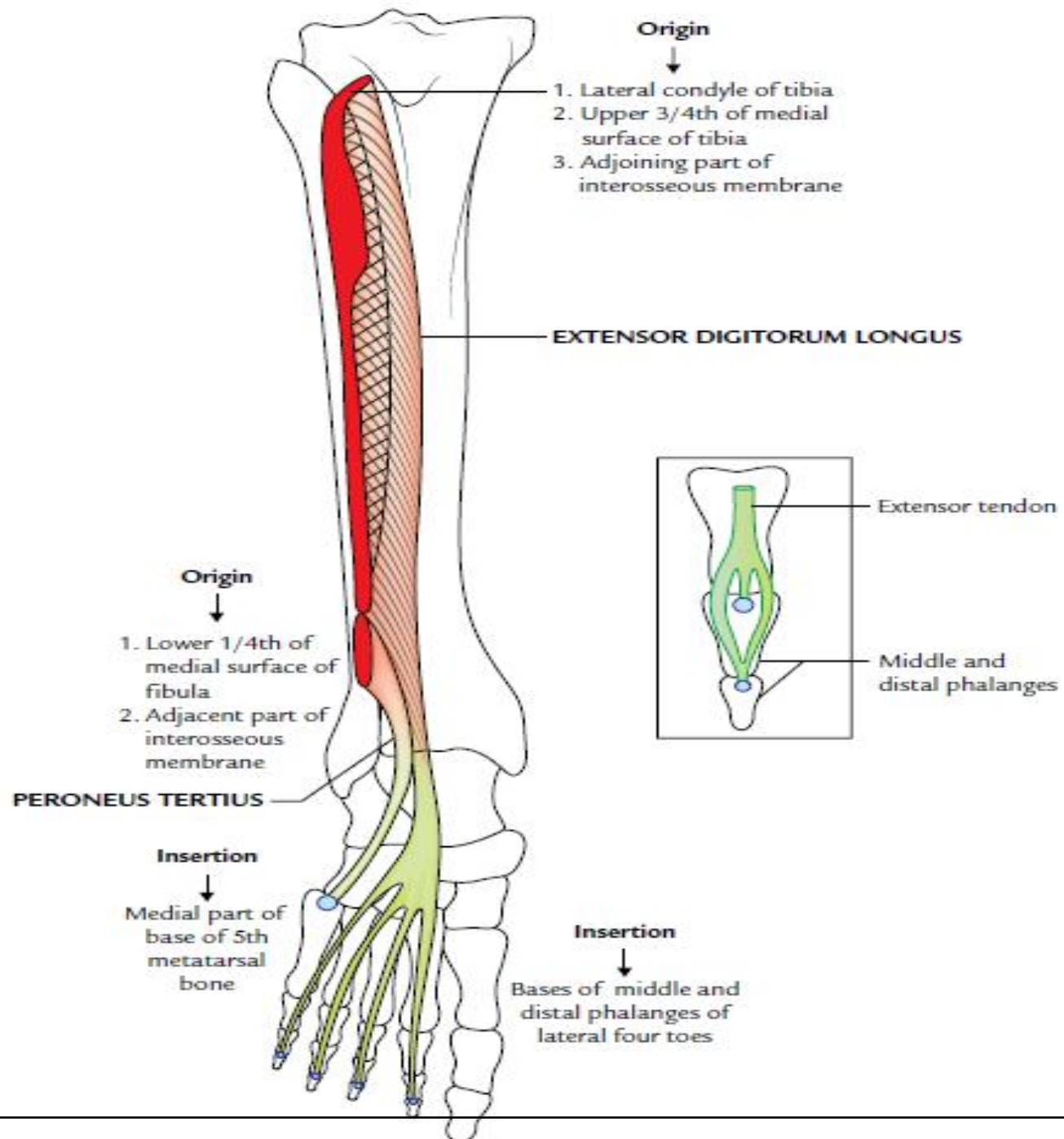
Nerve: Deep peroneal nerve
(anterior tibial nerve).



Lateral condyle of tibia



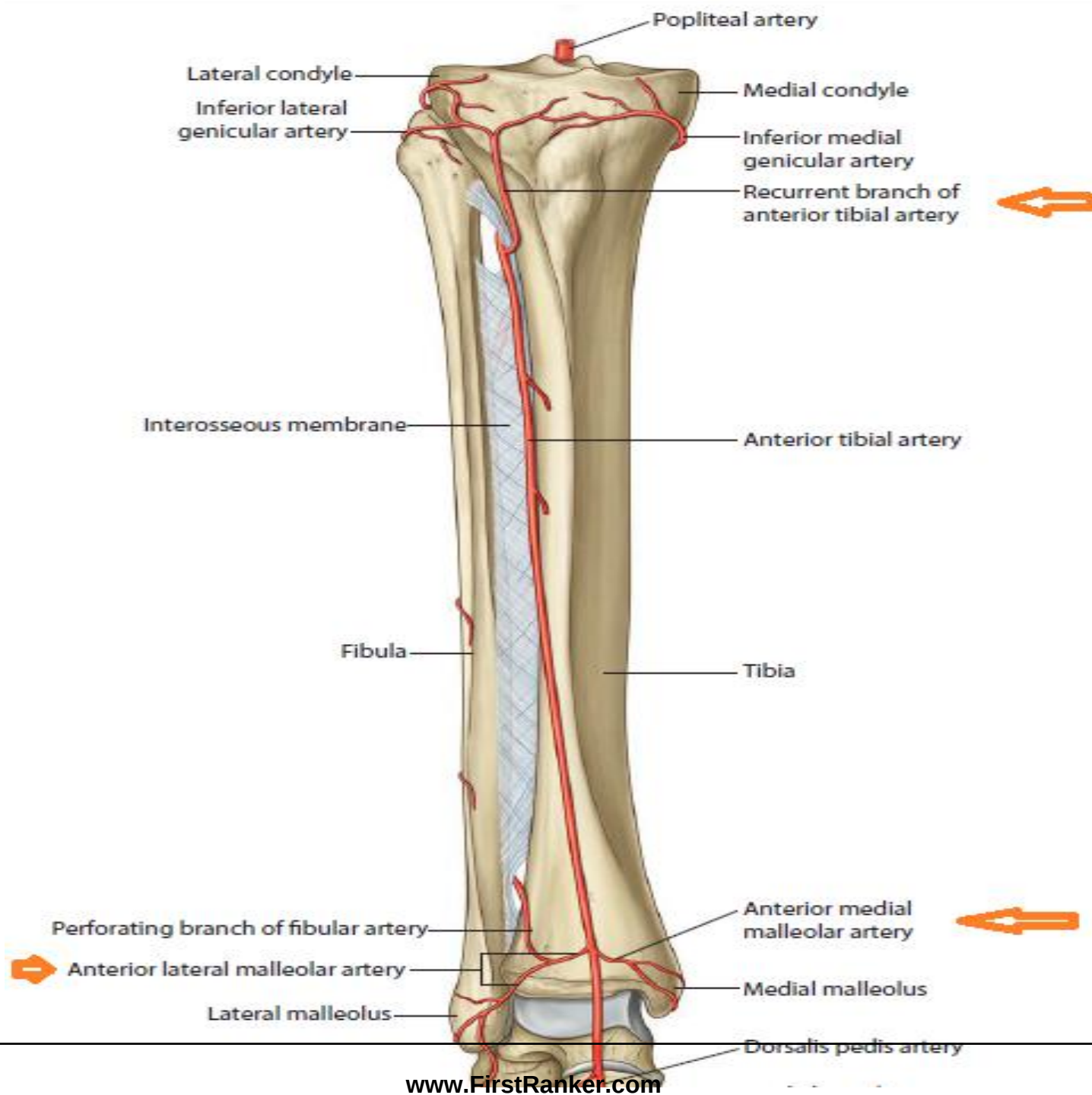




Muscle	Nerve supply	Action
Tibialis anterior	Deep peroneal nerve	Dorsiflexion of the ankle Inversion of the foot Maintenance of the medial longitudinal arch of the foot
Extensor hallucis longus	Deep peroneal nerve	Dorsiflexion of the foot Extension of the phalanges of the big toe
Extensor digitorum longus	Deep peroneal nerve	Dorsiflexion of the foot Extension of MP, PIP, and DIP joints of the lateral four toes
Peroneus tertius	Deep peroneal nerve	Dorsiflexion of the foot Eversion of the foot

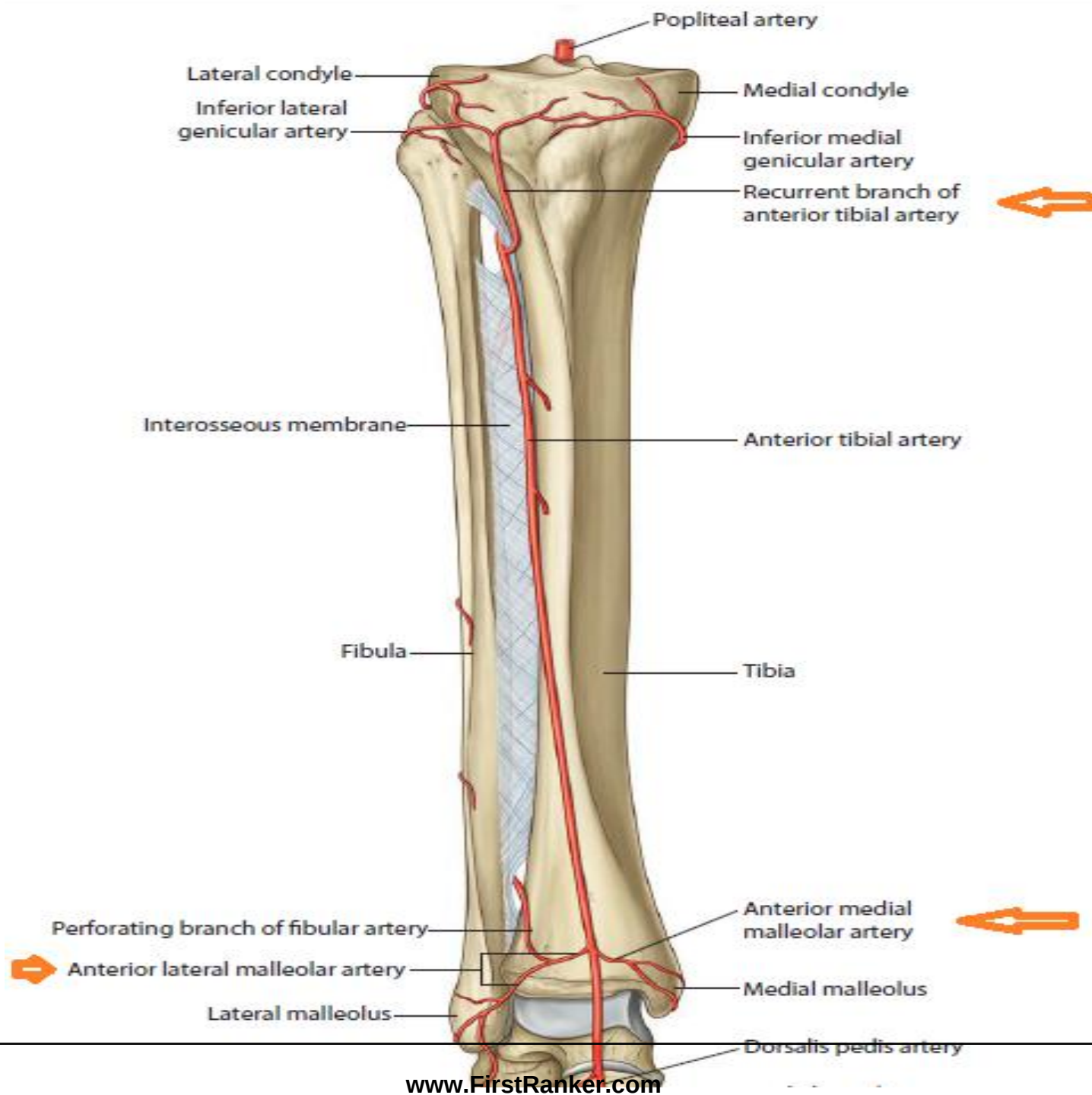
ANTERIOR TIBIAL ARTERY

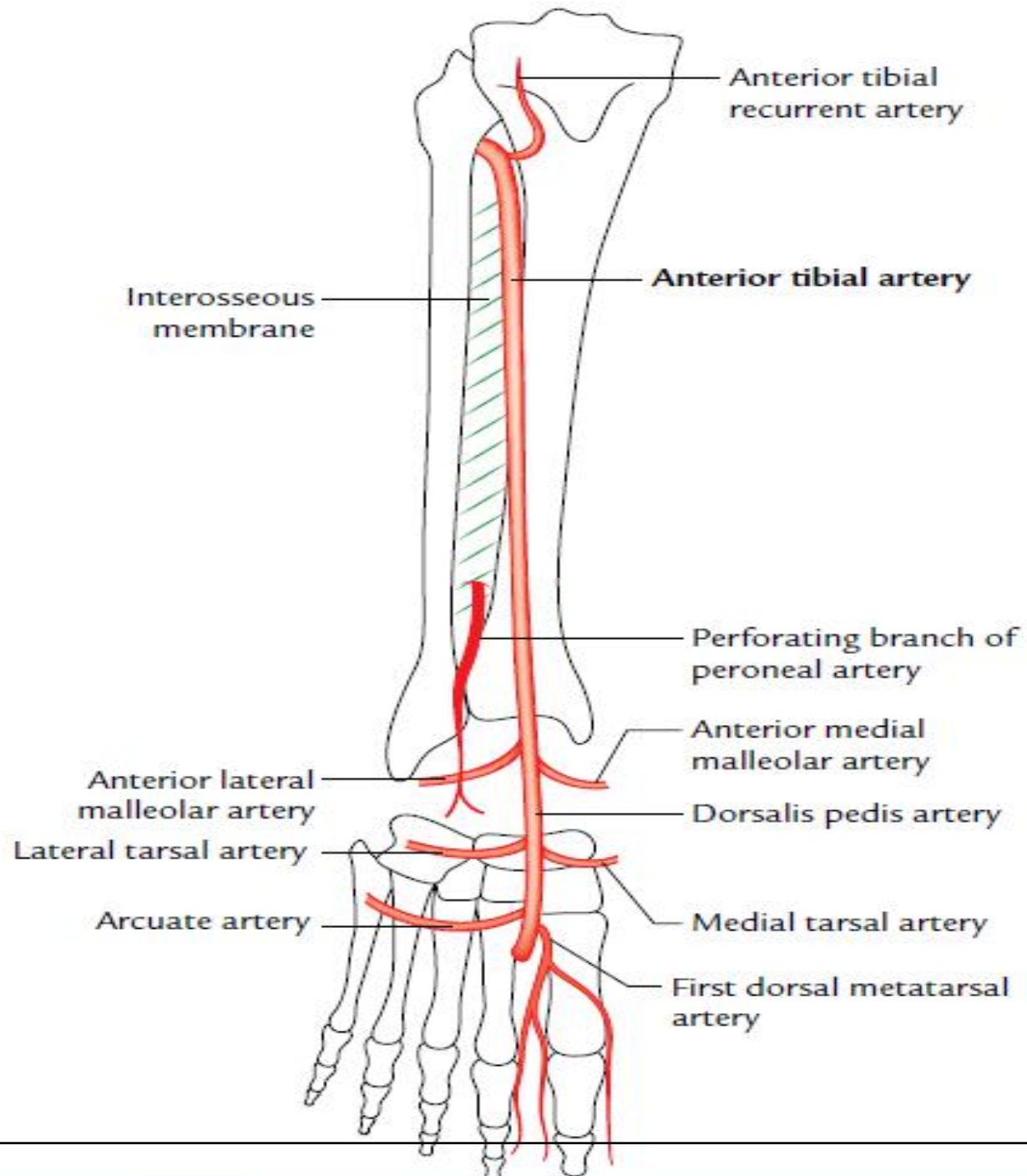
- Main artery of the anterior compartment of the leg
- Branch of **popliteal artery**
- It begins in the back of the leg at the lower border of popliteus.
- Enter into the anterior compartment of the leg through an *aperture* in the interosseous membrane
- It runs vertically downward into anterior compartment and enters the foot as **dorsalis pedis artery**



- **Branches**

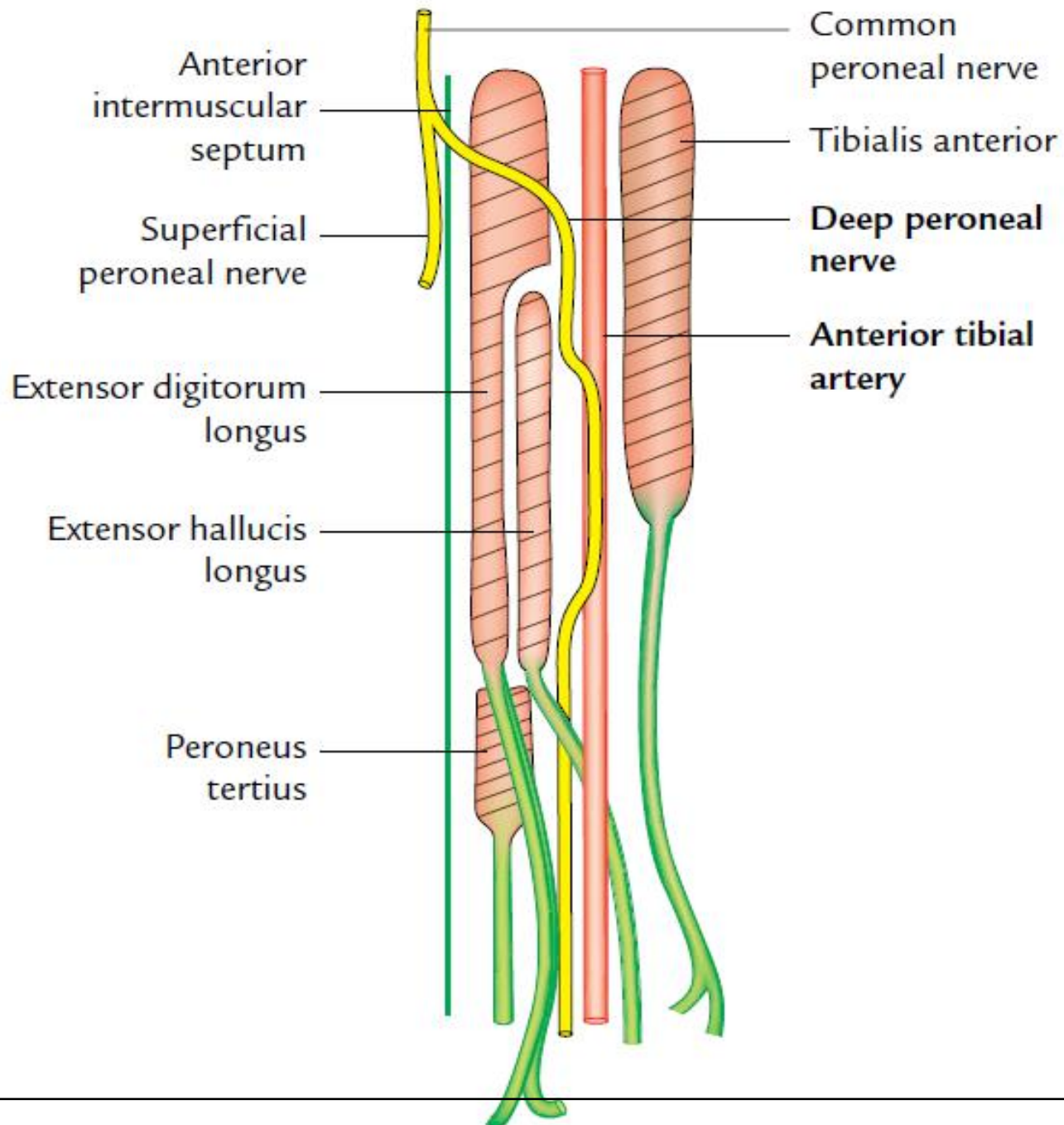
1. *Anterior and posterior tibial recurrent arteries:*
They take part in the arterial anastomosis around the knee joint.
2. *Muscular branches to adjacent muscles.*
3. *Anterior medial and anterior lateral malleolar arteries:* They take part in the anastomosis around the ankle joint.





DEEP PERONEAL NERVE (ANTERIOR TIBIAL NERVE)

- It is terminal branches of the **common peroneal nerve** at the neck of the fibula.
- It *begins on the lateral side of the neck of fibula.*
- It *enters the anterior compartment of the leg by piercing* the anterior intermuscular septum.
- It *pierces* extensor digitorum longus and descends in this compartment with the anterior tibial artery.



- In the leg→
- It accompanies the anterior tibial artery.
- Upper & lower $1/3^{\text{rd}}$ —It lies lateral to artery
- Middle $1/3^{\text{rd}}$ —It lies anterior to artery
- In the middle $1/3^{\text{rd}}$ the nerve *hesitates* to cross the artery from lateral to medial side
- Deep peroneal nerve is also called as **nervus hesitans**.

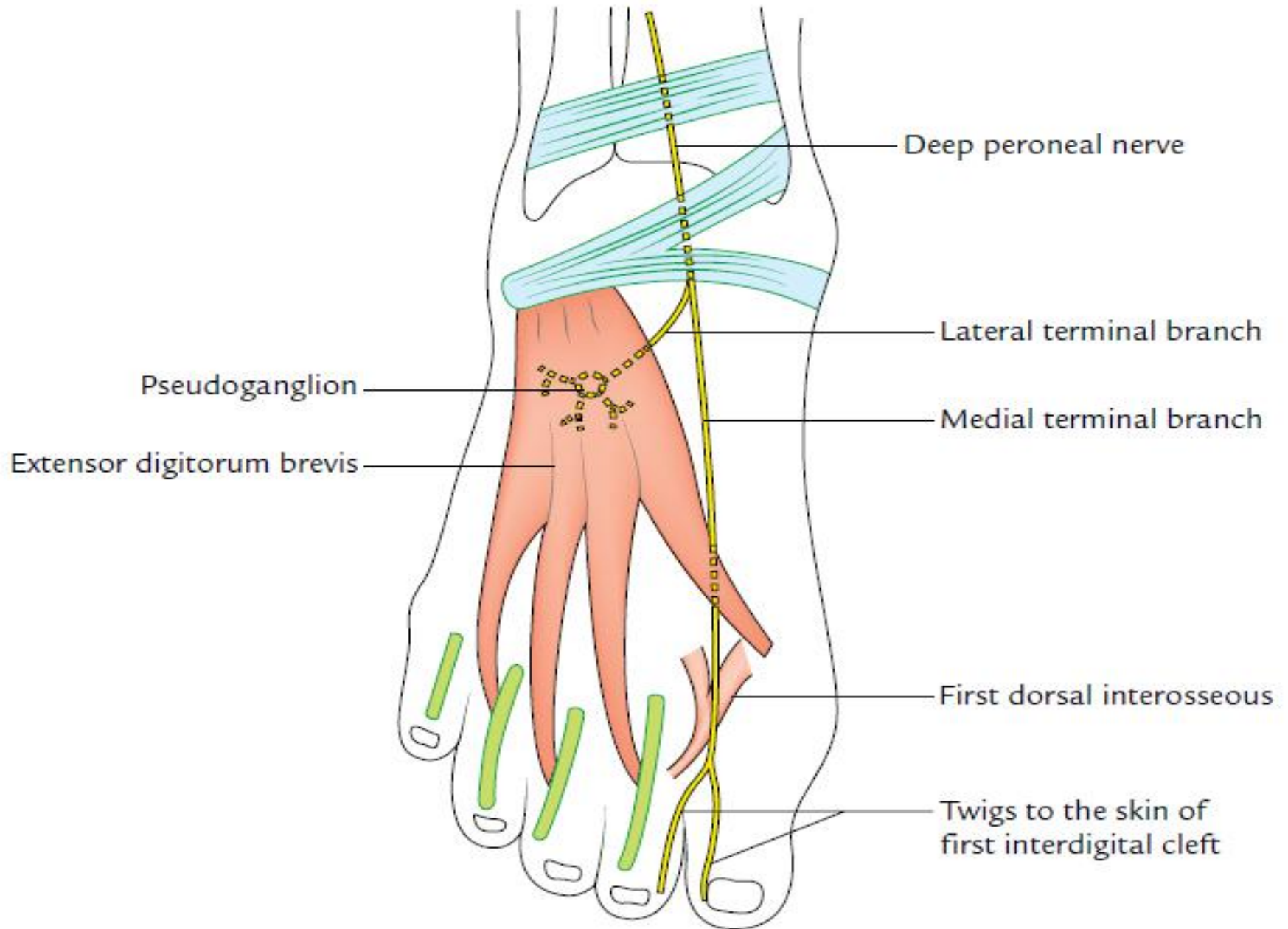
- **Branches**

1. **Muscular branches** supply all the four muscles of the anterior compartment of the leg

2. **Cutaneous branch** supplies the skin of the first interdigital cleft.

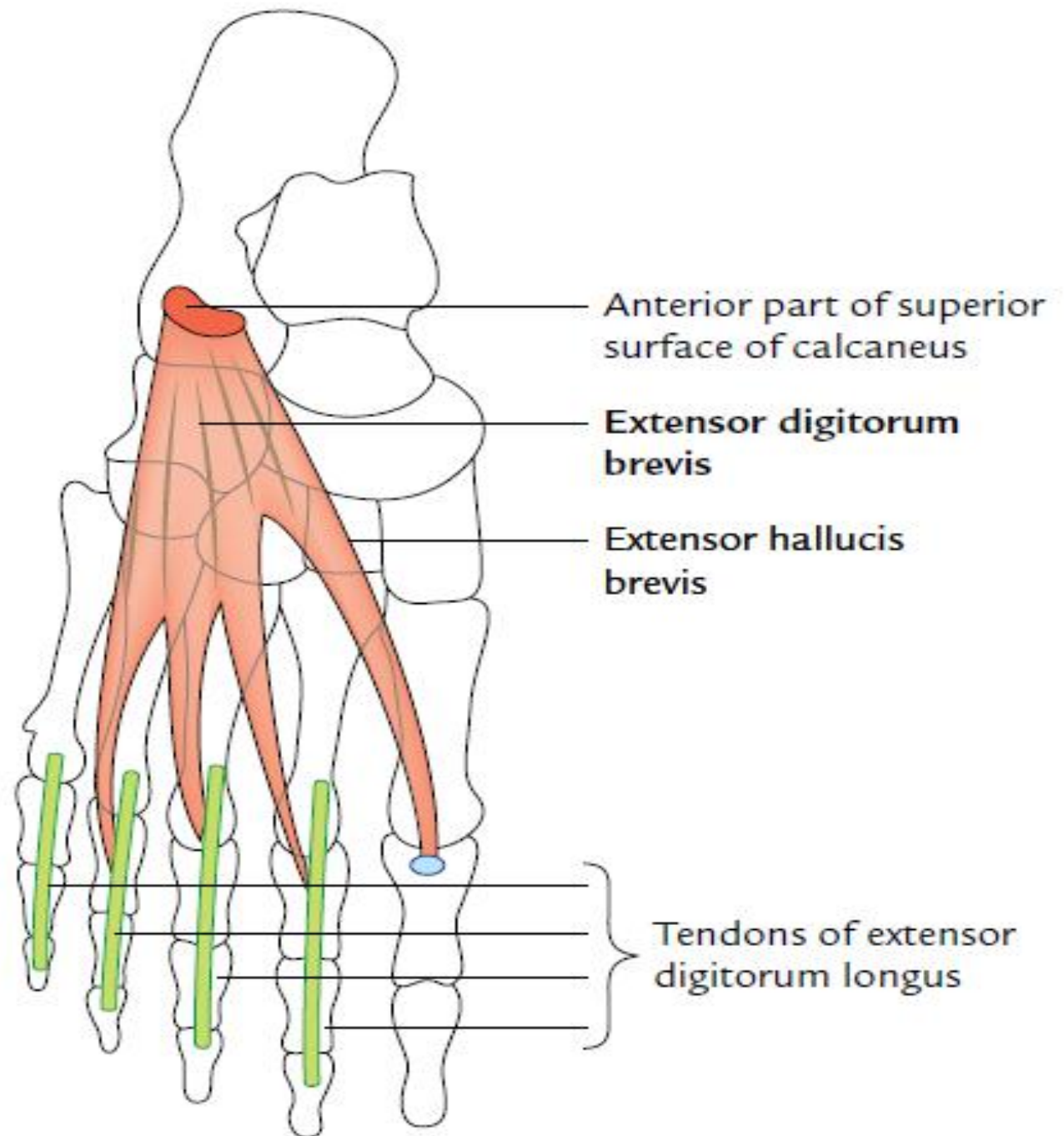
3. **Lateral** and **medial** terminal branches

- ***Lateral terminal branch*** runs laterally and ends in a **pseudoganglion** deep to the extensor digitorum brevis.
- ***Medial terminal branch*** runs forward and ends by supplying the skin first interdigital cleft.
- First dorsal interosseous muscle



DORSUM OF THE FOOT

- **MUSCLES OF THE DORSUM OF THE FOOT**
- **Extrinsic tendons of** → the muscles of the anterior compartment of the leg
- **Intrinsic muscle** → **Extensor digitorum brevis**
- Medial-most part of the extensor digitorum brevis is known as ***extensor hallucis brevis***.
- **Nerve supply** → **lateral terminal branch of the deep peroneal nerve.**
- ***Actions***
- Extends the metatarsophalangeal joint of the big toe.
- Other three tendons extend the metatarsophalangeal and interphalangeal joints of 2nd , 3rd , and 4th toes,



DORSALIS PEDIS ARTERY

Continuation of the
anterior tibial artery

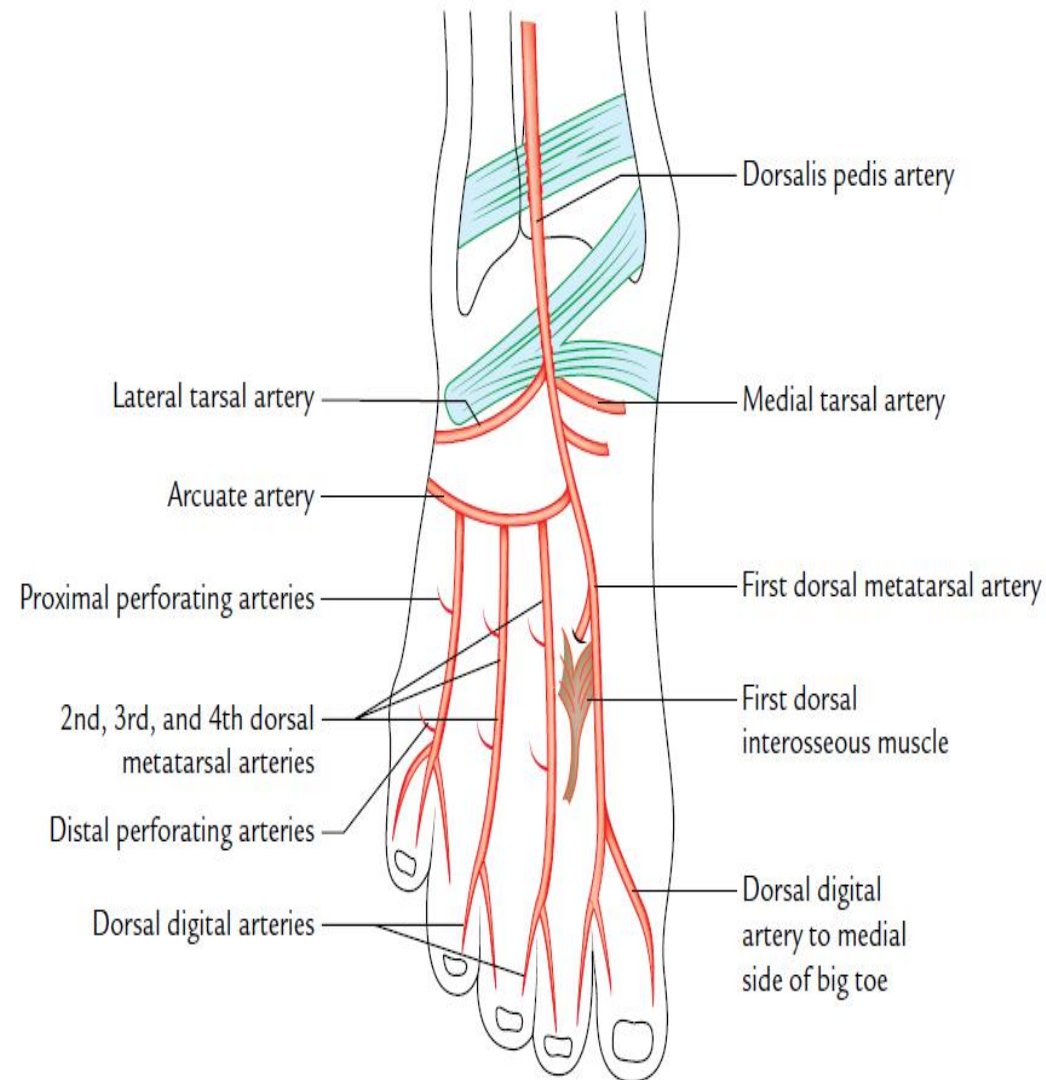
i) Lateral tarsal arteries

ii) medial tarsal arteries

iii) Arcuate artery →

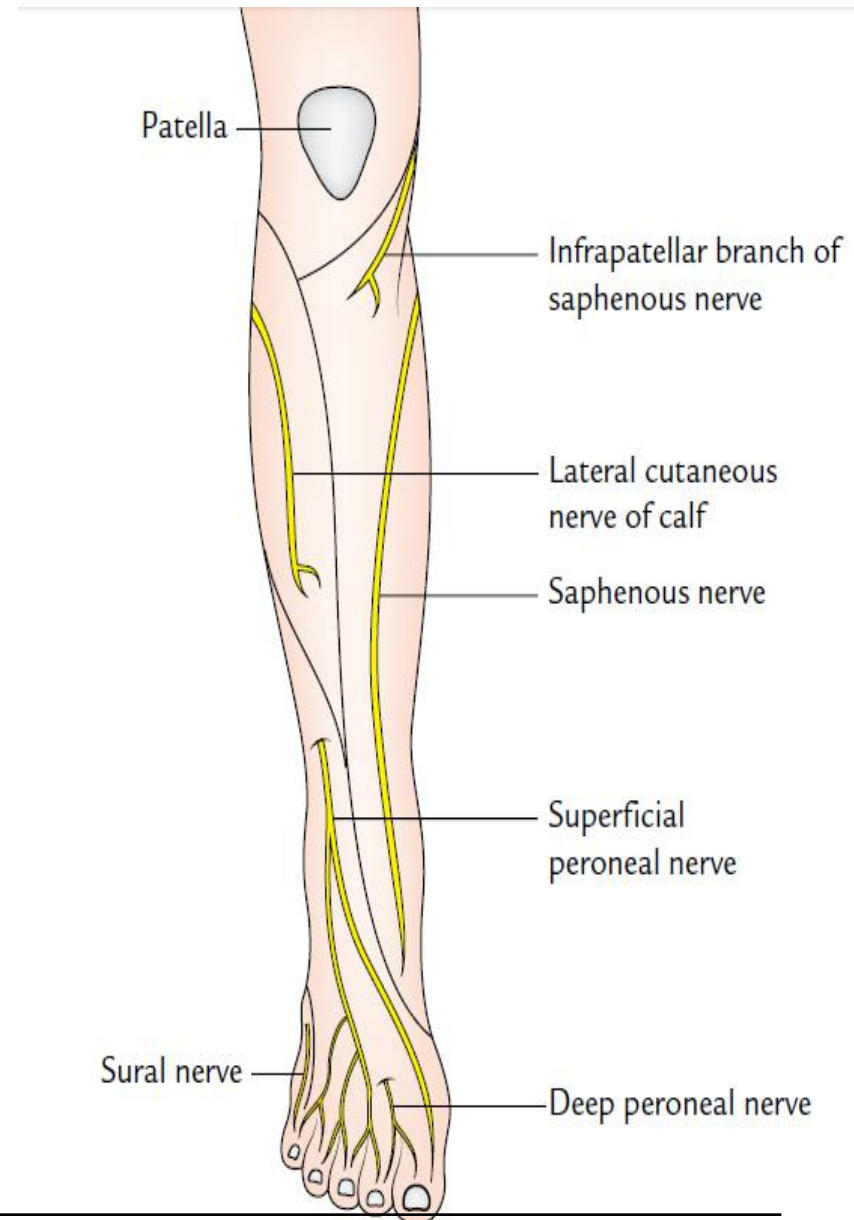
**3 dorsal metatarsal art
(2nd, 3rd, 4th) → dorsal
digital arteries**

**iv) First dorsal
metatarsal artery →
dorsal digital arteries**



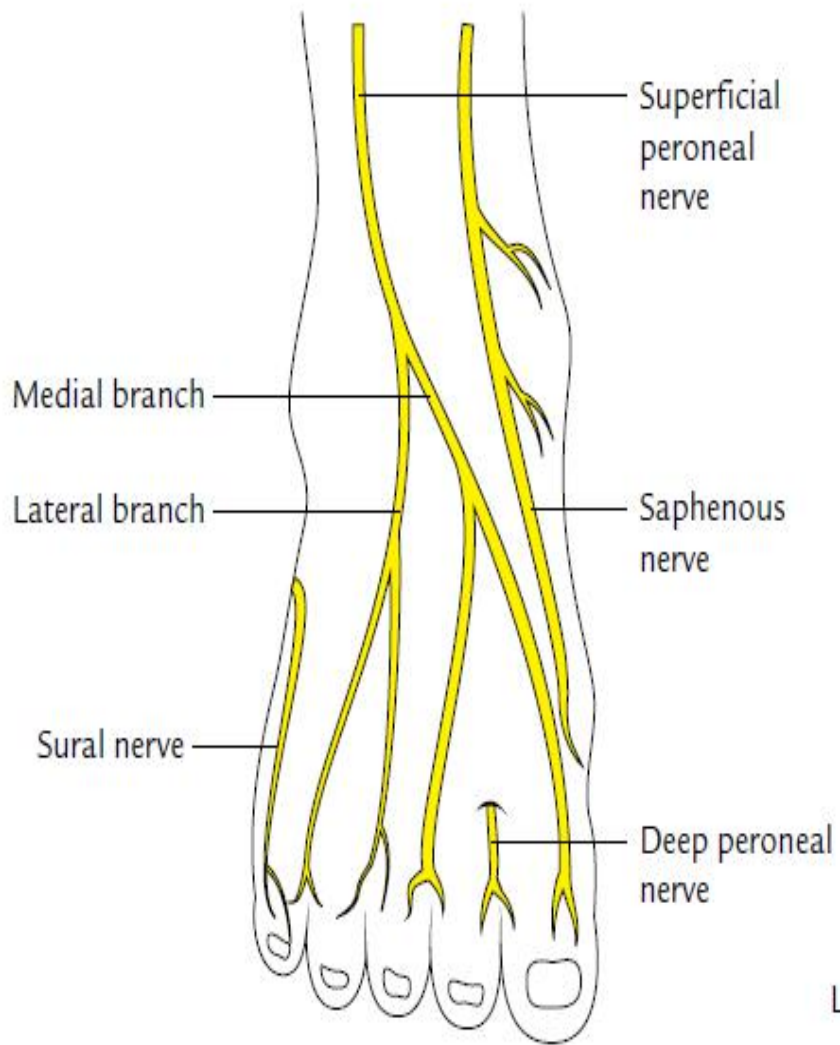
CUTANEOUS NERVES ON THE FRONT OF THE LEG

1. **Infrapatellar branch of the saphenous nerve** → skin over the ligamentum patellae.
2. **Saphenous nerve** → It supplies the skin on the medial side of the leg
3. **Lateral cutaneous nerve of calf branch** of the common peroneal nerve → upper two-third of the lateral side of leg.
4. **Superficial peroneal nerve** branch of common peroneal nerve → lower one-third of the lateral side of the leg.



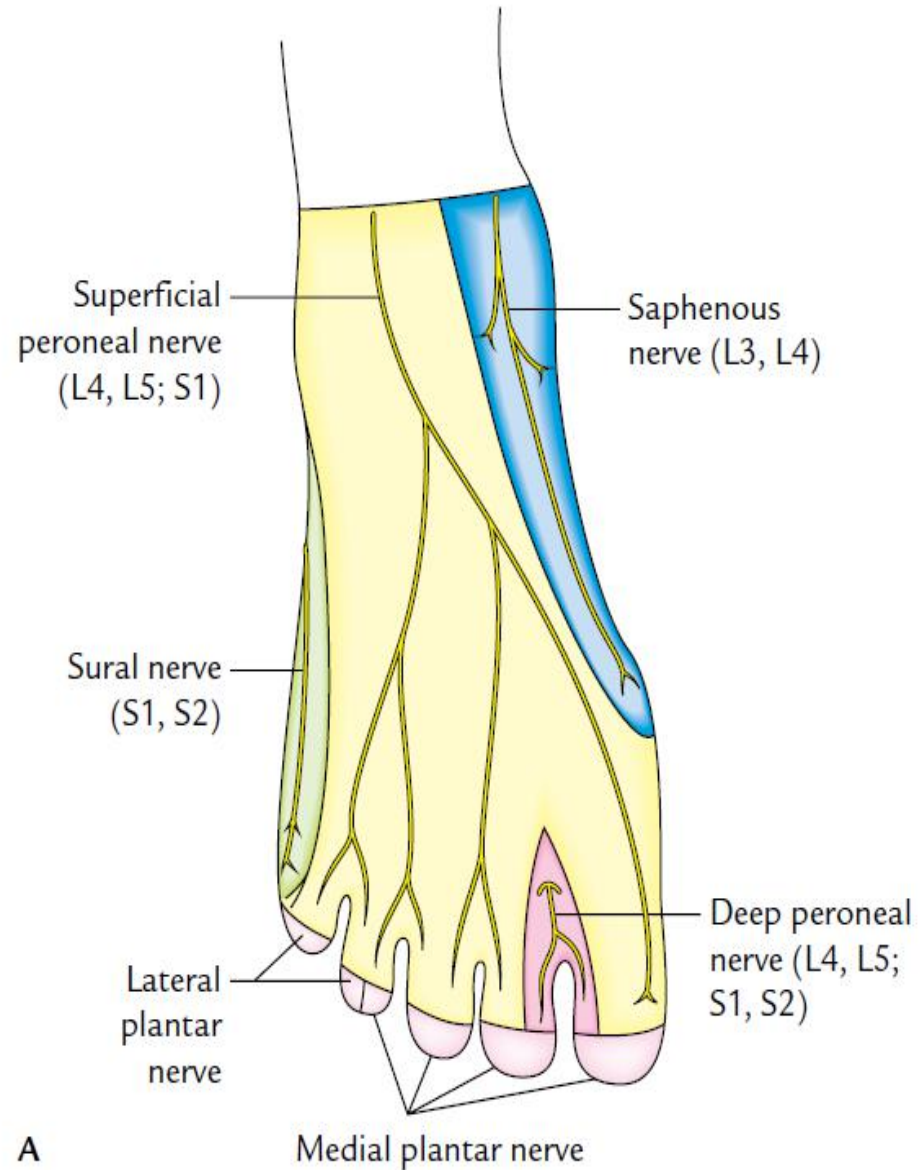
SENSORY INNERVATION OF THE DORSUM OF THE FOOT

- 1. Superficial peroneal (musculocutaneous) nerve:** most of the dorsum of the foot and medial margin of the great toe except the skin of the cleft between the first and second toes.
- 2. Deep peroneal nerve:** cleft between the first and second toes.
- 3. Sural nerve:** lateral margin of the dorsum of the foot and little toe.
- 4. Saphenous nerve:** medial margins of the dorsum of the foot up to the head of the first metatarsal.
- 5. Digital branches of the medial and lateral plantar nerves:** distal parts of the dorsal aspects of the toes



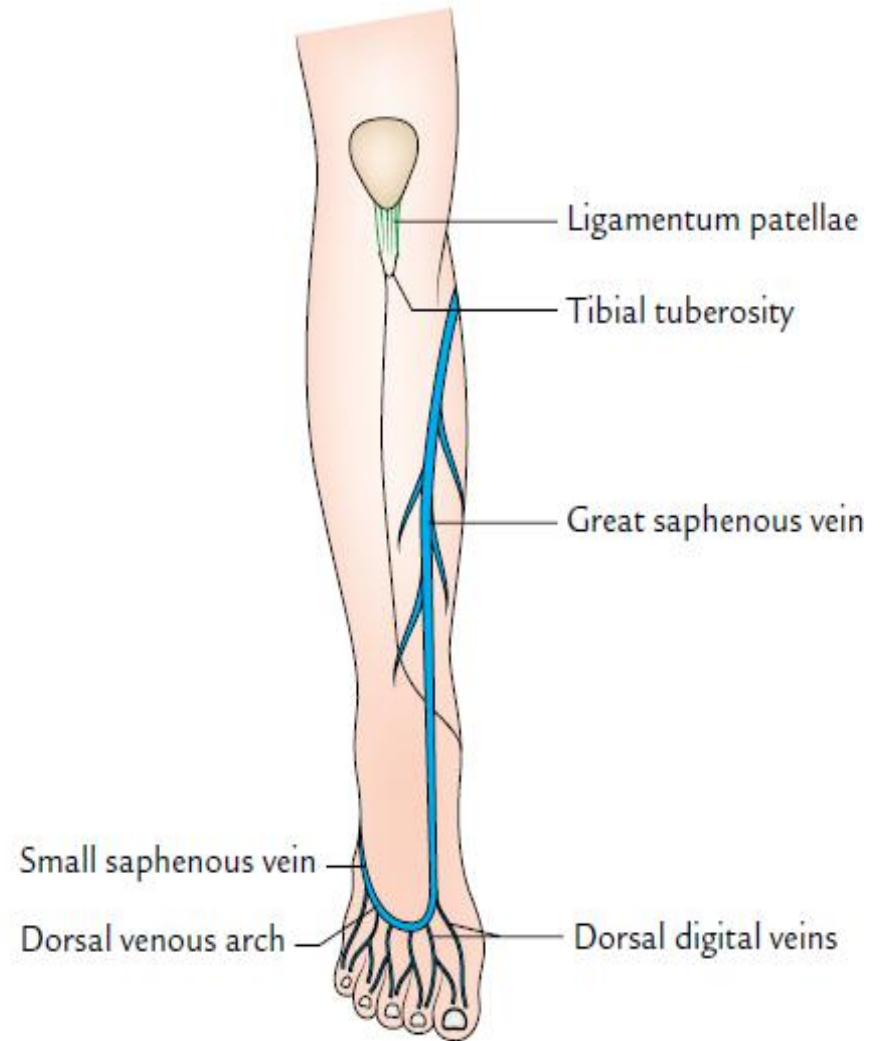
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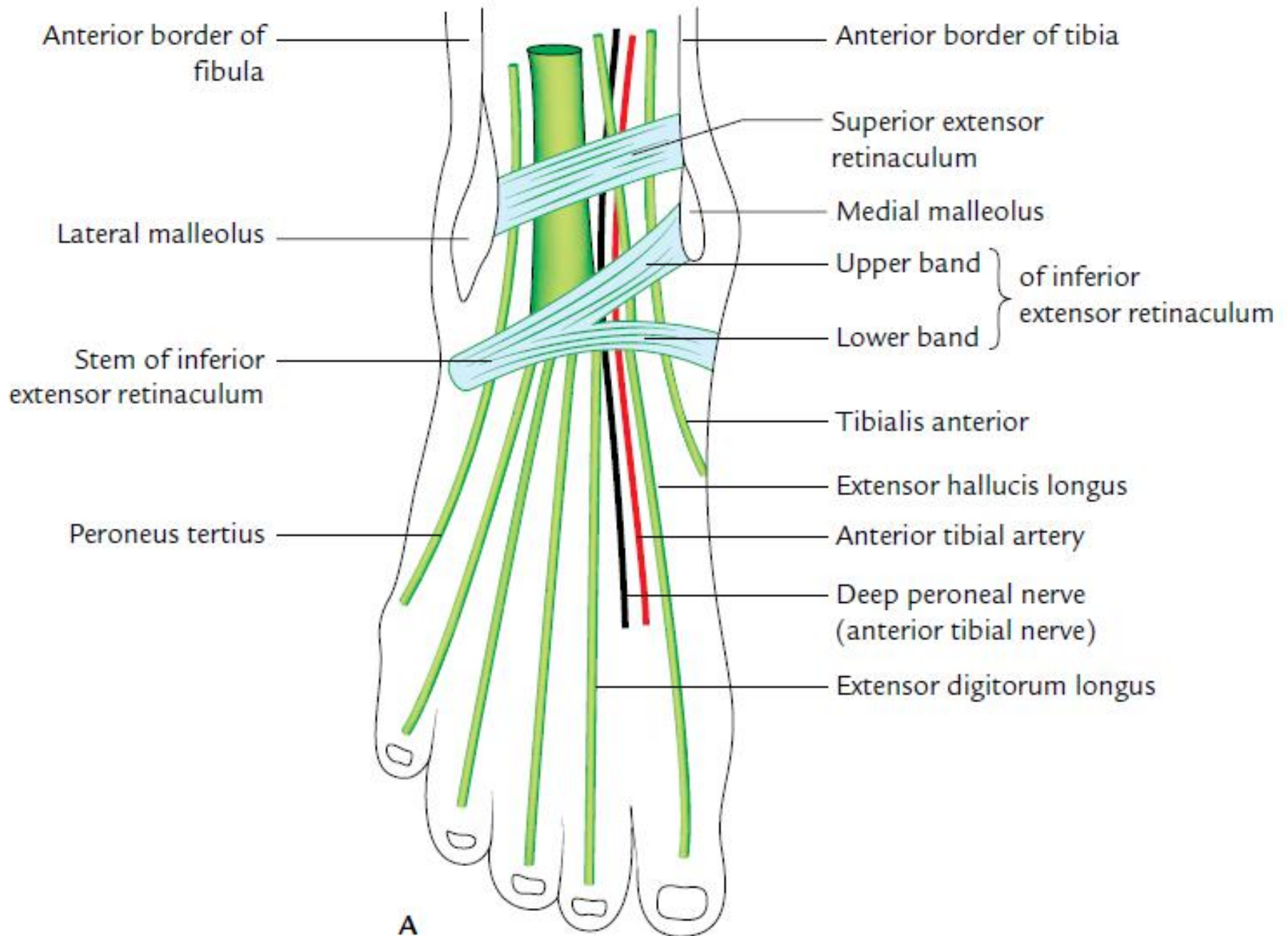
Superficial Veins

1. **Dorsal venous arch**-- proximal parts of the metatarsals
2. **Dorsal digital veins** → two veins joins → **dorsal metatarsal vein** → **dorsal venous arch**.
- **dorsal digital vein** (medial side) + **dorsal venous arch** → **great saphenous vein**
- **dorsal digital vein** (lateral side) + **dorsal venous arch** → **small(short) saphenous vein**

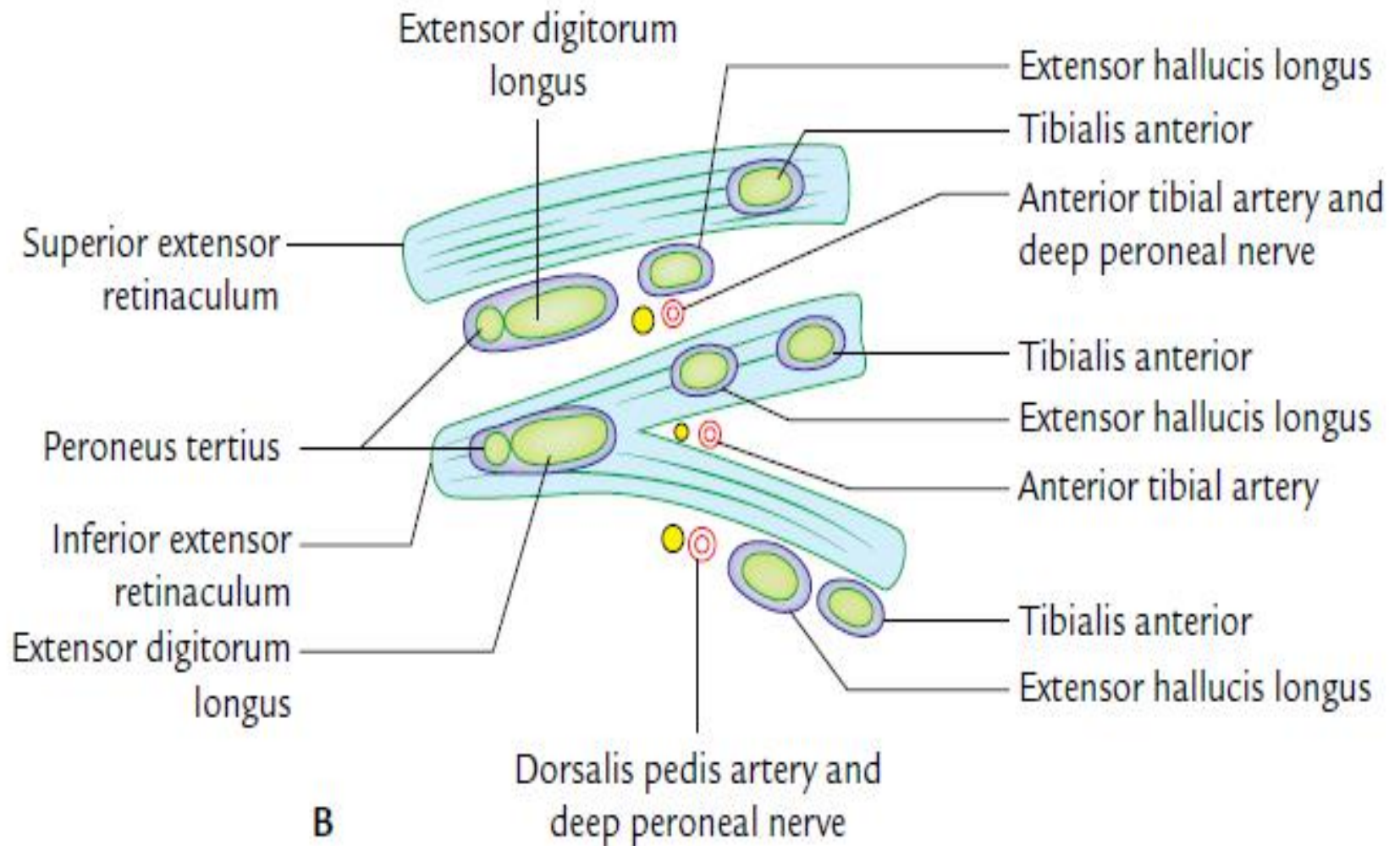


RETINACULA IN FRONT OF THE ANKLE

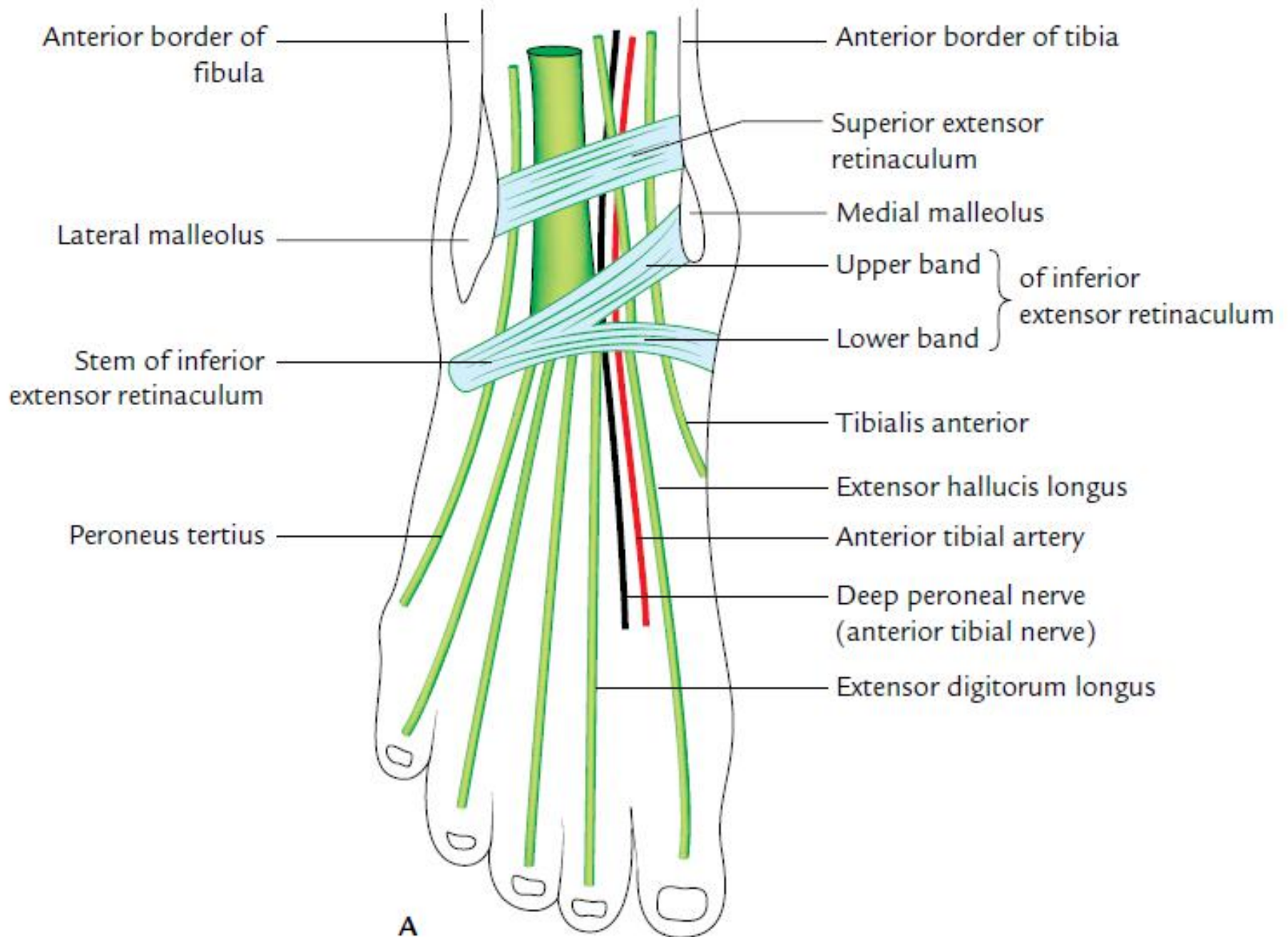
- **Superior Extensor Retinaculum**
- It is a broad band of the deep fascia, just above the ankle joint. Vertically it is about 1.5 inches wide.
- **Attachments**
 - Medially** → lower part of anterior border of the tibia.
 - Laterally** → lower part anterior border of the fibula.



- *Relations*
- Medially → Splits to enclose the tendon of **tibialis anterior** with its synovial sheath
- **Extensor hallucis longus**, **anterior tibial artery**, **deep peroneal nerve**, **extensor digitorum longus**, and **peroneus tertius** pass deep to the retinaculum. Tendons of these muscles are not surrounded by the synovial sheaths

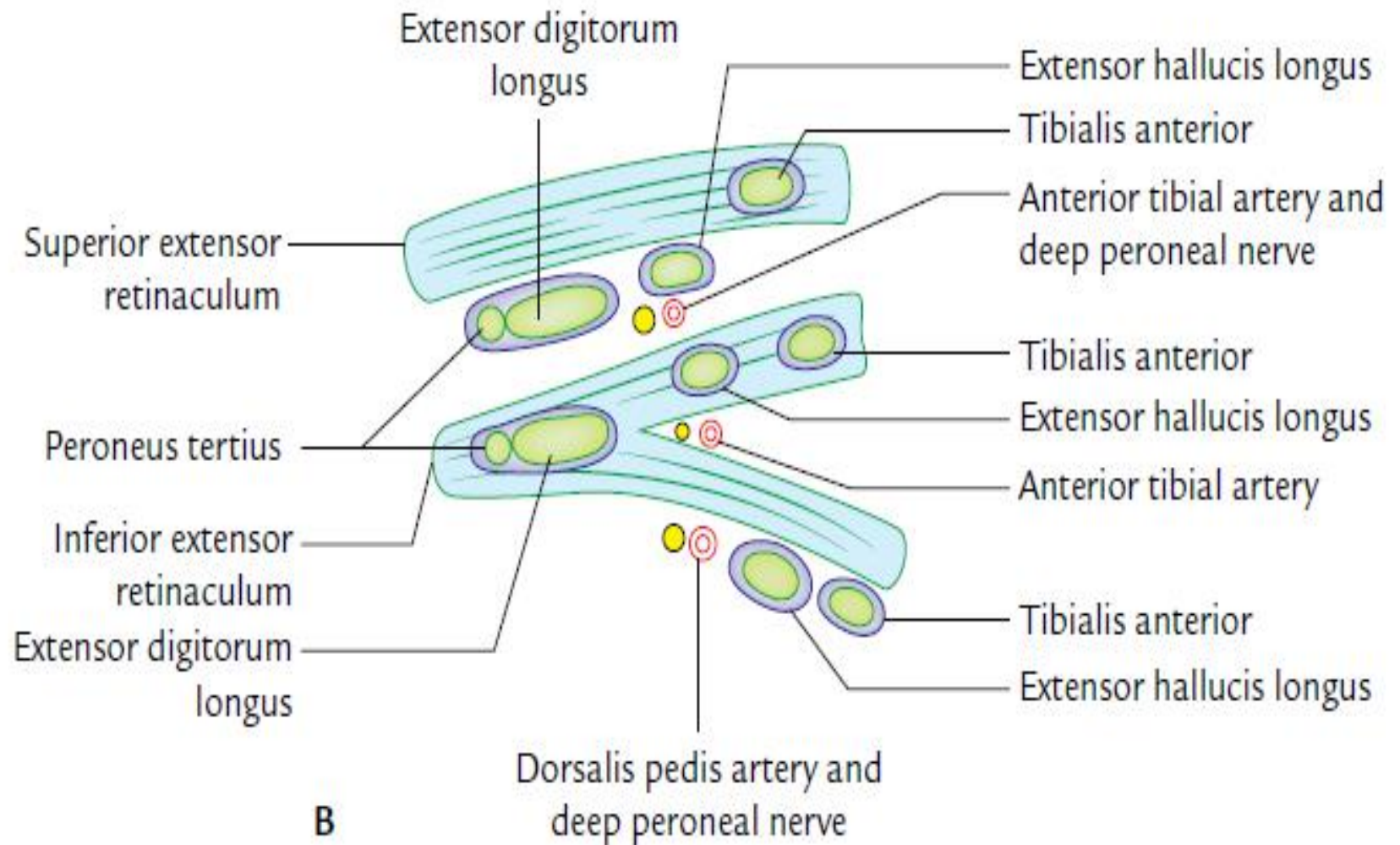


- **Inferior Extensor Retinaculum**
- Is Y-shaped,
- ***Attachments***
- ***Laterally*** → Base to the lateral side of the upper surface of the calcaneus
- ***Medially*** →
- Upper arms to the medial malleolus
- Lower arm attaches to the medial side of the plantar aponeurosis



- ***Relations***

- *Stem of Y* forms a loop around the tendons of **extensor digitorum longus** and **peroneus tertius** with their common synovial sheath
- *Upper band of Y splits to enclose the tendons of* **tibialis anterior** and **extensor hallucis longus**
- The **anterior tibial artery** and **deep peroneal nerve** pass deep to it.
- *Lower band of Y passes superficially to the tendons* of **tibialis anterior** and **extensor hallucis longus**.

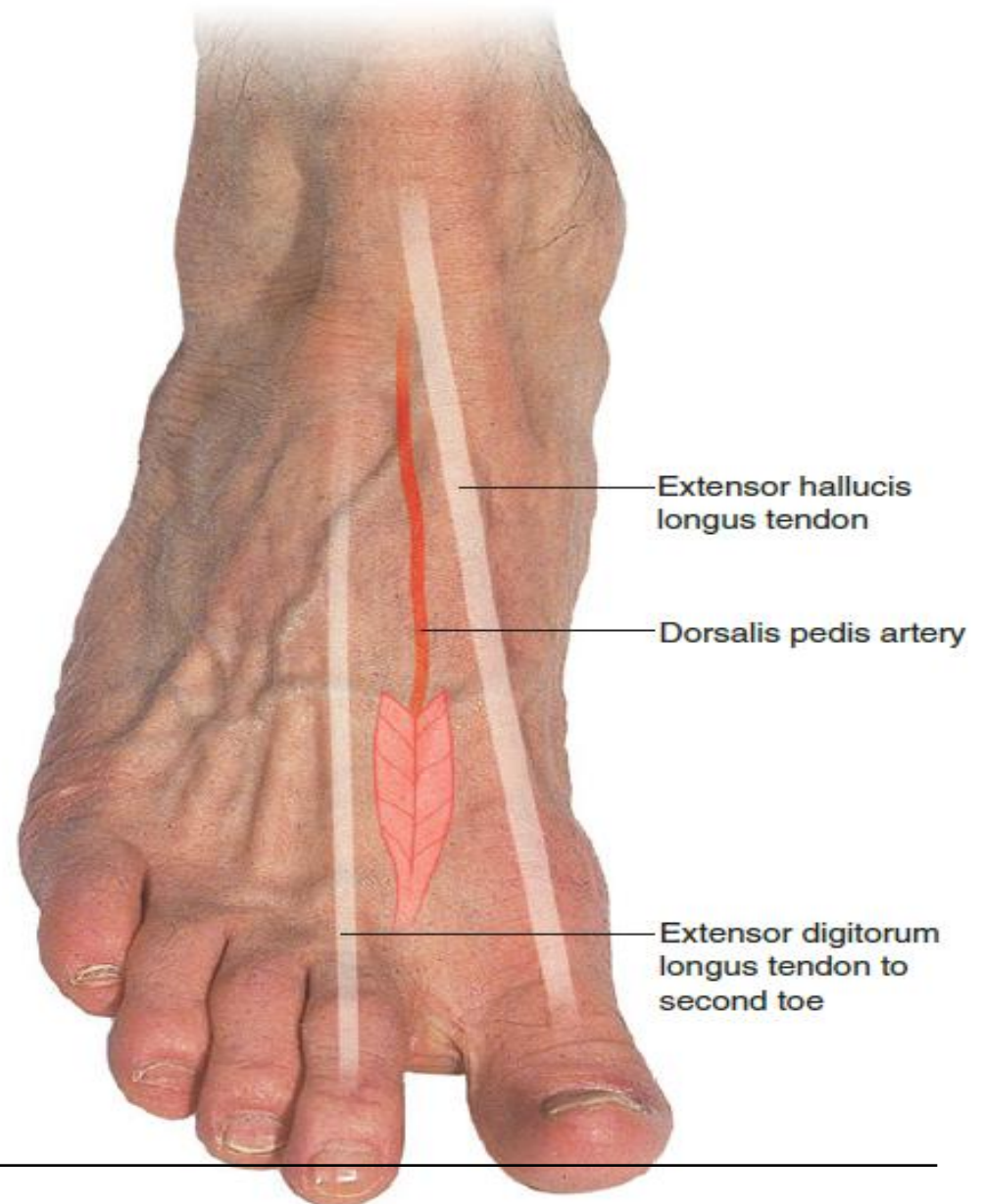


- **Anterior tibial compartment syndrome/shin splints (Fresher's syndrome):**
- **It occurs due to→**
- Overexertion of the muscles of the anterior compartment
- When the untrained persons who lead a sedentary life are asked to walk or run for long distances.
- Shin splints also occur in trained runners who do not warm-up.

- Muscles of the compartment swell → may impede venous return → accumulation of more fluid inside the compartment → increased pressure compress the anterior tibial artery → reducing the blood supply to the muscles → leading to ischemia & pain.
-
- It is frequently seen in freshers (newly admitted medical students/newly recruited army personnel) who are made to run excessively.
- This condition is also referred to as army **fresher's syndrome**

Dorsalis pedis artery pulse

- It can be easily felt **between** the tendons of extensor hallucis longus and first tendon of extensor digitorum longus



Deep Fibular Nerve Entrapment

- Excessive use of muscles supplied by the deep fibular nerve (e.g., during skiing, running, and dancing) may result in muscle injury and edema in the anterior compartment.
- This entrapment may cause compression of the deep fibular nerve and pain in the anterior compartment.
- Compression of the nerve by tight-fitting ski boots, for example, may occur where the nerve passes deep to the inferior extensor retinaculum and the extensor hallucis brevis .

- Pain occurs in the dorsum of the foot and usually radiates to the web space between the 1st and 2nd toes.
- Because ski boots are a common cause of this type of nerve entrapment, this condition has been called the “**ski boot syndrome**”;
- The syndrome also occurs in soccer players and runners and can also result from tight shoes