

ANATOMY OF THE

Lower Limb

Professor

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- * The Leg:

- Extensor compartment

- Peroneal compartment

- * Dorsum of the foot

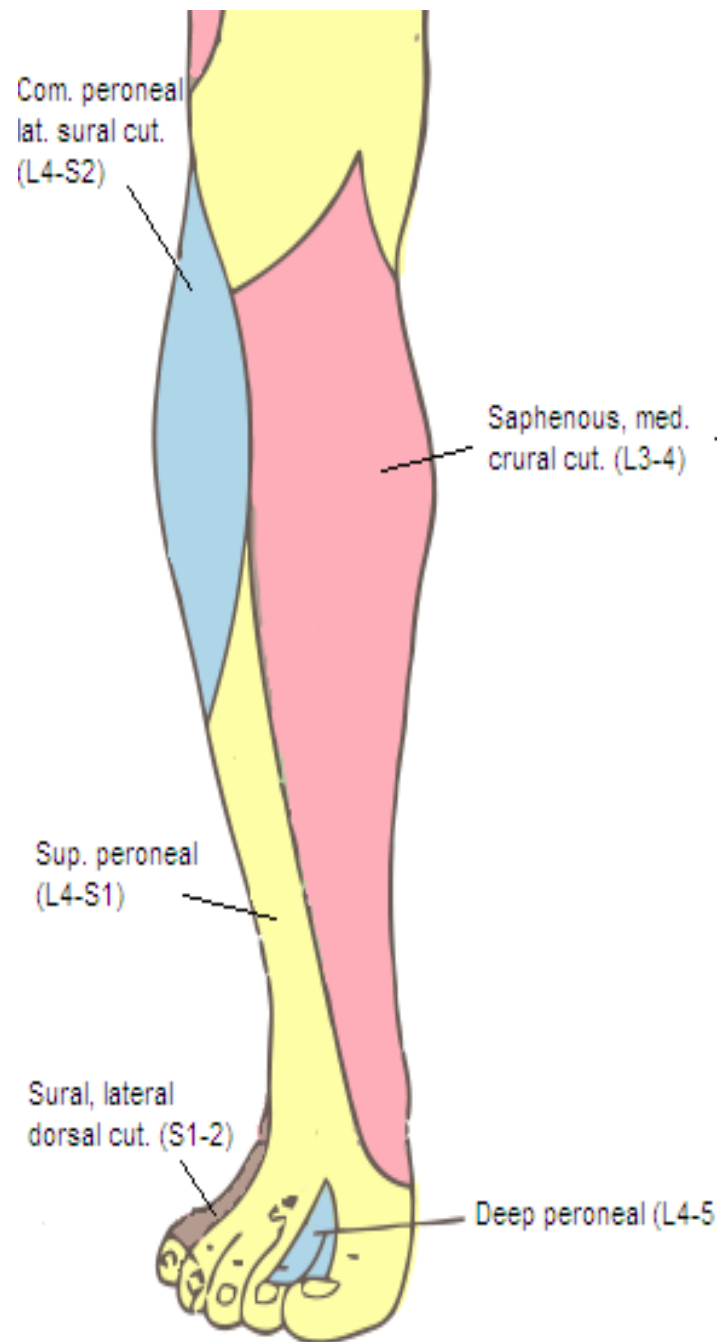




Objectives

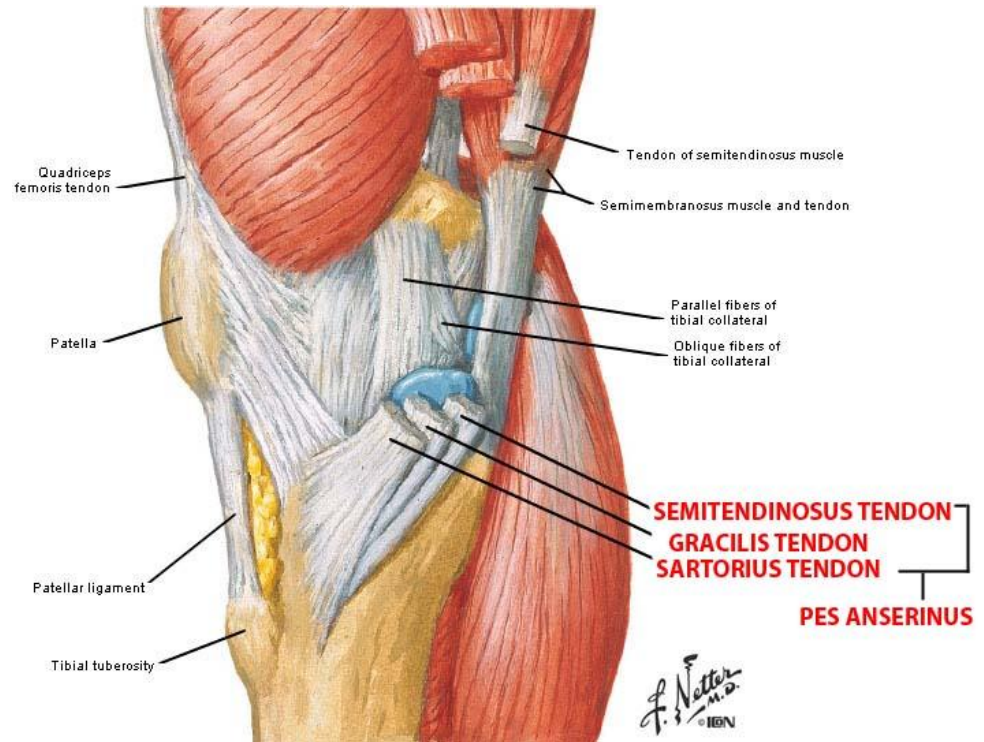
- **To describe the extensor & peroneal muscles**
- **To define the anterior tibial vessels**
- **To explore the superficial & deep peroneal nerves & main pathologies affecting them in the region**
- **To describe the dorsum of the foot**

Cutaneous innervation:



The shin:

- The subcutaneous surface of the tibia forms the anteromedial aspect of the leg
- Apart from partial course of the saphenous NV, the only important structure here is the pes anserinus
- **Pes anserinus** is the successive insertions sartorius, gracilis & semitendinosus on the superomedial part of the tibia
- A bursa separates these tendons called **bursa anserina**



Muscles of the extensor compartment:

Tibialis anterior:

Origin	Insertion	Innervation	Function
Lateral surface of tibia & interosseous membrane	<ul style="list-style-type: none">- Inferior surfaces of medial cuneiform- 1st metatarsal	Deep fibular (peroneal) nerve L4,5	<ul style="list-style-type: none">- Dorsiflexion of foot- Inversion of foot- Support of medial arch



Extensor digitorum longus:

Origin	Insertion	Innervation	Function
<ul style="list-style-type: none">- Proximal half of fibula- Related surface of lateral tibial condyle	<p>Via dorsal digital expansions into distal & middle phalanges of lateral four toes</p>	<p>Deep fibular (peroneal) nerve L4,5</p>	<ul style="list-style-type: none">-Extension of lateral four toes and-Dorsiflexion of foot



Extensor hallucis longus:

Origin	Insertion	Innervation	Function
Middle half of fibula & interosseous membrane	Distal phalanx of great toe (via an extensor hood)	Deep fibular (peroneal) nerve L4,5	-Extension of great toe -Dorsiflexion of foot



Peronius tertius:

Origin	Insertion	Innervation	Function
Distal part of fibula	Base of 5 th metatarsal	Deep fibular (peroneal) nerve L4,5	- Dorsiflexion - Eversion

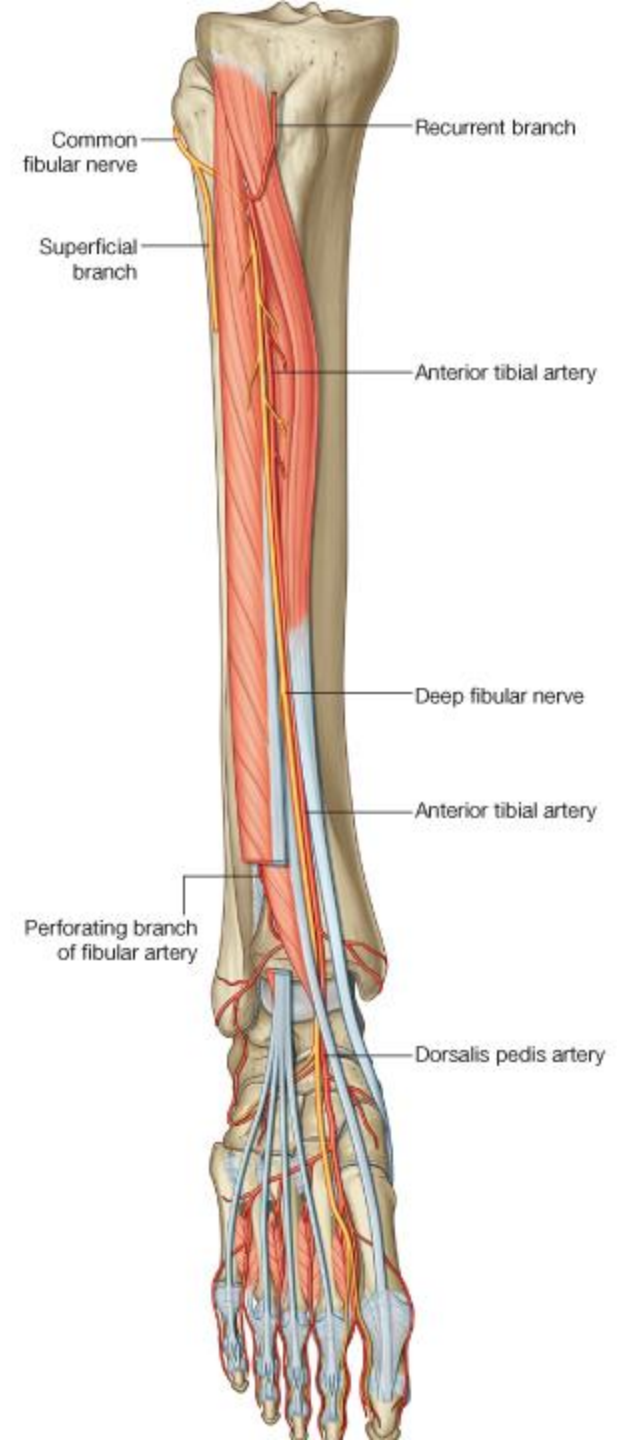


The anterior tibial artery:

-After division of the popliteal artery, the ATA passes forward through the origin of tibialis posterior & over the interosseous membrane to reach the anterior compartment between TA & EDL

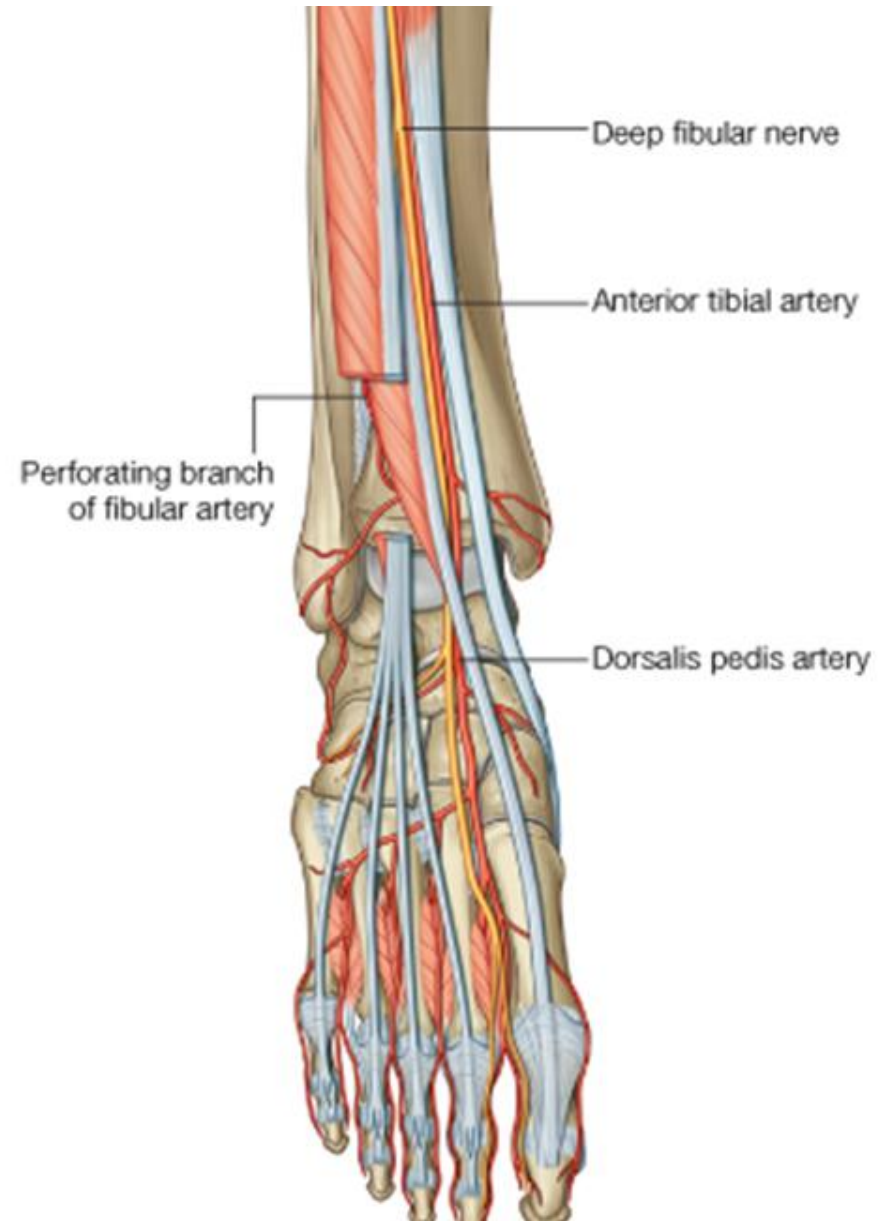
-When EHL arises, the ATA will lie between it & TA

-Just above the ankle, EHL crosses medially, here the artery will lie between the tendons of the 2 long extensors



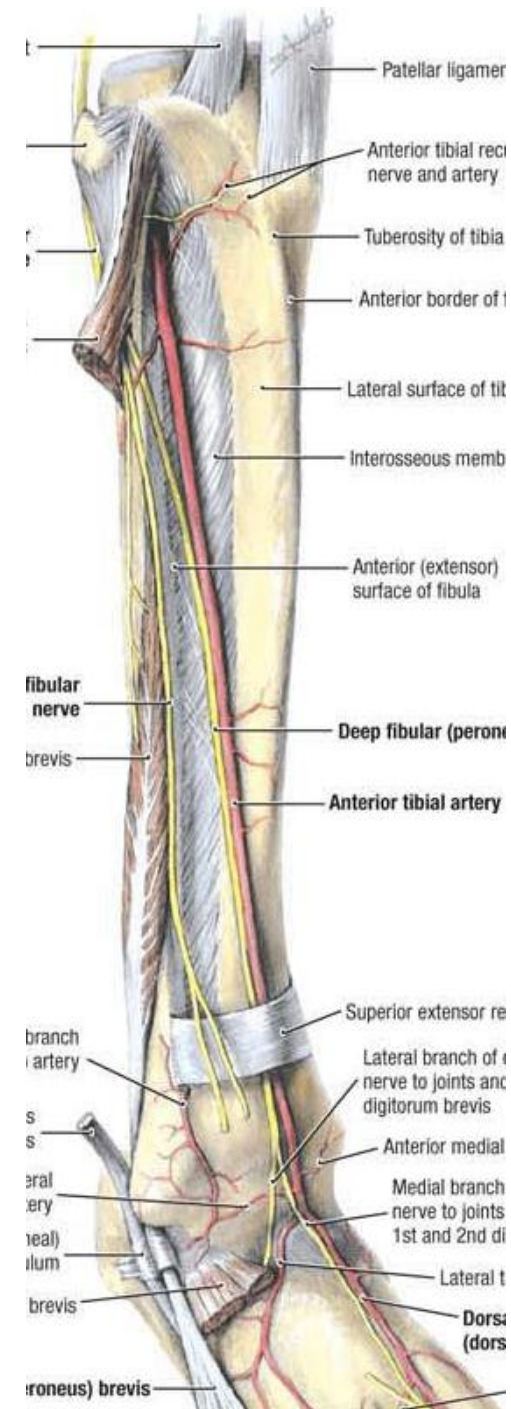
-Along its course it is accompanied by 2 veins, & the deep peroneal nerve on its lateral side

-After crossing below the extensor retinacula, the artery enters the foot midway between the 2 malleoli as the dorsalis pedis artery



Branches:

- 1- Anterior tibial recurrent a.; shares in the patellar plexus
- 2- Anterior medial & lateral malleolar; to the ankle & overlying skin
- 3- Sometimes the posterior tibial recurrent & circumflex fibular arteries arise from it



The deep peroneal nerve:

- The common peroneal n. after winding around the fibular neck divides in the upper part of peroneus longus into superficial & deep peroneal nerves
- The deep peroneal nerve passes medially to the extensor compartment where it accompanies the ATA

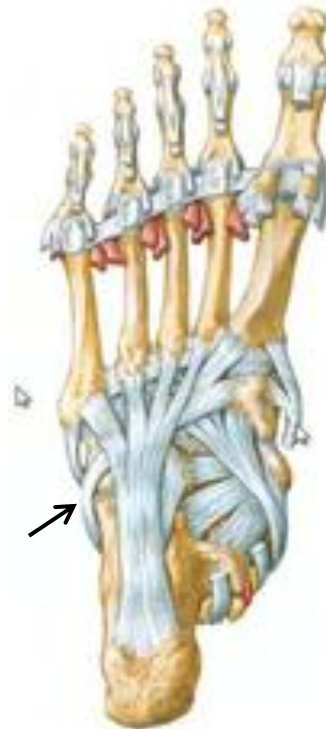
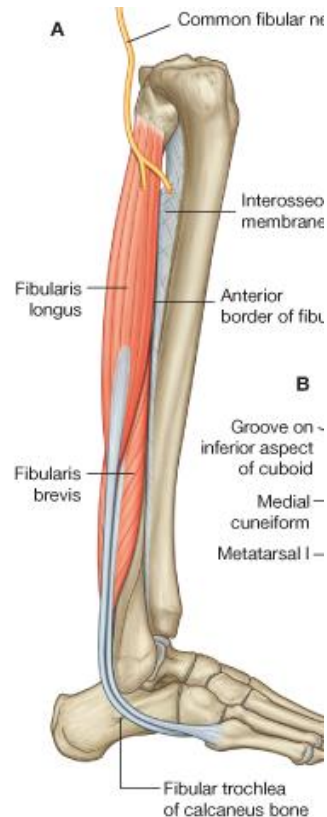


- It supplies all muscles of this compartment & tibio-fibular joints
- Divide on the dorsum of the foot into medial & lateral branches



Muscles of the lateral compartment

Muscle	Origin	Insertion	Innervation	Function
Fibularis (peroneus) longus	<ul style="list-style-type: none"> - Upper 2/3 of fibula - Lateral tibial condyle 	<ul style="list-style-type: none"> - Undersurface of medial cuneiform - 1st metatarsal 	Superficial fibular (peroneal) nerve L5-S2	<ul style="list-style-type: none"> - Eversion - Plantarflexion - Supports foot arches
Fibularis (peroneus) brevis	Lower 2/3 of fibula	Base of 5th metatarsal		Eversion of foot

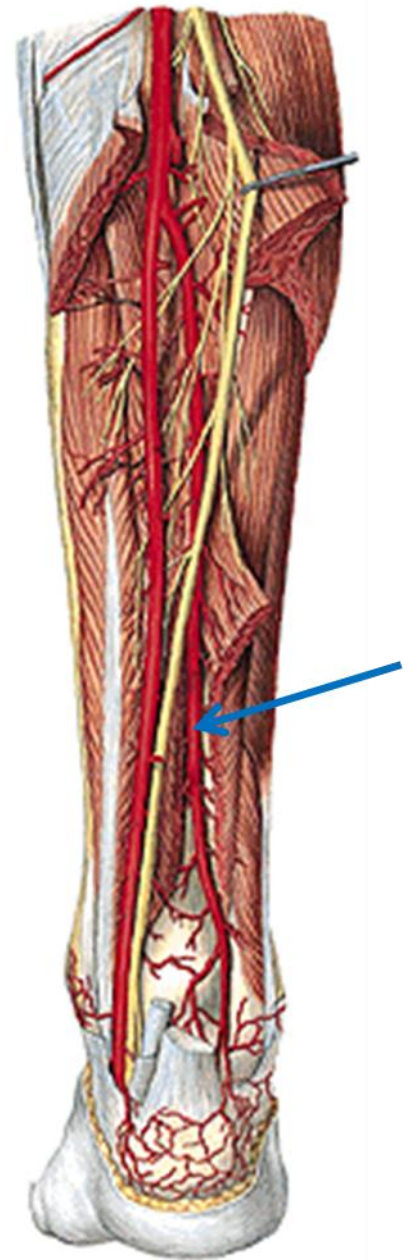
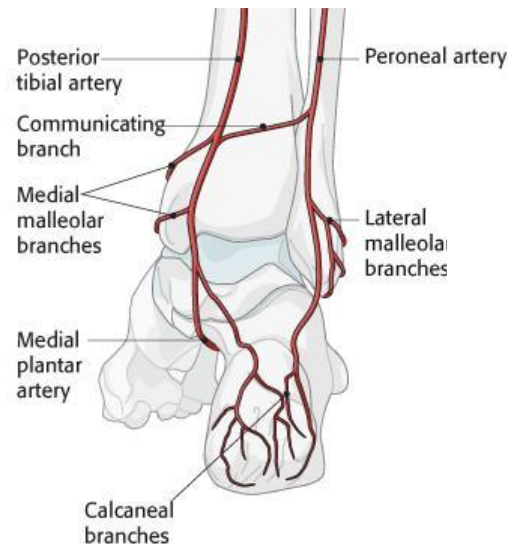


The peroneal artery:

- The principal source of blood to the lateral compartment
- Given from the PTA 2 cm below its origin
- Descends in the posterior compartment of the leg in the substance of FHL

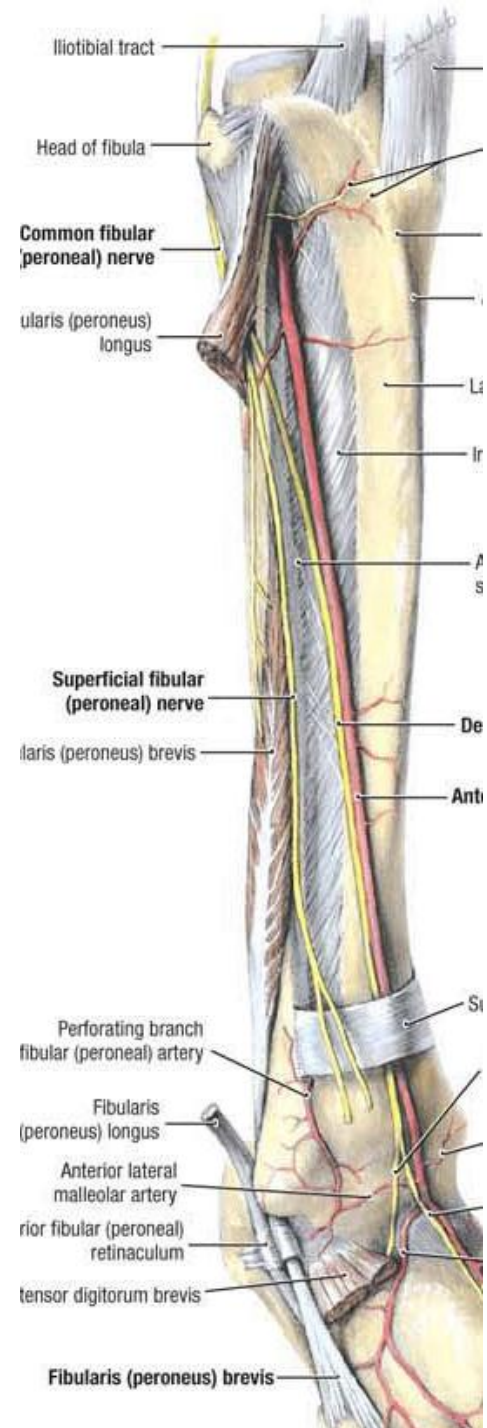
Branches:

- 1- Nutrient; to the fibula
- 2- Perforating branches; given distal to the interosseous membrane to enter the anterior compartment
- 3- Lateral malleolar a.; spread on the lateral aspect of the ankle supplying it & overlying skin
- 4- Lateral calcaneal branches



The superficial peroneal nerve:

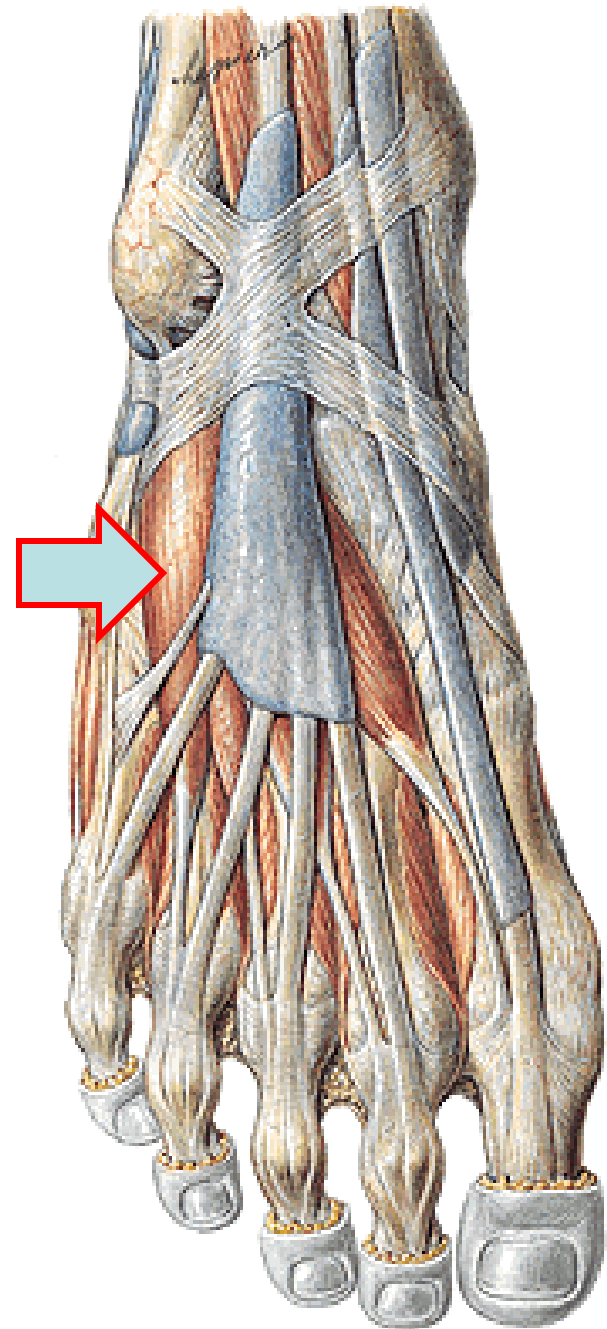
- Descends in the lateral compartment of the leg to supply both peronei
- It also supplies skin over the anterolateral aspect of the leg
- In the lower 1/3 of the leg it pierces the deep fascia to supply the dorsum of the foot by medial & lateral branches



The dorsum of the foot:

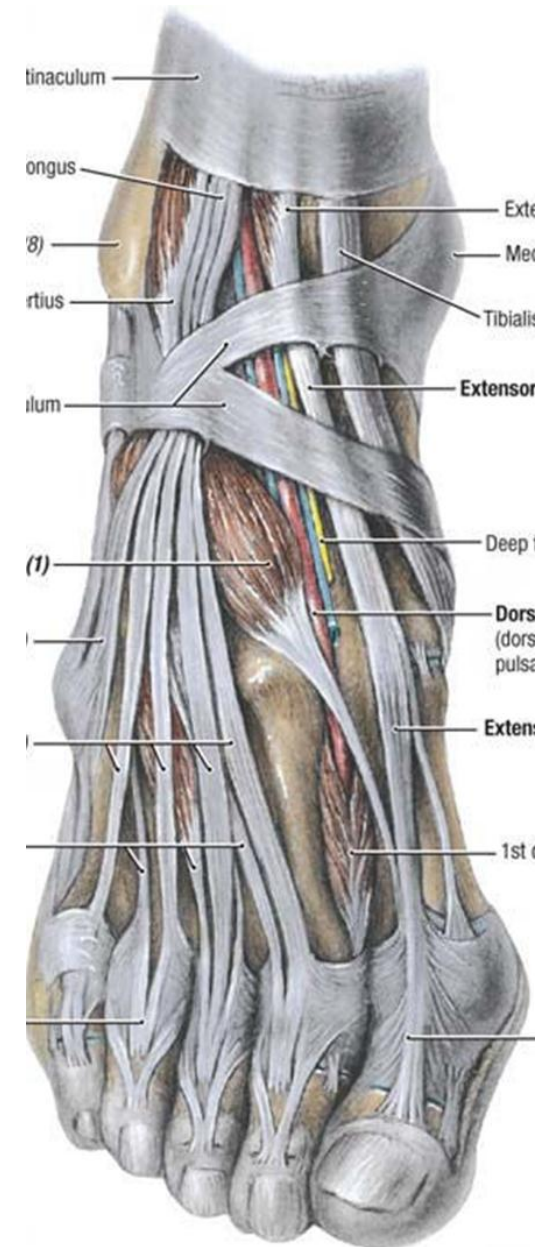
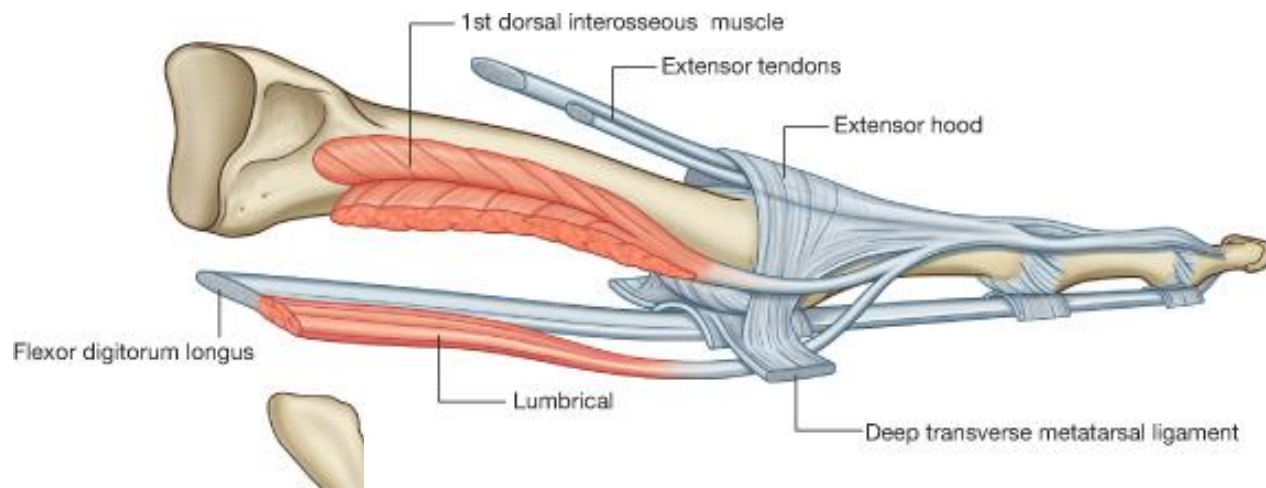
Extensor digitorum brevis:

- This thin muscle arises from the extensor retinacula & calcaneus
- The muscle divides into 4 slips for the medial 4 toes
- The most medial is called EHB & inserted into the proximal phalanx of the great toe
- The rest 3 go to the extensor expansion of the middle 3 toes
- Supplied by the deep peroneal nerve
- Aids in extension of the proximal phalanges



The extensor hoods:

- Each extensor hood is triangular in shape with the apex attached to the distal phalanx & the central region attached to the middle phalanx
- The corners of the hoods attach mainly to the deep transverse
- Many of the intrinsic muscles of the foot insert into the free margin of the hood on each side
- The attachment of these muscles allows the forces from these muscles to cause flexion of the MTPJ while at the same time extending the IPJ



or View

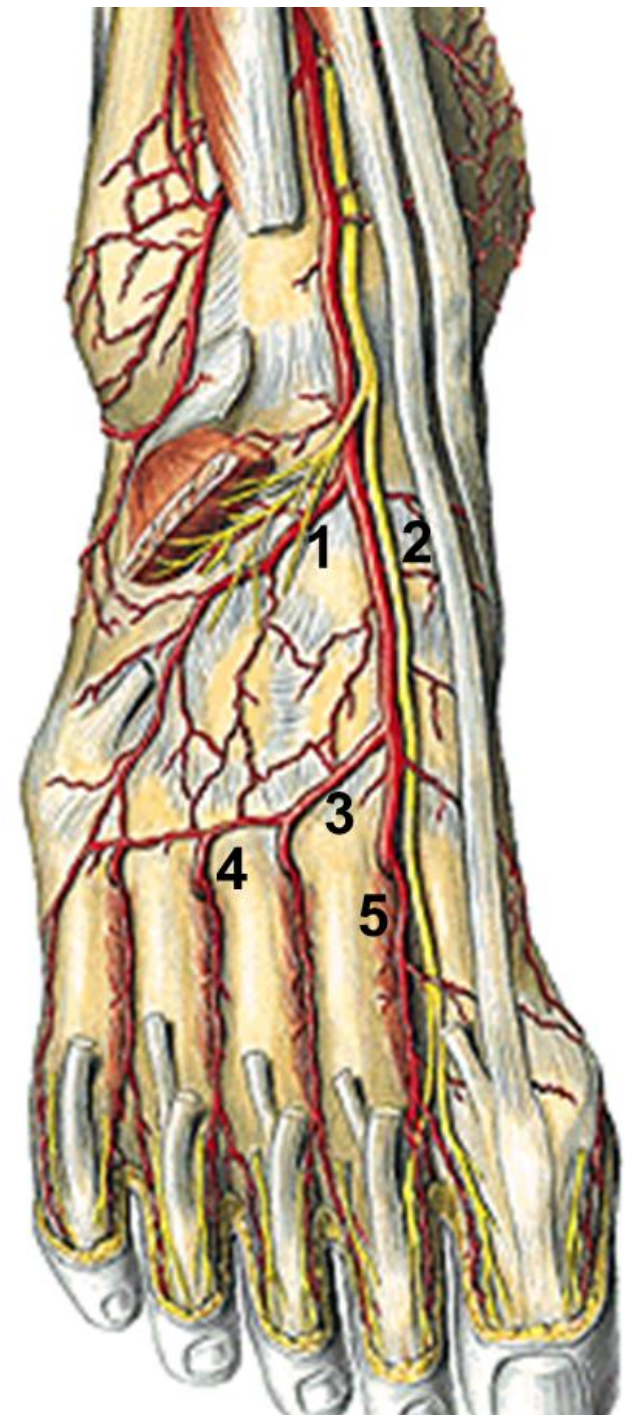
Dorsalis pedis artery:

- The continuation of ATA at the ankle joint
- The artery lies against bones & crossed by EHB muscle
- Accompanied by the deep peroneal nerve
- Dips between the 2 heads of 1st dorsal interosseous muscle as the deep plantar artery to join the deep plantar arch in the sole



Branches:

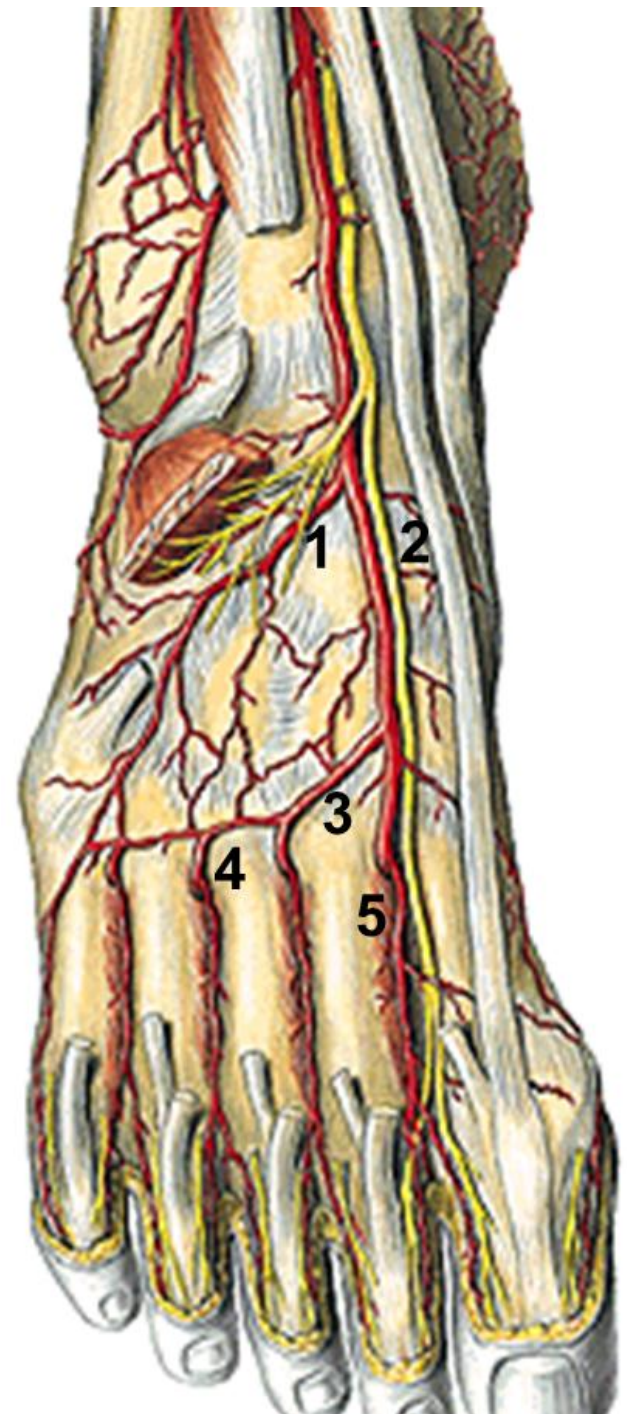
- 1- The lateral tarsal a.; supplies structures in the region & anastomoses with the lateral malleolar & arcuate arteries**
- 2- The medial tarsal a.; runs medially to anastomose with the medial malleolar a.**
- 3- The arcuate a.; arises at the level of the bases of metatarsal arteries, passes laterally to anastomose with the lateral tarsal & plantar arteries**



4- Four dorsal metatarsal arteries to the 4 clefts, each divides into 2 dorsal digital arteries. Each DMA gives a perforating branch which sinks into the sole between the 2 heads of origin of dorsal interossei to anastomose in the foot with plantar arches.

5- First dorsal metatarsal a. passes to the 1st web & divides into 2 dorsal digital arteries

6- Deep plantar arteries; is the continuation of DPA



The deep peroneal nerve:

- Lies parallel & lateral to the tendon of EHL
- At the lower border of the inferior ER divides into the terminal medial & lateral branches
- Lateral branch supplies EDB
- Medial branch supplies the web between 1st & 2nd digits & the first two dorsal interossei

