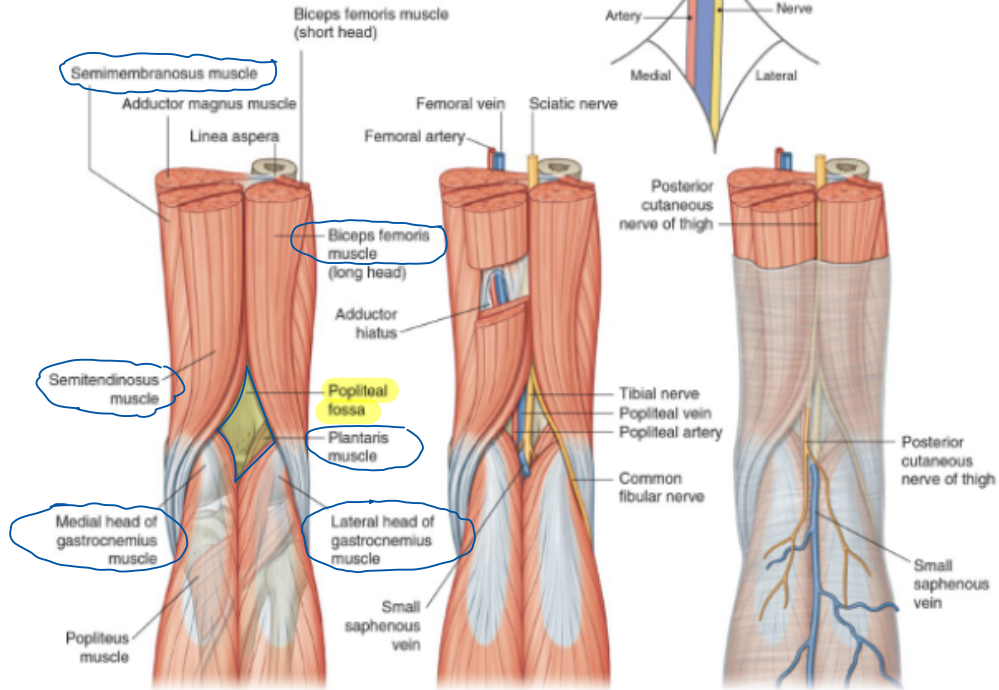


Popletial fossa and leg

Amjad hamad

• 4 Boundaries راعى ، اننا من

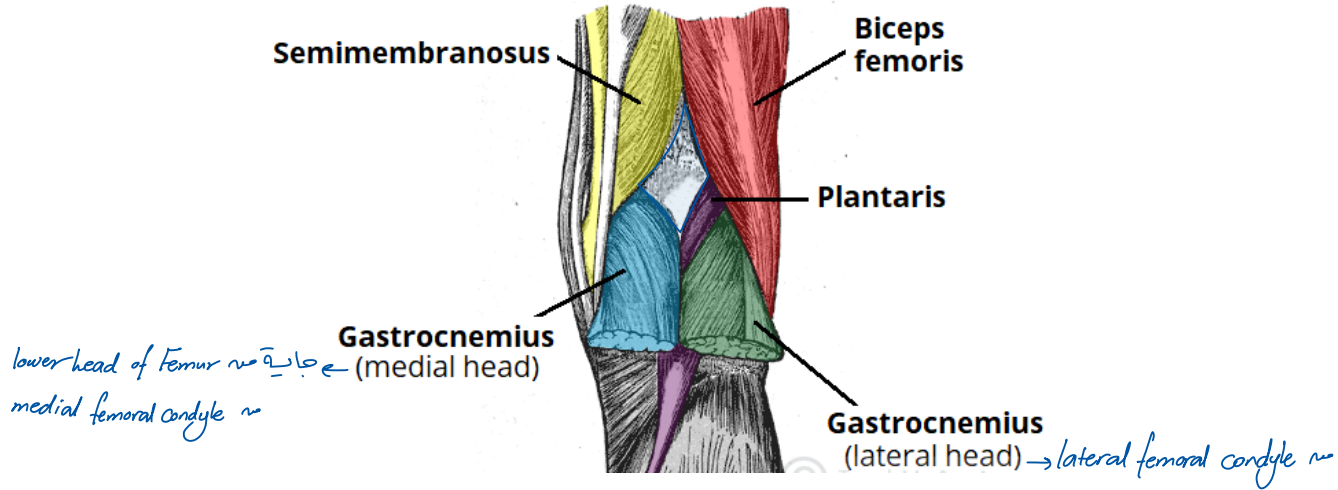
- The **popliteal fossa** is a diamond shaped area located on the posterior aspect of the knee. It is the main path by which vessels and nerves pass between the thigh and the leg.



Borders

- **Superomedial border** – ^{membrane رية الغضية} semimembranosus, ^{tendon رية الغضية} semitendinosus.
- **Superolateral border** – biceps femoris.
- **Inferomedial border** – medial head of the gastrocnemius. ✓
- **Inferolateral border** – lateral head of the gastrocnemius and plantaris ↴
- **The floor** of the popliteal fossa is formed by the posterior surface of ^{palmaris longus} the knee joint capsule, popliteus muscle and posterior femur.
- **The roof** is made of up two layers: popliteal fascia and skin

بني مشهورة في
10% من الناس.



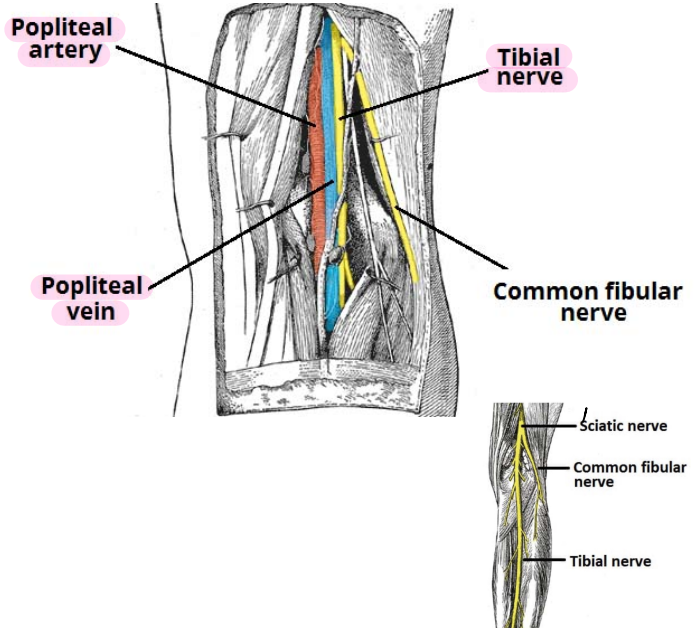
Achilles tendon ~ سيجلول ~ Soleus ~ يمتزج مع ~ Gastrocnemius *

های ال Content بتوی موجوده فی

Anatomical content عین normal

- Popliteal artery → Femoral artery ع
- Popliteal vein
- Tibial nerve → Sciatic nerve ع جایی
- Common fibular nerve (common peroneal nerve)

Contents



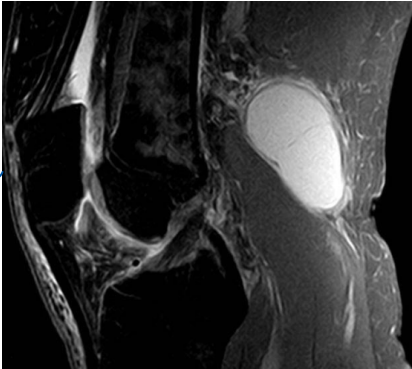
Pathologic content

Baker cyst:

- If rupture can cause DVT like pain

تحدث نتيجة أي Inflammation في knee joint ، في تجمع السوائل وتنتقل knee fusion ، في بعض herniation [تتفعل] هيا السوائل [Synovial] في posterior [popliteal fossa].

المريض يشعرك في Fullness يعني يكون حاسس بالكتلة.



Popliteal aneurysm:

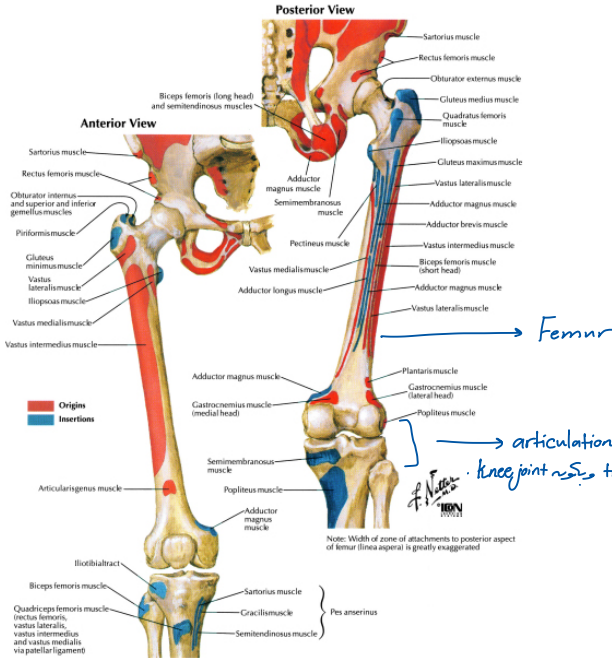
مخزقة الكا.

- Pulsating mass
- May cause compression symptom on the tibial nerve (weakness plantar flexion, numbness on foot and posteriolateral leg)

× ممكن الـ tumor في popliteal fossa.

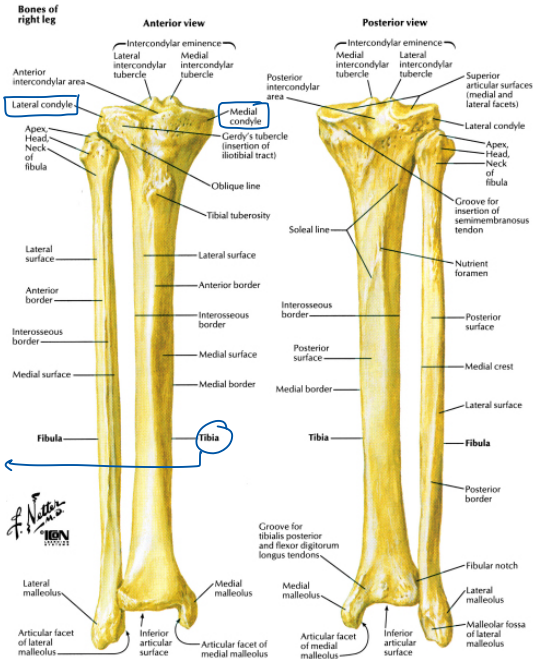


action of muscle ←
Extension, Flexion

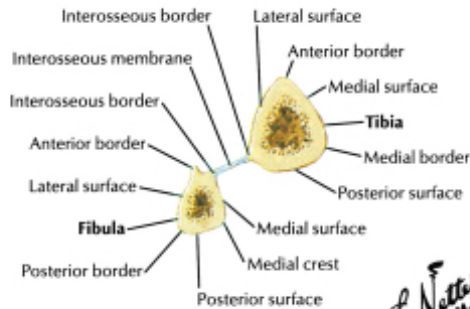


Both condyle articulate with Femur ←
 Cruciate ligament * tibia → upper surface ←
 Tibia * Cross section
 3 borders triangular Bone
 3 surfaces
 3 muscle groups

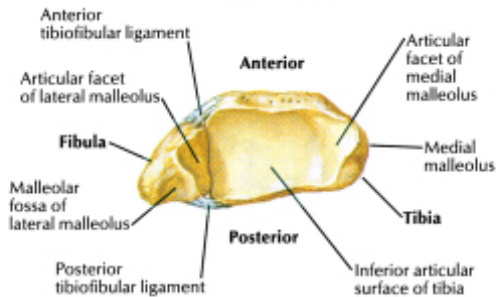
- Diaphysis long Bone
 - Metaphysis
 - Epiphysis (upper + distal end).
 Epiphyseal plate pediatric (growth side).



Cross section

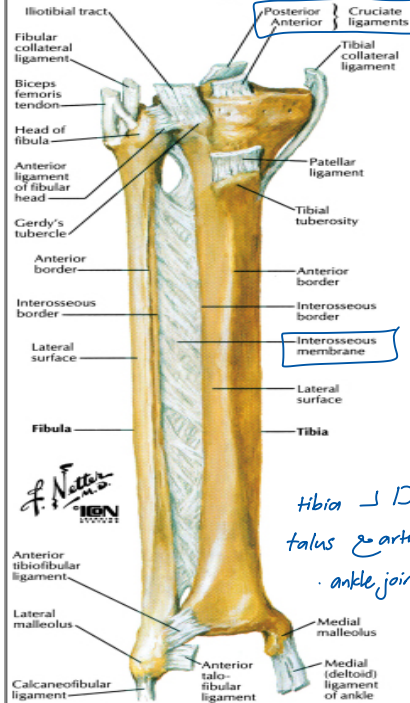


Inferior view



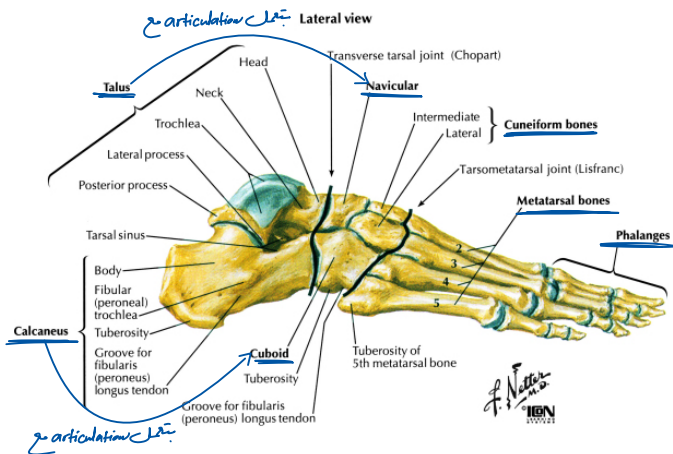
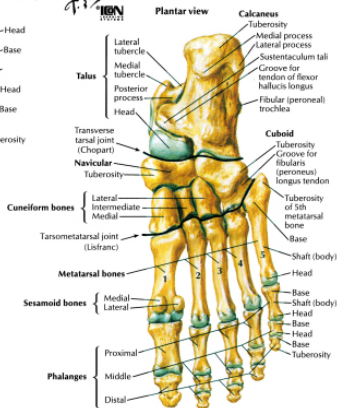
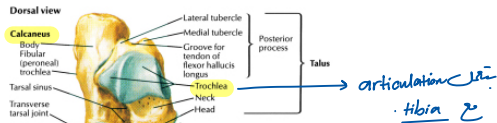
F. Netter M.D.
© IGM 1999

Anterior view with ligament attachments



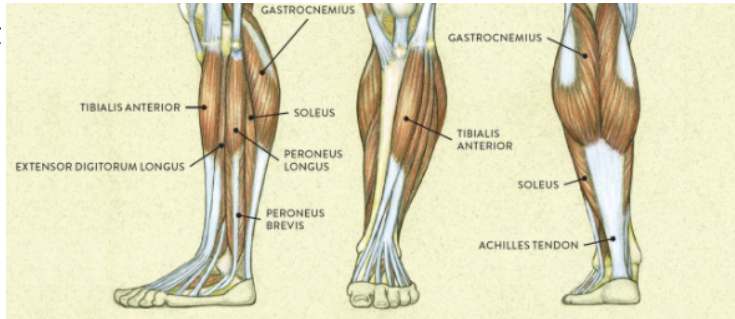
F. Netter M.D.
© IGM 1999

Distal end of tibia
articulation with talus
and ankle joint.



Muscles of the leg

- Anterior compartment
- Lateral compartment
- Posterior compartment



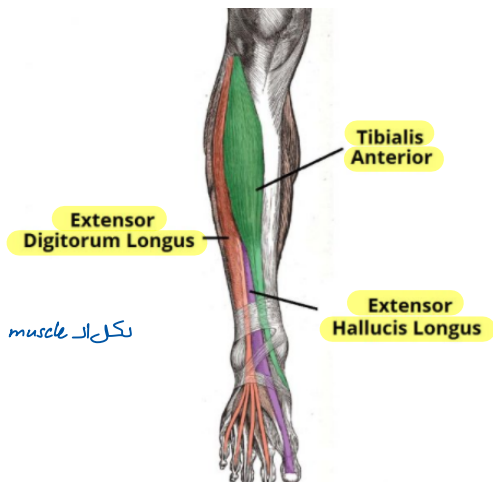
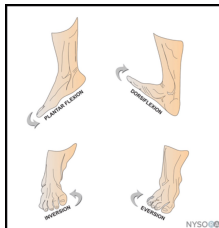
Anterior compartment

Tibialis Anterior:

- **Attachments:** Originates from the lateral surface of the tibia, attaches to the medial cuneiform and the base of 1st metatarsal. ✓
- **Innervation:** Deep fibular nerve. ✓
- **Actions:** Dorsiflexion and inversion of the foot

كفة القدم تنقلب لخمسة

كل واحد muscle اللربعة



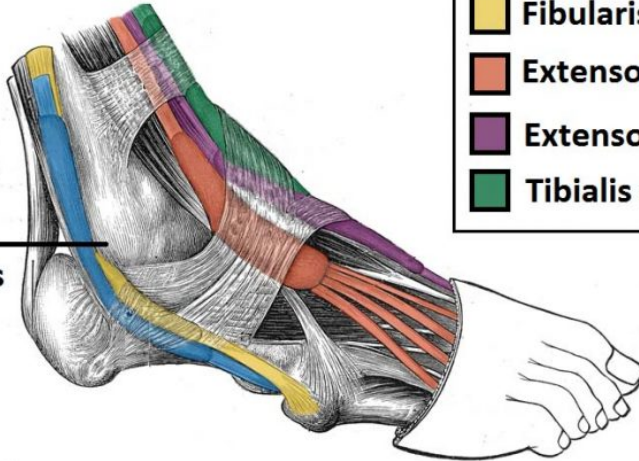
Extensor Digitorum Longus:

- **Attachments:** Originates from the lateral condyle of the tibia and the medial surface of the fibula. ✓
travels to the dorsal surface of the foot. The tendon splits into four, each inserting onto a toe. ✓
- **Innervation:** Deep fibular nerve. ✓
- **Actions:** Extension of the lateral four toes, and dorsiflexion of the foot
ankle ↘

Extensor Hallucis Longus:

- **Attachments:** Originates from the medial surface of the fibular shaft. The tendon crosses anterior to the ankle joint and attaches to the base of the distal phalanx of the great toe. ✓
- **Innervation:** Deep fibular nerve ✓
- **Action:** Extension of the great toe and dorsiflexion of the foot
ankle ↘

**Lateral
malleolus**



Fibularis longus



Fibularis brevis



Extensor digitorum longus



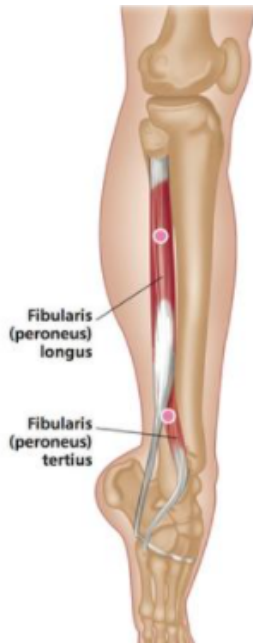
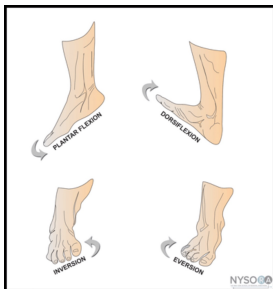
Extensor hallucis longus



Tibialis anterior

Fibularis Tertius: *Proneus tertius / *العضلة الثالثة**

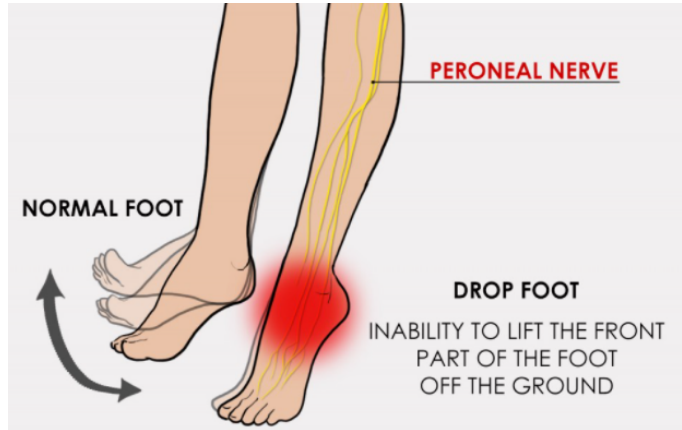
- **Attachments:** Originates with the extensor digitorum longus from the medial surface of the fibula. The tendon descends with the EDL, and attaches to 5th metatarsal. ✓
- **Actions:** Eversion and dorsiflexion of the foot



Drop foot → inability to do active dorsiflexion

سبب Nerve injury أو muscle atrophy

- This condition caused by paralysis of the anterior compartment
- Cause by injury of the deep peroneal nerve
- Stamping gait



Lateral compartment of the leg

Peroneus longus: *long*

- Originates from the superior and lateral surface of the fibula and the lateral tibial condyle. Run behind the lat. Malleolus and cross the foot from lateral to medial to insert in the medial cuneiform and base of 1st metatarsal. ✓
- Superficial peroneal nerve. ✓
- Eversion of the foot. → *مربطاً مع شئ في planter Flexion.*

Peroneus brevis: *Short.*

Originates from the inferolateral surface of the fibular shaft.

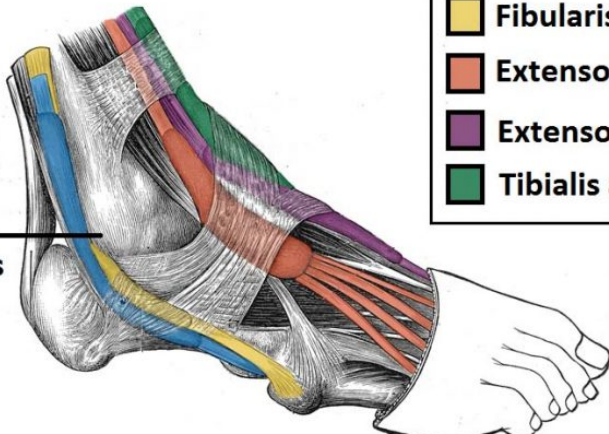
The tendon then attaches to a tubercle on metatarsal V.

Action: Eversion.

* *بعض Inversion و Eversion* Foot

• *لا تتحرك تكون تتحرك ك* One unit

**Lateral
malleolus**

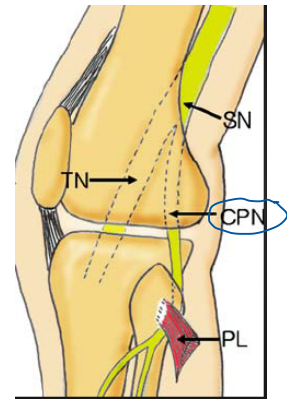


-  **Fibularis longus**
-  **Fibularis brevis**
-  **Extensor digitorum longus**
-  **Extensor hallucis longus**
-  **Tibialis anterior**

N.B: Identification of the common peroneal nerve at the fibular neck pass in the gap between the origin of the peroneus longus at the head and neck of the fibula before it terminate to deep and superficial.

side injury
Fracture
Compression

* Common peroneal nerve Compression by tight cast
 proximal to CPN Compression on CPN
 Entrapment of nerve -> neuropraxia
 reversible injury of nerve -> neurotmesis
 permanent damage of nerve -> Drop Foot



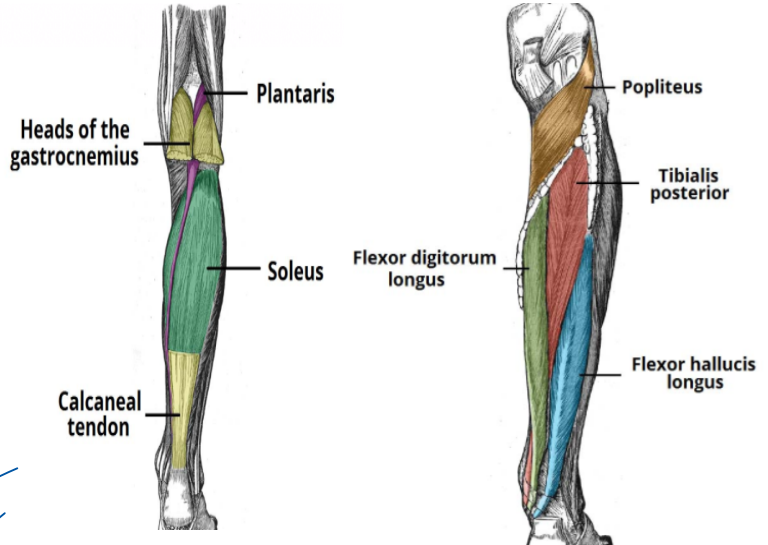
Posterior compartment of the leg

- Superficial group:

- Gastrocnemius, ✓
- soleus, ✓
- plantaris ✓

- Deep group:

- Popliteus, ✓
- tibialis posterior, ✓
- flexor digitorum longus ✓
- flexor hallucis longus ✓



Superfascial group

- **Gastrocnemius:**

Medial and lateral head attached to medial and lateral femoral condyle then united with each other and with the soleus to form the achilis tendon. → *calcaneus tuberosity is insertion جا*

Supplied by Tibial nerve → *posterior group کی nerve supply*

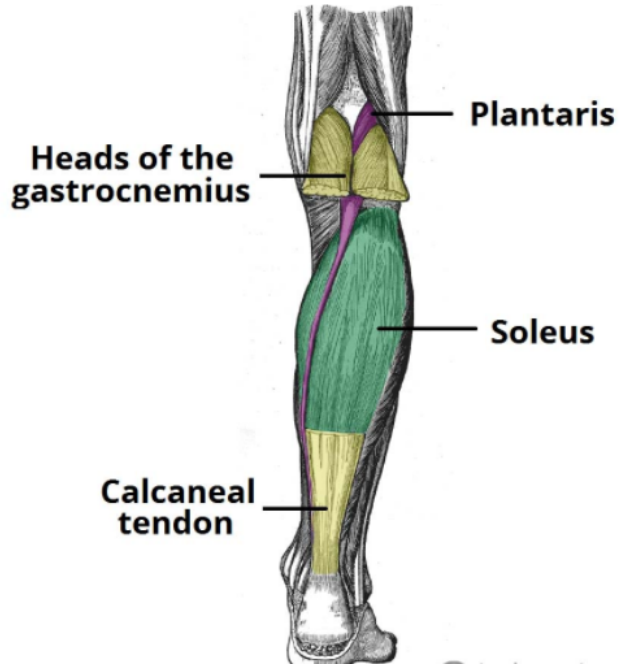
Action planter flexion of the ankle

Plantaris: *palmaris longus* ~

- Abscent in 10% ✓
- From the lateral supracondylar line run medial to bend the achillis tendon ✓
- Planter flexion of the ankle
- Tibial nerve ✓

Soleus:

- ^{*back of tibia*} soleal line of the tibia and upper fibula , to achillis tendon
- Tibial nerve ✓
- Planter flexion ankle ✓



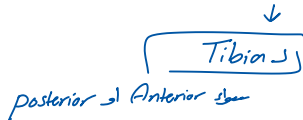
Deep part

Popliteus:

- Base of the popliteal fossa → *origin.*
- From the ^{*insertion*} lateral femoral condyle and the posterior horn lat. Meniscus to the upper tibia above the soleal line
- Unlocking of the knee (ex. Rotate the femur on the tibia)
- Tibial nerve ✓ *proximal insertion → Distal origin* ^{لأنه البعيد}

• **Tibialis posterior:**

- Deepes, between the FHL, FDL
- Attached to interosseus membrane and both bone posterior and run posterior to the medial malleolus to the planter aspect of the navicular and medial cuboid *Cuneiform.*
- Tibial nerve ✓
- Planter flexion and inversion of the foot ✓



Flexor digitorum longus:

- Small muscle from the posterior aspect of tibia, to the planter aspect of the lateral 4 digits ✓
- Tibial nerve ✓

*Flexion of toes / Action 11x
[lateral 4 toes].*

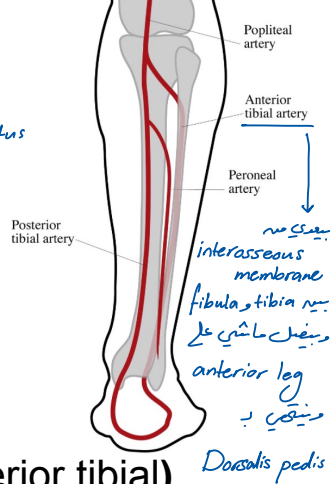
Flexor hallucis longus:

- From posterior aspect of the fibula to the planter aspect of the great toe ✓
- Tibial nerve. ✓

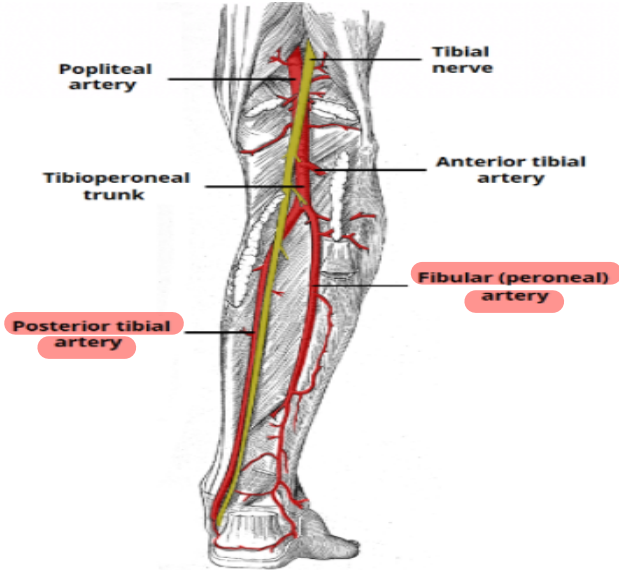
Blood supply of the leg:

- Femoral artery, (adductor hiatus)
Anterior aspect of leg
- Popliteal artery (genicular arteries, popliteus and gastrocnemius)
knee joint - supply
- Anterior tibial artery, (dorsalis pedis)
popliteal ~ largest branch
- Posterior tibial artery, (tarsal tunnel with the posterior tibial)
- Peroneal artery
planter aspect of foot

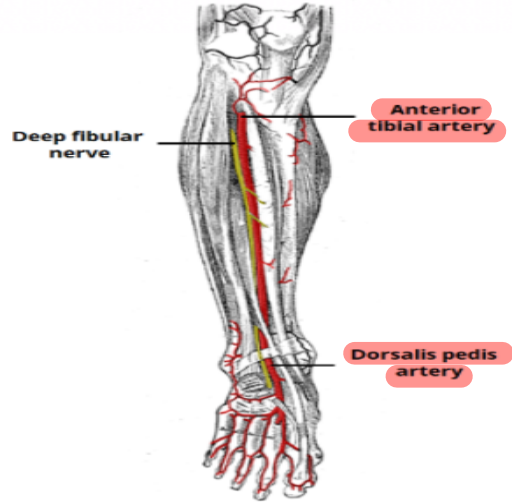
* ال Femoral artery لا يحيد من
popliteal artery بعد adductor hiatus



Blood supply in the leg



(i) Posterior Leg



(ii) Anterior Leg

- The popliteal artery is the continuation of the femoral after it pass through the adductor hiatus. ✓
- Enter the popliteal fossa under the margin of semimembranosus with the tibial nerve as the deepest structure. ✓
- End by forming anterior and posterior tibial arteries. ✓
- The popliteal vein superficial to the artery end by forming the femoral after pass the adductor hiatus. ✓

Nerves

- **Tibial nerve: (L4-S3)**

- Cutaneous (postrolateral leg, lateral foot, sole)✓
- Motor (posterior compartment, interinsic muscle foot)✓
- Branch of the sciatic at the upper popliteal fossa travel through the fossa at the popliteal fossa give branch to form the sural, and supply the superficial muscles of the back✓
- Then at the posterior aspect of the leg supply the muscles of the leg
- Posterior and inferior to the medial malleolus in the tarsal tunnel and terminate at by division to sensory (medial calcaneal, medial and lateral planter)and motor✓

Tarsal tunnel syndrome from compression of nerve



Sciatic nerve

Common fibular nerve

Tibial nerve

* ينقسم غالباً عند / هاداه common most

Upper aspect of popliteal fossa

* لكن من ينقسم من البقية

pelvis من

* greater sciatic notch من

Saphenous nerve

(branch of the femoral nerve)



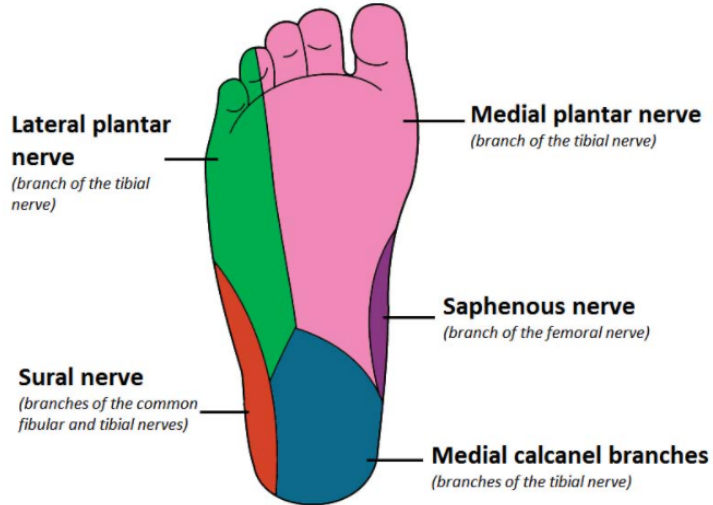
Sural nerve

(branches of the common fibular and tibial nerves)

Superficial fibular nerve

Medial calcaneal branches

(branches of the tibial nerve)



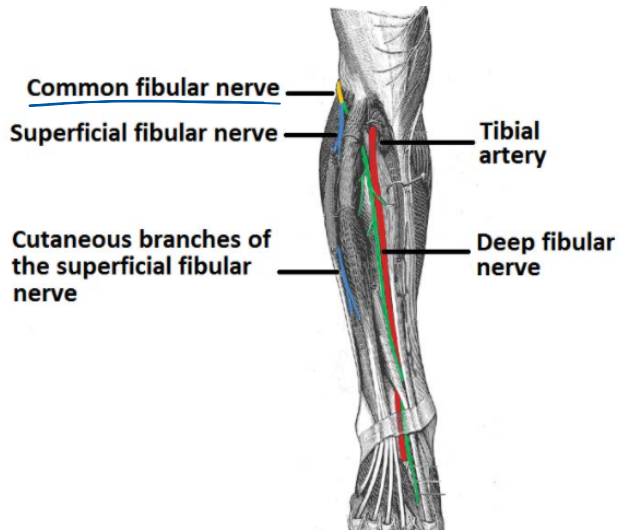
- **N.B:** Tarsal tunnel syndrome: entrapment of the nerve under the flexor retinaculum and produce sensory and motor symptoms ✓
- Management by physiotherapy, NSAIDs, steroids or surgical release of the flexor retinaculum

Common peroneal nerve:(L4-S2) → *نفس الشئ ينطص حب وينه حمار انقسام*

Sciatic nerve

- Sensory of the lateral aspect of the leg and dorsum of the foot ✓
- Motor to the short head of biceps and lateral and anterior compartment of the leg ✓
- Terminal branch of the sciatic at the apex of the popliteal fossa, run over the medial border of biceps femoris, over the lateral head of the gastrocnemius give two cut.. Branches , then run around the neck of the fibula where it divides to superficial and deep

ال Biceps femoris هي العضلة الرمية الى نى thigh الى تنغنى من Sciatic nerve





-  **Saphenous** (*from femoral*)
-  **Lateral sural** (*from common fibular*)
-  **Sural** (*from common fibular and tibial*)
-  **Superficial fibular**
-  **Deep fibular**
-  **Medial calcaneal** (*from tibial*)

- **N.B.** Drop foot: cut or damage of the common peroneal nerve that occurs post # of the fibular head and neck or tight plaster lead to loss of the foot dorsiflexion and the foot is in plantar flexion, and the gait is stamping in nature.