

**Anatomy – lecture 24**

**Lower limb – part 7**

**10/10/2019**

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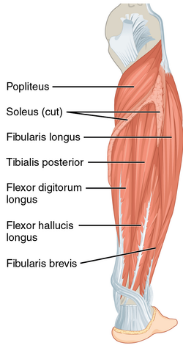
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Reminder:

* **Limbs rotated in utero around their long axis but in opposite directions.**
* **The lower limbs rotate in utero 90-degree medially. While upper limbs rotate 90-degree laterally.**
* **Thus the limbs are 180 degrees out of phase with one another (Knee anterior and big toe medial versus Elbow posterior and thumb lateral).**

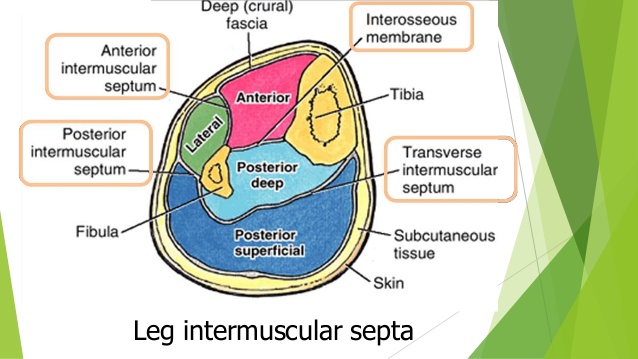
**Bones of the lower limb (leg):**

* **Tibia is the only weight-bearing bone of the leg.**
* **Most muscles originate from tibia is called tibialis.**
* **Tibia is triangular in cross-section, so it has 3 borders and 3 surfaces.**
* **Most of the tibia on medial surface and anterior border is subcutaneous , that’s why any injury or fracture on it is highly complicated because of the poor blood supply .**
* **The fracture of the tibia is called shin fracture.**
* **Fibula is only for muscle attachments (non-weight bearing bone).**
* **Sometimes fibula is used to bone transplant, especially if someone has an accident and injured his mandible, the replacement of the mandible done by the fibula.**
* **On the posterior surface of the tibia, there is an oblique line called soleal line (for a muscle called soleus muscle), that’s why in physiology the venous return in the lower limb against gravity is done via soleal bump.**
* **Above the soleal line is the origin of popletius muscle, below it is the origin of soleus muscle .**



* **The keystone of the foot > talus, so if it is broken this lead to flat foot because of the weight is go vertical on it .**

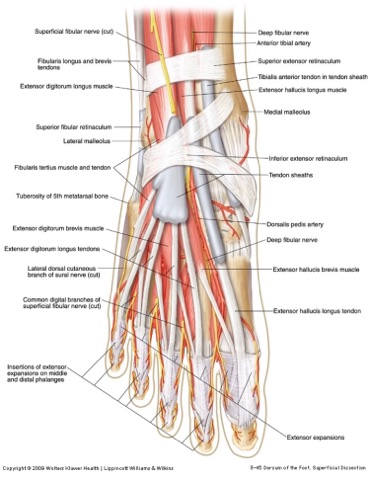
**Deep fascia of the leg :**



* **The deep fascia of the leg sends 2 intermuscular septa to the fibula (anterior and posterior intermuscular septa) that divide the leg into 3 compartments with the interosseous membrane (anterior, lateral and posterior compartments).**
* **Extra note: there is another septum posteriorly from fibula to tibia called transverse intermuscular septum that divides the posterior compartment into superficial and deep layers.**
* **Anterior compartment (extensor compartment) lies between the tibia and ant. Intermuscular septum. Lateral compartment (fibular/peroneal/eversion compartment) lies between ant. and pos. intermuscular septa . Posterior compartment (flexor compartment) lies between tibia and pos. intermuscular septum.**



* **The deep fascia extends down to the malleoli and ankle. At the ankle joint it is form 2 thickening bands of the fascia (superior and inferior extensor retinaculum) > the tendons of extensor muscles passing below them.**
* **Inferior extensor retinaculum is Y-shaped.**



**Anterior compartment of the leg :**

* **It is composed of 4 muscles :**

1. **Tibialis anterior.**

**O > origin**

**I > insersion**

**F > function**

**O : tibia (lateral condyle)**

**I : base of first metatarsal**

**F : dorsiflexion + inversion**

1. **Extensor hallucis longus.**

**O : fibula**

**I : distal phalanx of first digit**

**F : dorsiflexion + extension of first digit**

1. **Extensor digitorium longus.**

**O : tibia + fibula**

**I : distal phalanges of lateral four digits.**

**F : dorsiflexion + extends the four lateral digits**

1. **Fibularis tertius or peroneus tertius**

**O : fibula**

**I : base of fifth metatarsal**

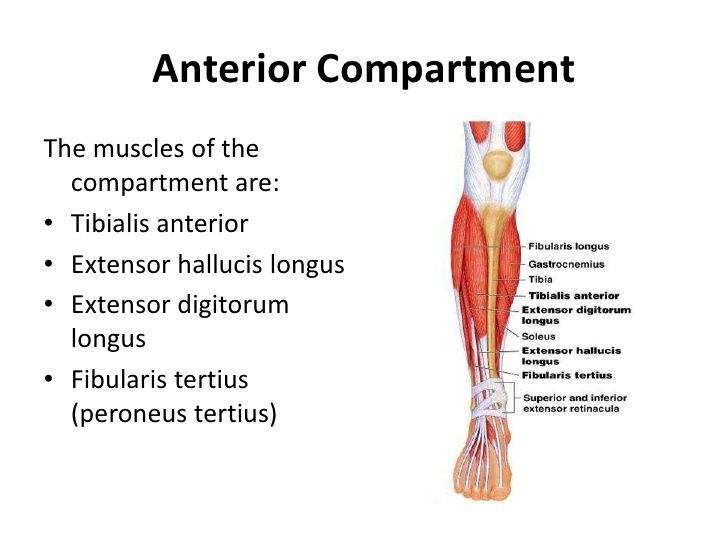
**F : inversion (eversion المفروض )**

* **All innervated by deep fibular (peroneal) nerve**

**(The common peroneal nerve which is a lateral branch of sciatic nerve , divides into 2 branches (deep and superficial branches) , the deep branch is the one that innervates the anterior compartment of the leg, but the superficial branch innervates lateral compartment .**

* **All supplied by anterior tibial artery > branch from popliteal artery .**
* **All extend foot at the ankle (Dorsiflex the foot)**

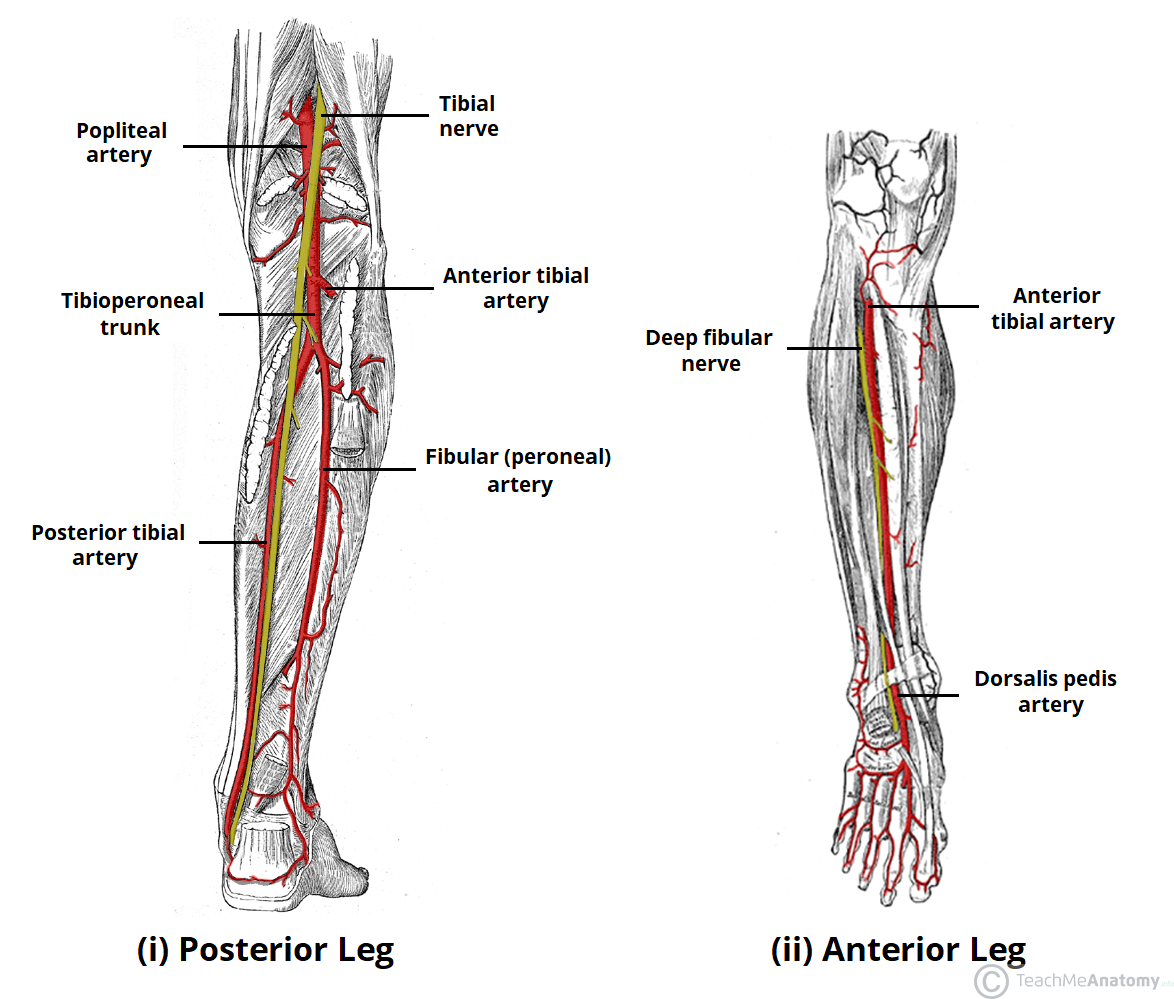
**# cut or injury in deep peroneal nerve , the patient cannot dorsiflex the foot (cannot elevate the foot).**



**Arterial supply :**

* **Popliteal artery ends at the lower border of popliteus muscle by dividing into 2 branches 🡪 1) anterior tibial artery passes and supplies the anterior compartment and then it will continue in the dorsum of the foot at the level of ankle ,it becomes dorsalis pedis artery**

**# if a patient has a cast on thigh and leg > we know the effectiveness of the popliteal artery from dorsalis pedis, so this artery tells us that everything is ok and the cast does not compress the popliteal artery.**



**Lateral compartment of the leg :**

* **Peroneal or fibular compartment**
* **Consists of 2 muscles**

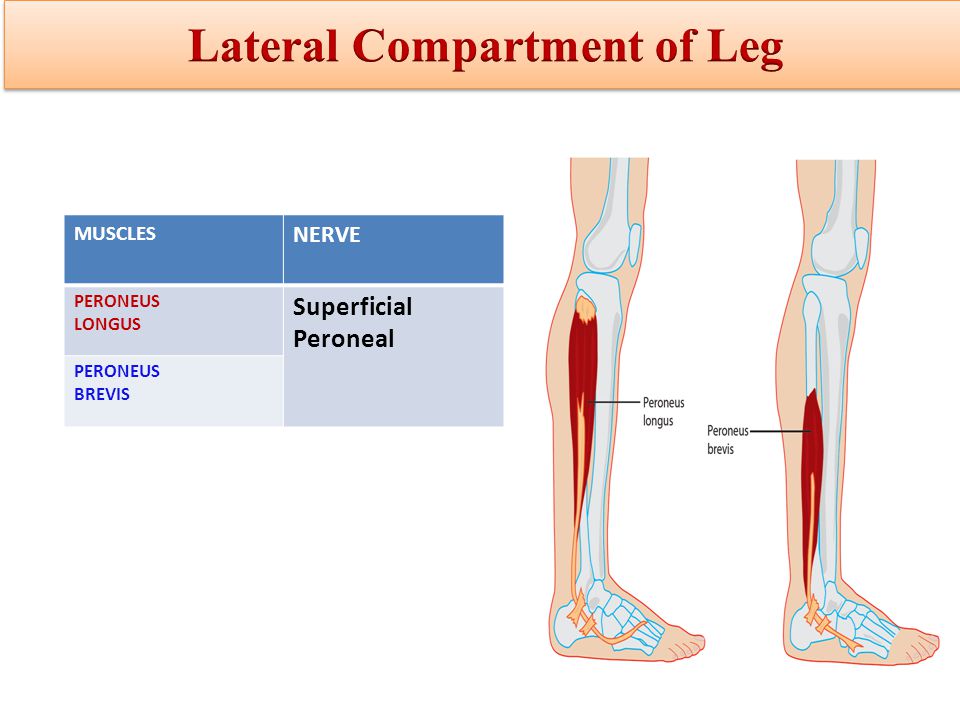
1. **Fibularis (perneous) longus**
2. **Fibularis (perneous) brevis**

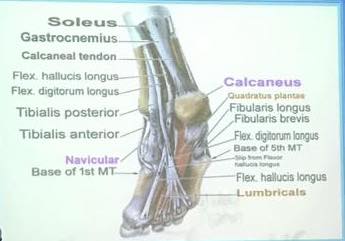
* **Both originates from fibula.**
* **Both passes behind lateral malleolus.**
* **Both innervated by superficial fibular nerve.**
* **Both supplied by fibular artery which is branch from posterior tibial artery.**
* **Both passes below 2 fibular retinaculum (sup. and inf.).**
* **Both evert the foot (sole face outward).**

**\*\* Insertion of muscles:**

1. **Fibularis (perneous) brevis > inserted at the base of the fifth metatarsal bone🡪 it is important in elevating the lateral longitudinal arch.**
2. **Fibularis (perneous) longus > inserted at the base of first metatarsal bone 🡪 it is important in elevating the transverse arch.**

* **The muscle responsible for elevating medial longitudinal arch is tibialis anterior, so if tibialis anterior paralyzed > the foot becomes flat foot.**





\*\* The doctor did not explain the posterior compartment of the leg and the remaining parts ☹

**The End**