ANATOMY OF THE

Lower Limb

Professor

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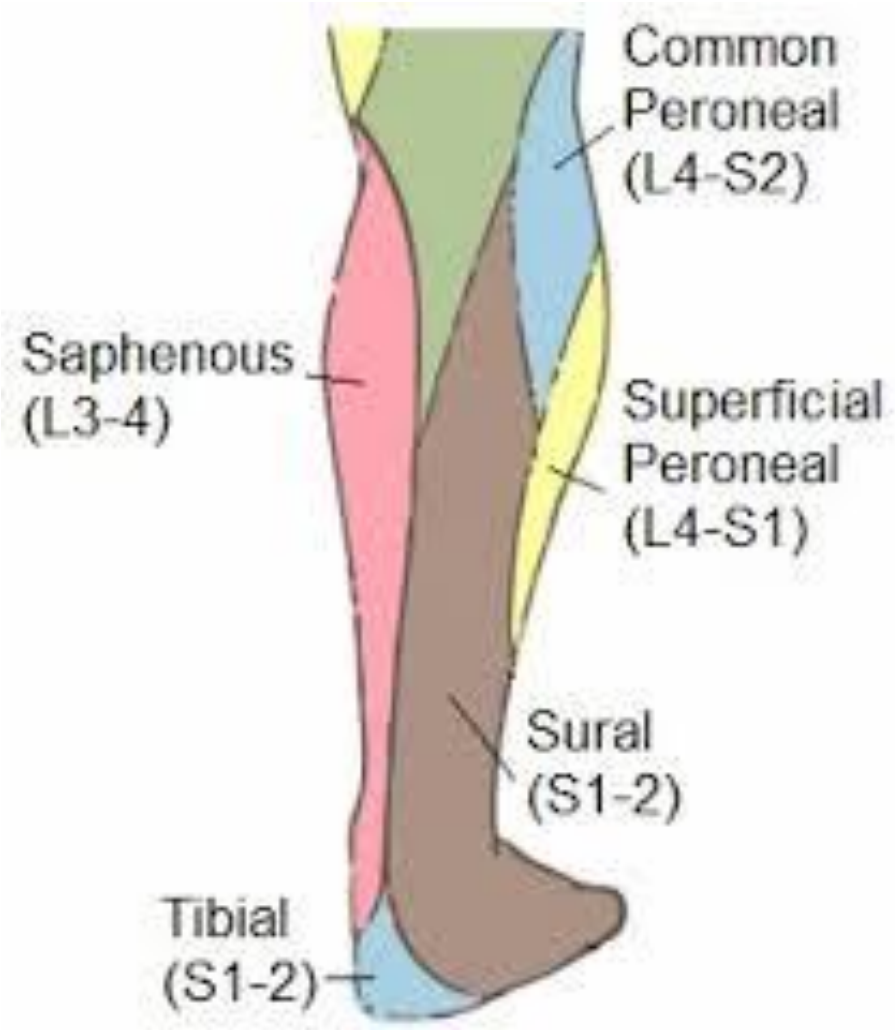
The calf

- To define the compartments of the leg
- To describe the calf muscles & layers
- To follow the tibial nerve & posterior tibial artery in the leg
- To relate the deep & superficial veins of the leg & determine their pathology

Superficial structures:

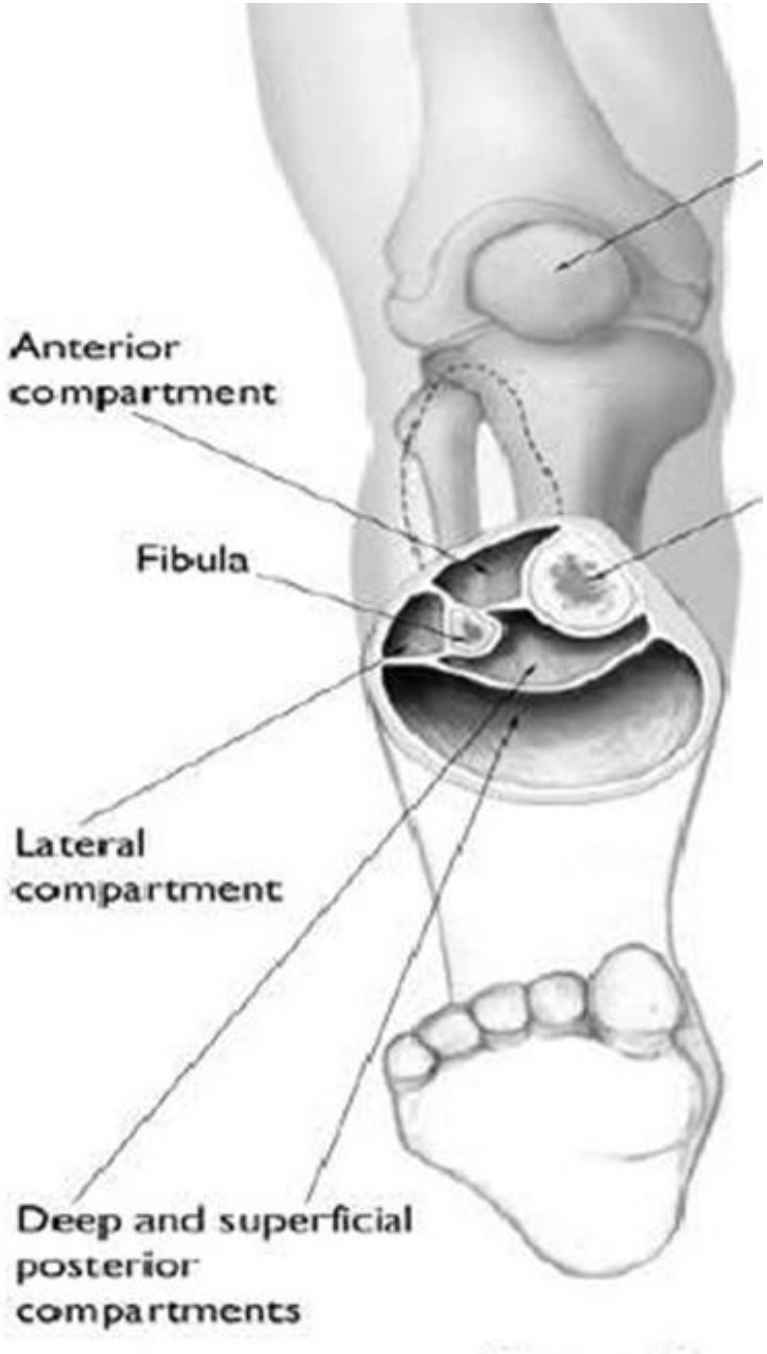
- **Small saphenous v**
- **Sural nerve**

Cutaneous innervation



The leg fascia:

- **Fascia lata continues over the leg as the crural fascia**
- **Superiorly the fascia is attached to the bones in the upper leg, reinforced by the patellar retinacula**
- **Lower down it is attached to the malleoli & posterior surface of calcaneus**
- **The fascia sends 2 intermuscular septa, anterior & posterior dividing the leg into 3 compartments, flexor (superficial & deep), extensor & peroneal**

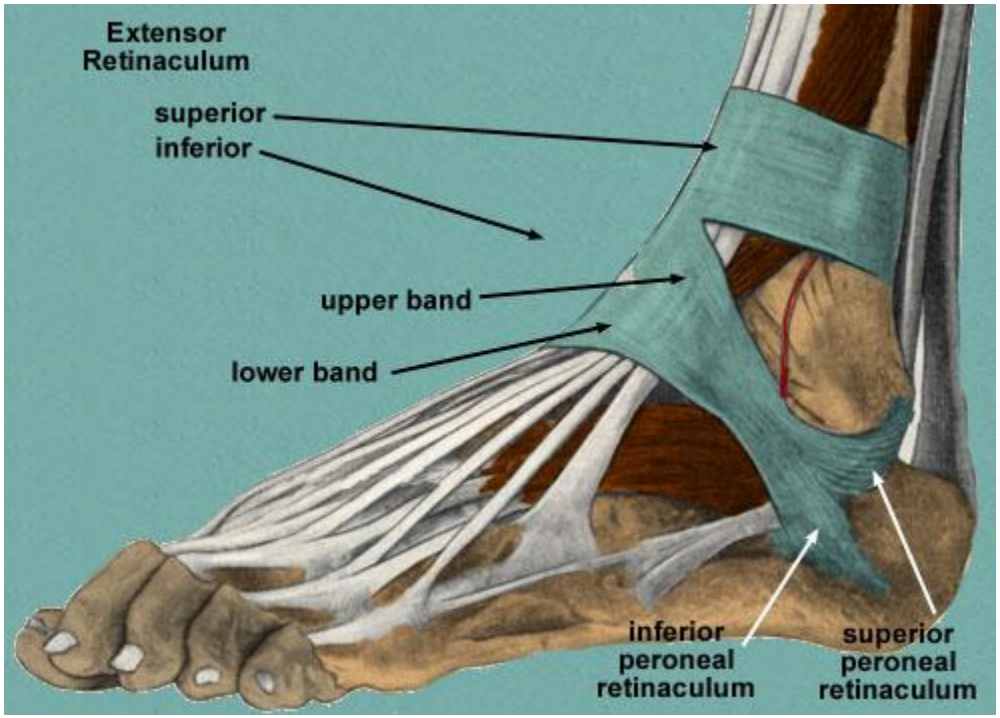


Ankle retinacula:

Around the ankle joint the crural fascia is thickened as many retinacula:

1- superior extensor R; between tibia & fibula

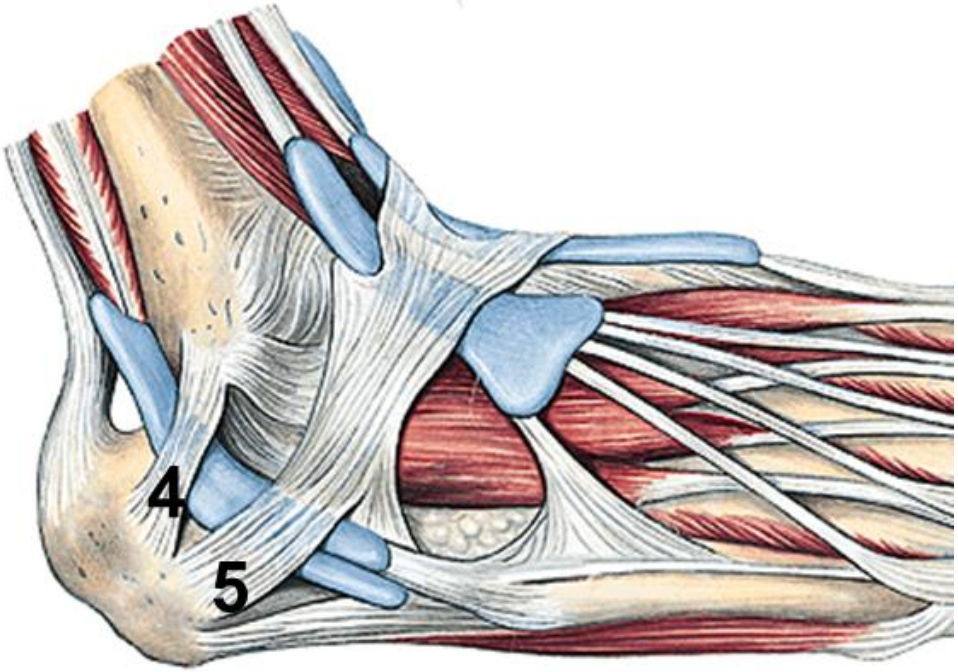
2- Inferior extensor R; Y-shaped, the stem is attached to calcaneus, the upper limb to medial malleolus & the lower limb blends medially with the fascia of the sole

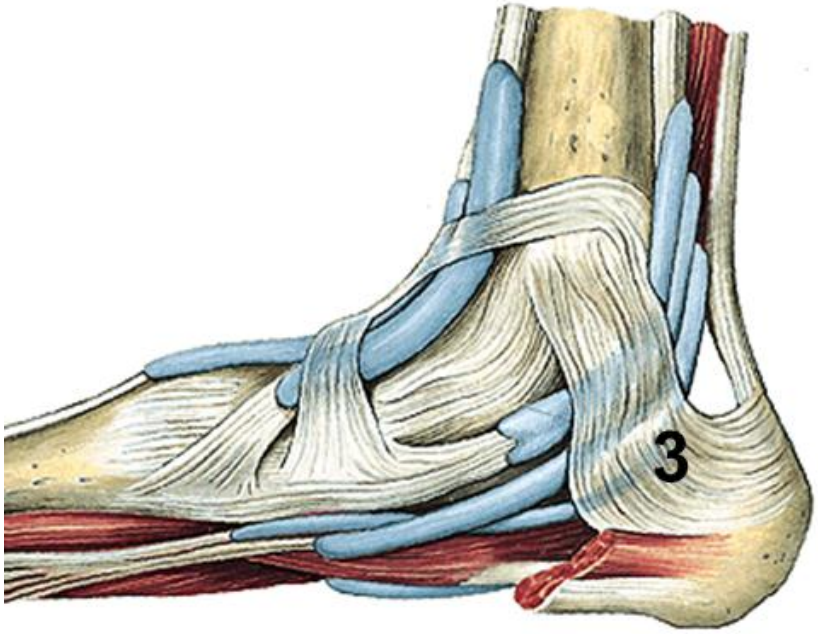


3- Flexor R; between the medial alleolus & medial calcaneal tubercle

4- Superior peroneal R; between lateral malleolus & lateral surface of calcaneus

5- Inferior peroneal R; lies on the side of calcaneus





Superficial group of muscles (Act on ankle)

Muscle	Origin	Insertion	Innervation	Function
Gastrocnemius (Top gear)	Medial & lateral heads from back of femur above corresponding condyles	Via calcaneal tendon, to the back of calcaneus	Tibial nerve S1,2	- Plantarflex the foot - Gn flexes the knee
Plantaris	Lateral supracondylar line of femur			
Soleus (Bottom gear)	- Soleal line - Fibular head - Tendinous arch in between			

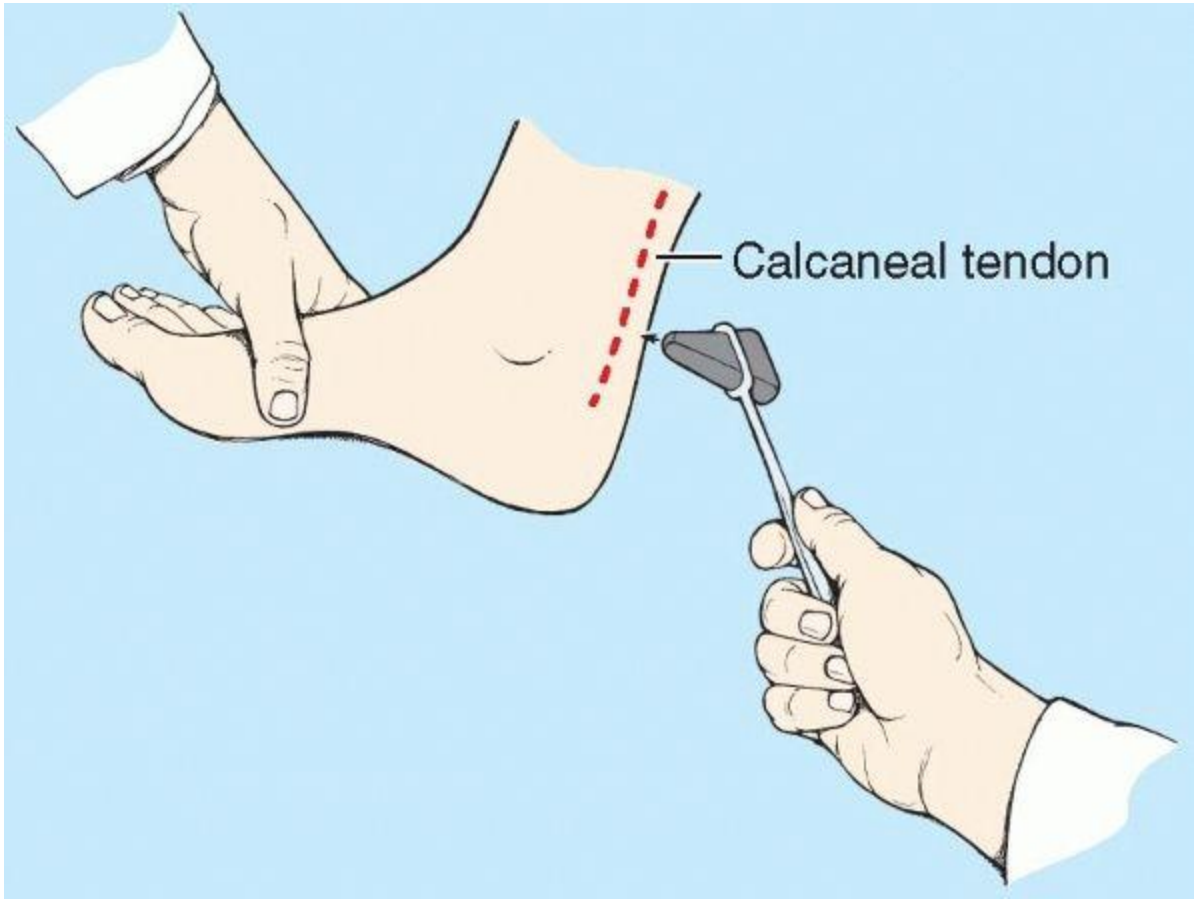
The peripheral heart:

-Soleus is a powerful muscle which participate in venous return

-When venous stagnation takes place it reflexly contracts (with other muscles of yawning) to pump blood back to the circulation

Ankle jerk reflex

S1-2



Deep group of muscles
(Act on the foot)

Muscle	Origin	Insertion	Innervation	Function
Tibialis posterior	Interosseous membrane & adjacent bony borders	- Navicular tuberosity - Tarsal * metatarsals	Tibial nerve L4-S1	- Inversion - Support the foot arch
Flexor digitorum longus	Posterior surface of tibia (below soleus)	Distal phalanges of lateral 4 toes		Flexor lateral 4 toes
Flexor hallucis longus	Posterior surface of fibula	Distal phalanx of big toe		Flexor big toe

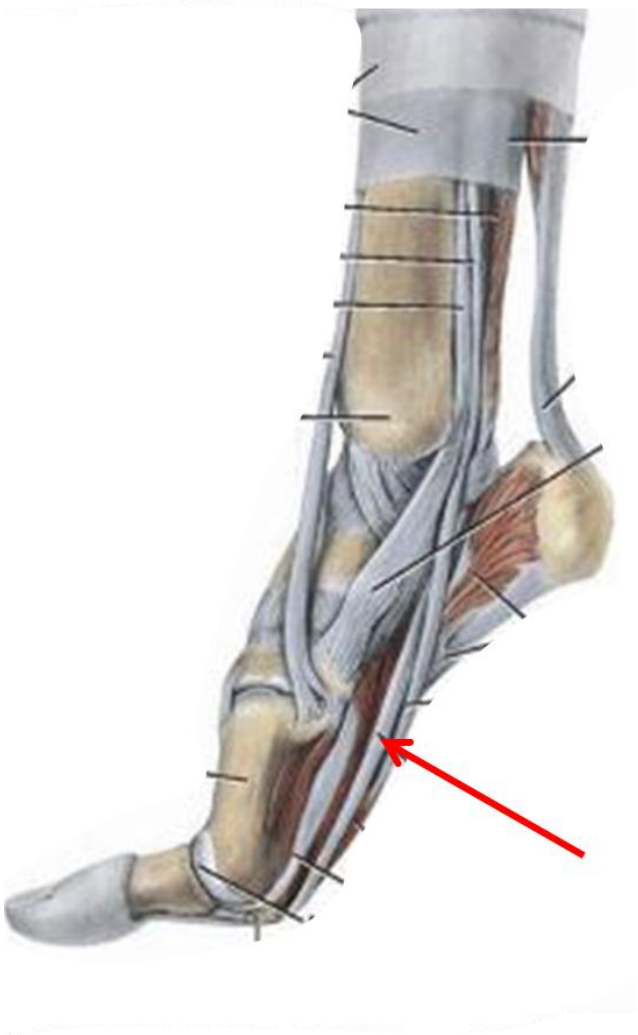
Notes:

- **Tibialis posterior tendon after passing deep to the flexor R inserted by slips as follows:**

- **Main part in the navicular tuberosity**
- **Plantar portion is inserted into the cuboid, cuneiforms & bases of 2 & 3 metatarsals**

Notes:

- **FHL & FDL tendons cross over in the sole**
- **FHL tendon grooves the talus & calcaneus**
- **FHL is the take off muscle**



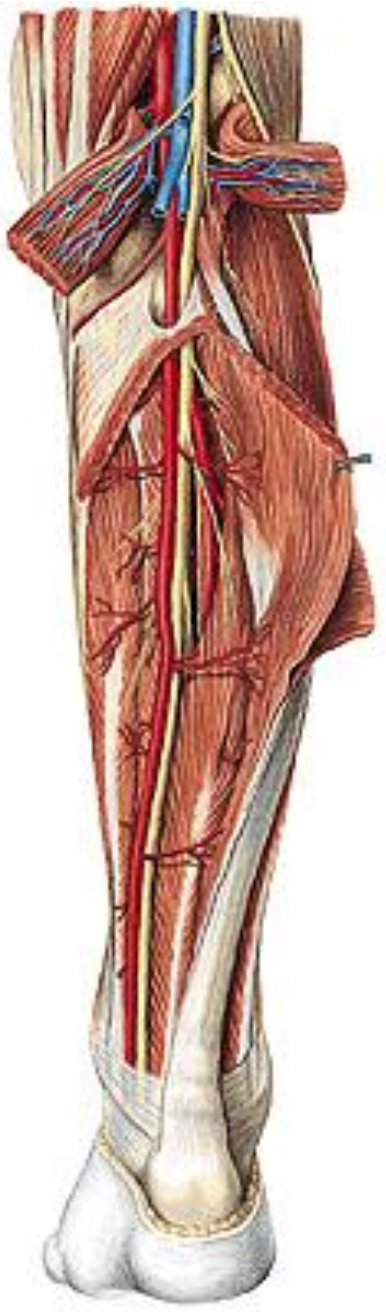
The posterior tibial artery:

-**The continuation of popliteal a. after giving the anterior TA**

-**Descends deep to soleus, where at the lower leg it lies behind the medial malleolus**

-**Ends in the foot by dividing into medial & lateral planter arteries**

-**Accompanied by two deep veins & the tibial nerve**



Branches:

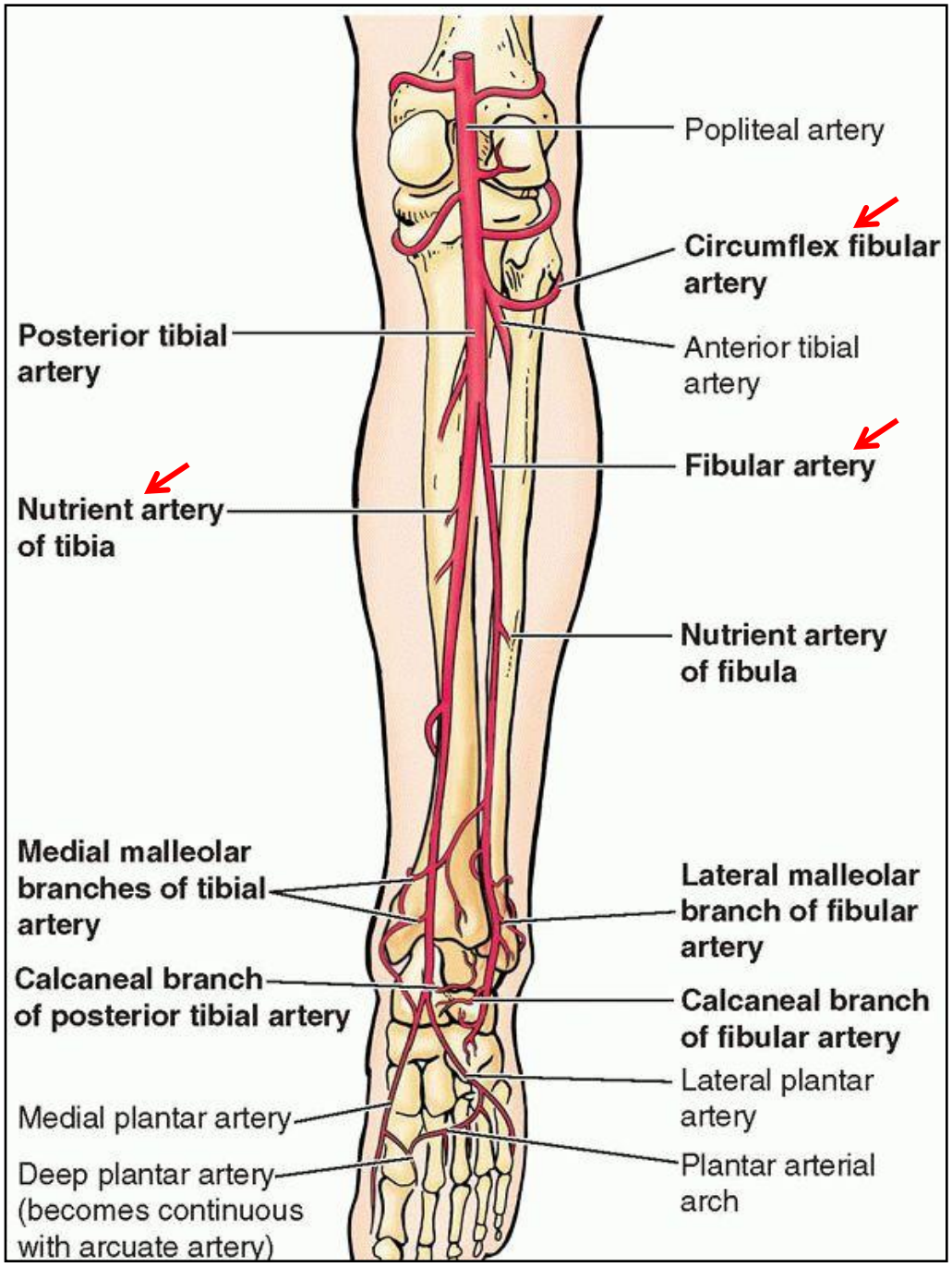
1- Circumflex fibular a.; einds around fibular neck to anastomose with anterior tibial recurrent & genicular arteries

2- Posterior tibial recurrent a.; to the anastomosis around the knee

3- Peroneal artery

4- Muscular arteries

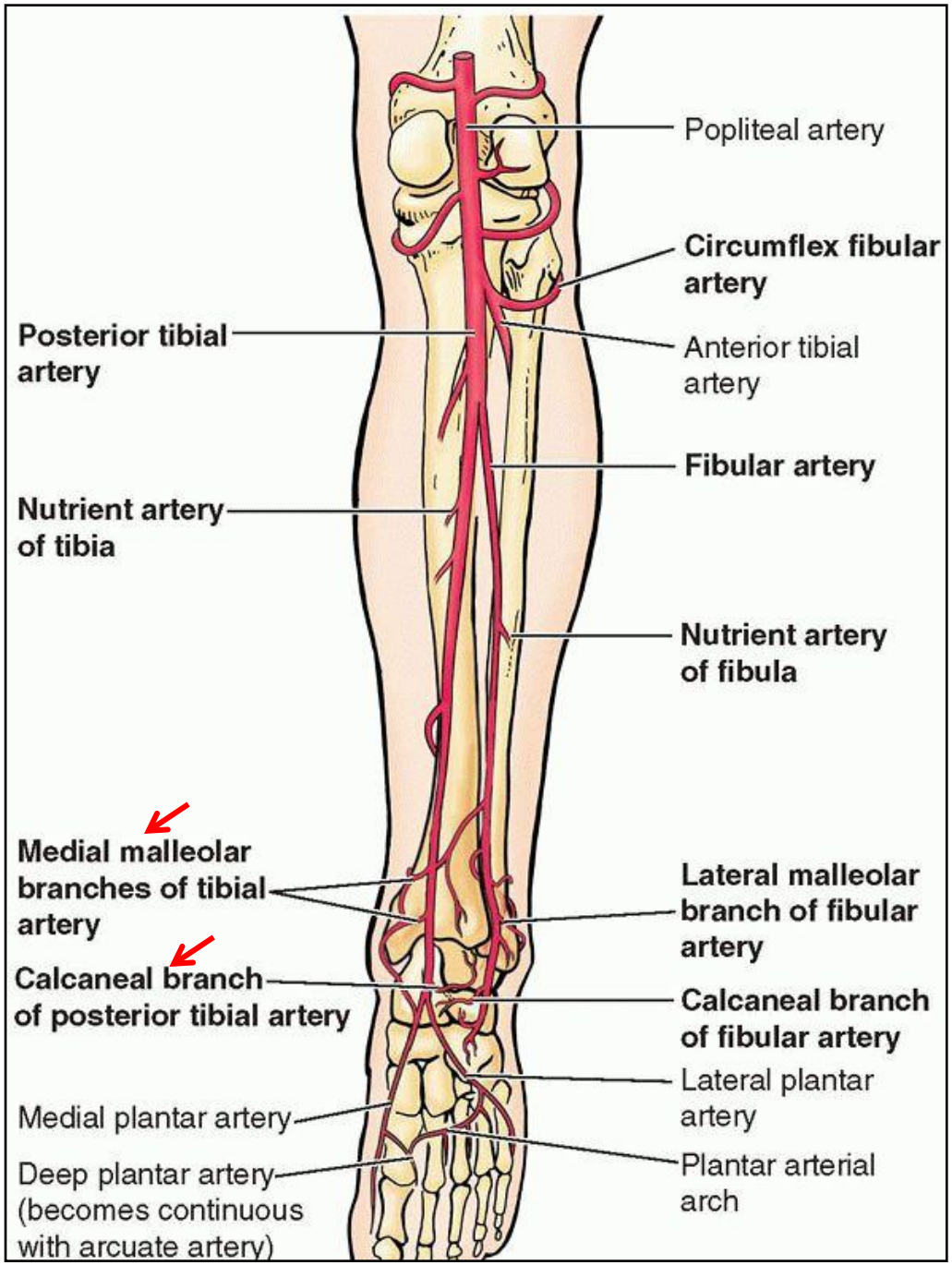
5- Nutrient artery to the tibia



6- Perforating arteries; 5 in number, perforate the deep fascia to supply superficial structures & skin

7- Medila malleolar artery; to the malleolar network

8- Medial calcaneal branches; to the skin of the heel & adjacent areas



Veins of the leg:

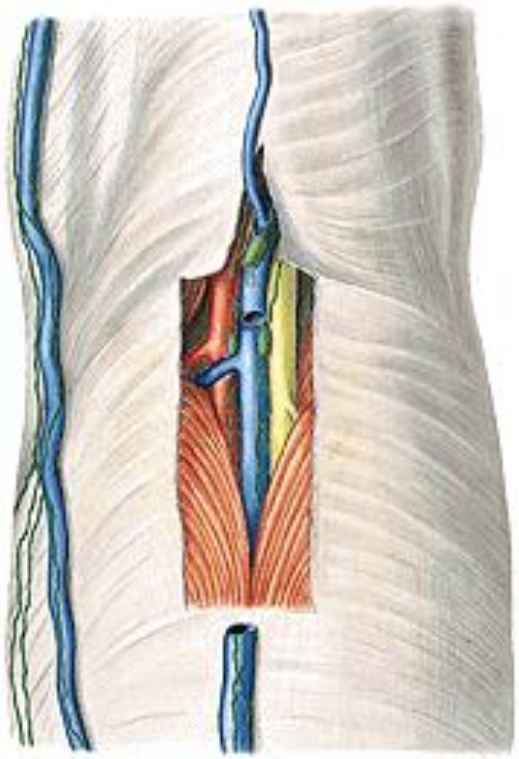
-Saphenous veins are superficial

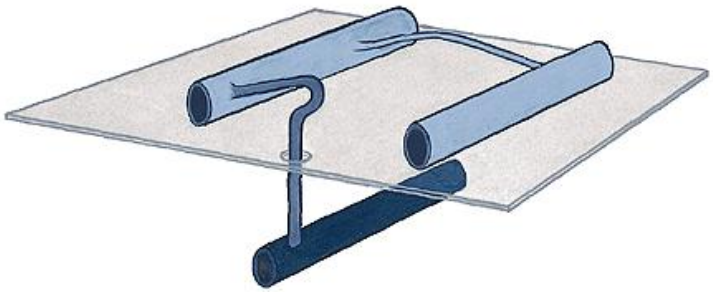
-Two deep veins accompany the PTA

-These veins are valved to aid venous return

-Perforating veins communicate these veins with superficial ones

-Perforating veins valves permit blood flow from superficial to deep veins





Deep venous thrombosis

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Destroys perforating veins valves

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Varicose veins

The tibial nerve:

-Lies at the same plane of the artery, superficial to it

-The nerve passes underneath the flexor retinaculum between FHL tendon & PTA to enter the foot

-It divides into its 2 terminal divisions (medial & lateral plantar) beneath the flexor retinaculum

-**Branches:**

1- Cutaneous

2- Muscular; to all calf muscles

3- Medial calcaneal branches; to supply the skin over the medial aspect of the heel

4- Articular; to the knee & ankle joints

Structures deep to the FR (The tarsal tunnel)