



# Muscles of Leg

## Anterior Crural Compartment

### Anterior View

Lateral

Proximal

Medial

#### Tibialis Anterior Muscle

- largest and most superficial of anterior compartment
- muscle belly easily visible and palpable at proximal part of anterior aspect of leg during muscular contraction.
- tendon easily visible and palpable at anteriomedial ankle region during muscular contraction
- primary extensor of the foot

**O:** tibial lateral condyle, anteriorly, the proximal lateral surface of the tibial shaft, and the adjacent interosseous membrane

**I:** medial and plantar surfaces of the medial cuneiform, and the first metatarsal tubercle  
 - its tendon passes distally over the anteromedial ankle, within the superior and inferior extensor retinacula and is visible during much of this course during active ankle joint dorsiflexion.

**A:** dorsiflexes and inverts the foot (inverting the foot supinates the subtalar joint)

**NS:** deep fibular/ deep peroneal nerve

**AS:** anterior tibial artery

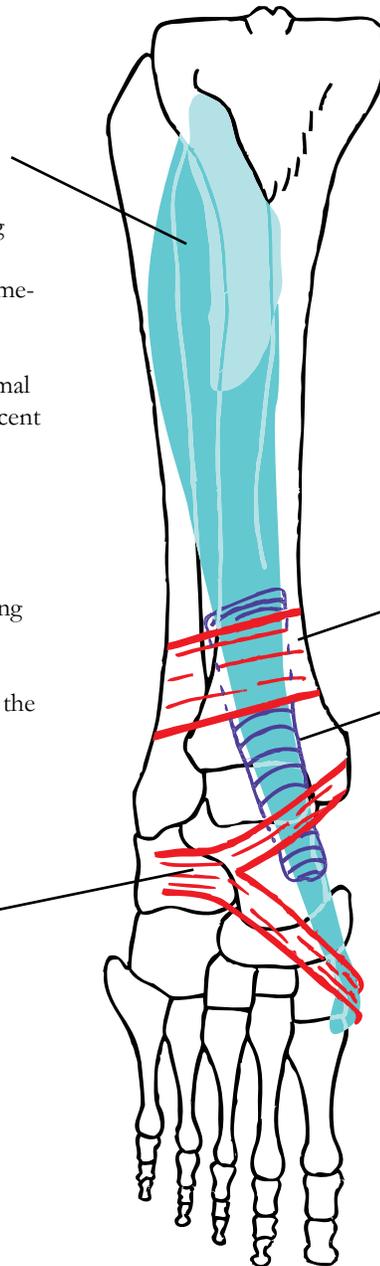
#### Inferior Extensor Retinaculum

#### Superior Extensor Retinaculum

#### Tibialis Anterior Synovial Sheath

- extends from just proximal to the transverse crural ligament to midway between the bands of the cruciate ligament

- passes within the transverse crural ligament and the upper band of the cruciate ligament; begins and ends most proximal.



#### Anterior Crural Compartment

- 4 muscles
- innervation from deep fibular/peroneal nerve
- arterial supply from anterior tibial artery
- in general, these muscles are dorsiflexors or extensors of the foot and ankle joint
- when can't do this - drop foot.

Distal

# Muscles of Leg

## Anterior Crural Compartment

### Anterior View

Lateral

Proximal

Medial

**Extensor Digitorum Longus Muscle**  
 - spindle-shaped muscle that lies lateral to tibialis muscle and superficial to extensor hallucis longus muscle

- its tendon is often visible over the anterolateral ankle/ dorsal foot during muscular contraction

**O:** tibial lateral condyle, the superior medial surface of the fibular shaft, and the adjacent interosseus membrane (also the fascia cruris)

**I:** dorsal surface of the middle phalangeal base of the 2nd, 3rd, 4th and 5th pedal digits, its part of the extensor hood apparatus

- its tendon passes inferiorly over the anterolateral ankle and dorsolateral foot, within the superior and inferior extensor retinacula, where the tendon divides into four slips; one for each lesser digit

**A:** dorsiflexes/ extends the lesser digits; aids in dorsiflexion and eversion of the foot (eversion of the foot causes pronation of the subtalar joint)

**NS:** deep fibular/ deep peroneal nerve

**AS:** anterior tibial artery

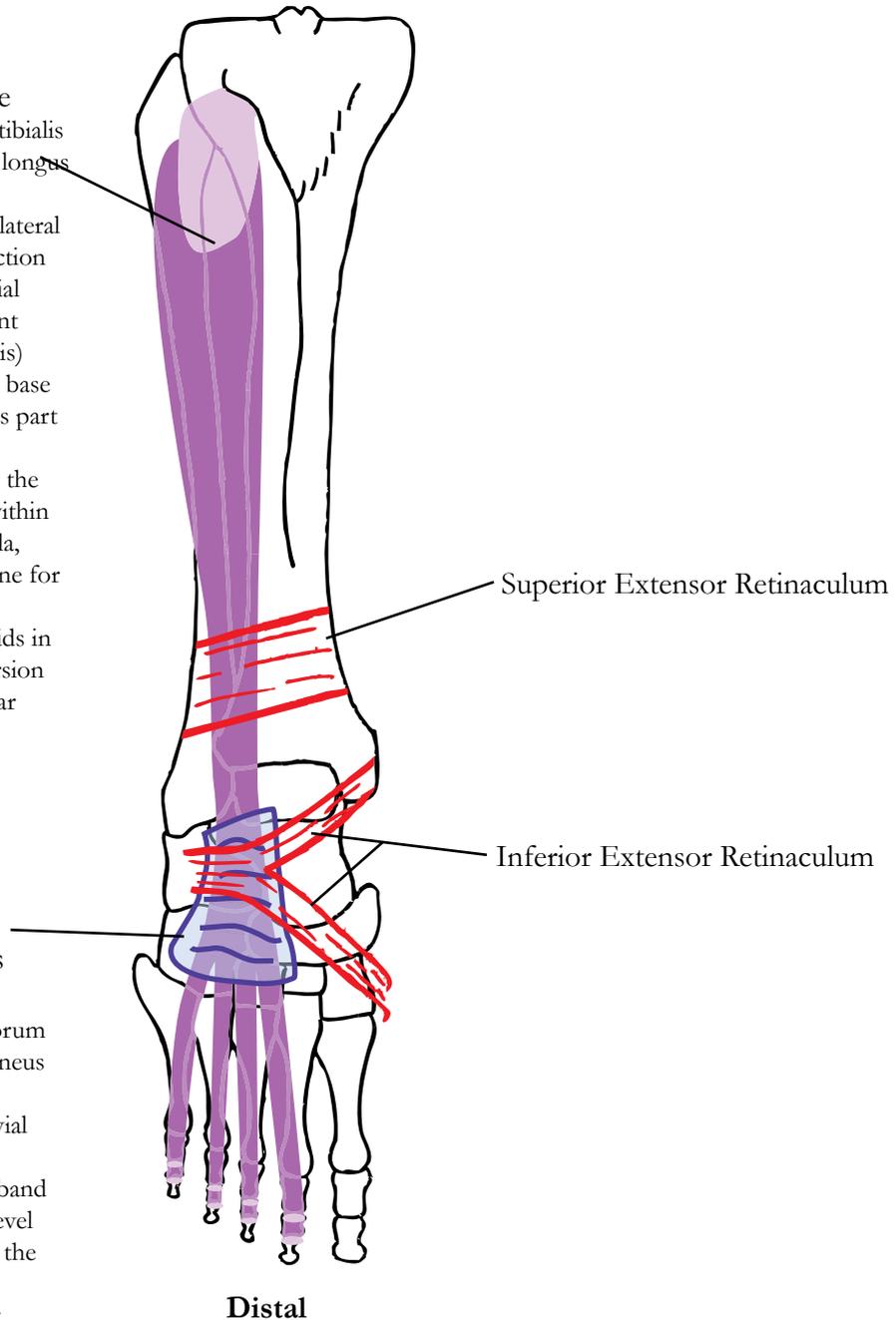
**Extensor Digitorum Longus and Fibularis Tertius / Peroneus Tertius Synovial Sheath**

- includes the 4 slips of the extensor digitorum longus tendon and the tendon of the peroneus tertius muscle

- short when compared to other two synovial sheaths

- extends from just proximal to the upper band of the inferior extensor retinaculum (the level of the malleoli) to the level of the base of the fifth metatarsal

- passes within the cruciate crural ligament



# Muscles of Leg

## Anterior Crural Compartment

### Anterior View

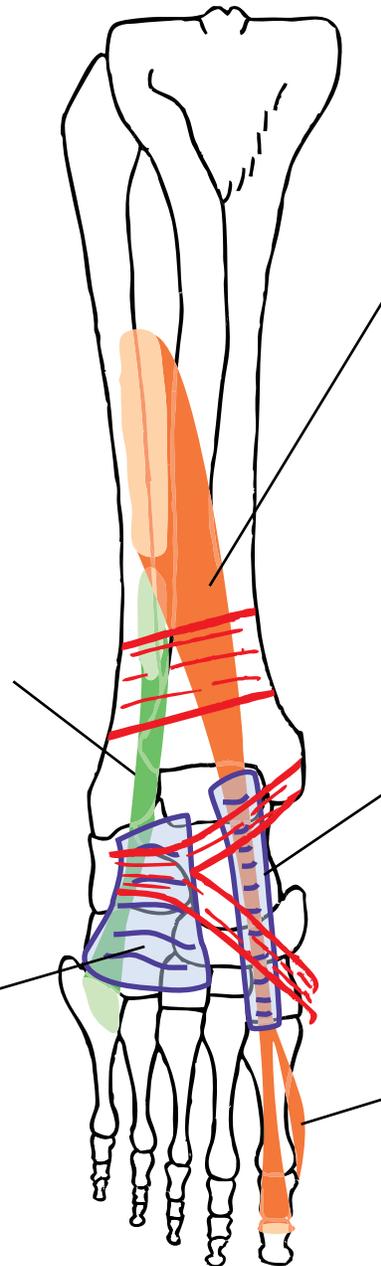
Lateral

Proximal

Medial

**Fibularis (Peroneus) Tertius Muscle**  
 - small muscle located deep and distal to the extensor digitorum longus muscle  
 - may be part of the extensor digitorum longus muscle or may be absent  
**O:** inferior part (1/4) of the medial surface of the fibular shaft and adjacent interosseous membrane  
**I:** dorsal surface of the base and proximal shaft of the fifth metatarsal; NOT the styloid process  
 - its tendon passes inferiorly with the extensor digitorum longus tendon deep to the superior extensor retinaculum and within the inferior extensor retinaculum  
**A:** dorsiflexion of the foot; aids in eversion of the foot (pronating the subtalar joint)  
**NS:** deep fibular/ deep peroneal nerve  
**AS:** anterior tibial artery

**Extensor Digitorum Longus and Fibularis (Peroneus) Tertius Synovial Sheath**



Distal

**Extensor Hallucis Longus Muscle**  
 - Located deep to tibialis anterior and extensor digitorum longus muscles superiorly; it becomes superficial at the level of the middle leg.  
 - is often visible over the anterior ankle, dorsomedial foot and first metatarsophalangeal joint during muscular contraction  
**O:** middle 1/2 of the medial/extensor surface of the fibular shaft and the adjacent interosseous membrane  
**I:** dorsal surface of the base of the distal phalanx of the hallux  
 - its tendon passes inferomedially across the anterior ankle and dorsal foot; at this level it lies intermediate to the tendons of extensor digitorum longus and tibialis anterior muscles, passes deep to the superior extensor retinaculum and within the inferior extensor retinaculum  
**A:** dorsiflexes / extends the hallux at both the interphalangeal and metatarsophalangeal joints; aids in dorsiflexion of the ankle  
**NS:** deep fibular/ deep peroneal nerve  
**AS:** anterior tibial artery

**Extensor Hallucis Longus Synovial Sheath**  
 - extends from just proximal to the upper band of the cruciate crural ligament (near the level of the malleoli) to the base of the first metatarsal  
 - begins and ends more distally than the synovial sheath of the tibialis anterior tendon  
 - passes within the cruciate crural ligament

**Extensor Hallucis Capsularis Muscle**  
 - a tendinous slip from the medial aspect of extensor hallucis longus muscle tendon; occasionally may be from the tibialis anterior muscle  
 - arises at the level of the midfoot  
**I:** medial aspect of the capsule of the first metatarsophalangeal joint  
**A:** tenses the capsule of the first metatarsophalangeal joint during extension which prevents impingement of the capsule

# Muscles of Leg

## Lateral Crural Compartment

### Lateral View

Proximal

#### Fibularis (Peroneus) Longus Muscle

- the muscle belly fills the superior part of the lateral crural compartment
- its tendon is often visible and palpable along the lateral calcaneus during muscular contraction

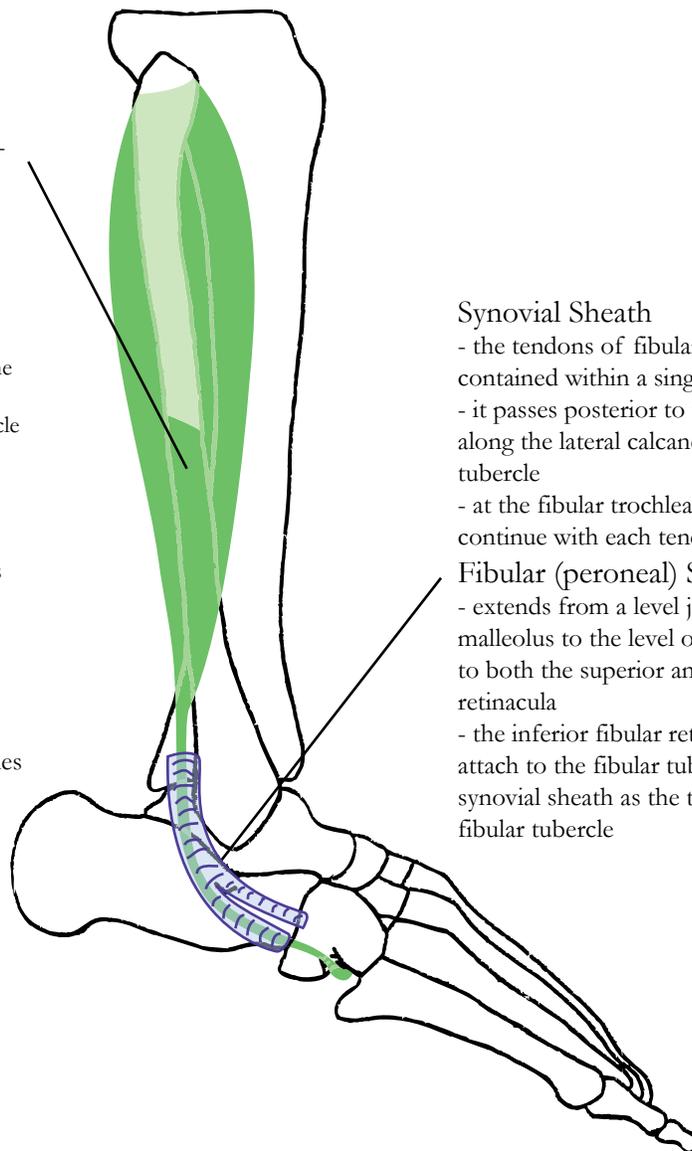
**O:** the fibular head and proximal 1/2 of the lateral surface of the fibular shaft (also fascia cruris)

**I:** lateral and plantar aspects of the medial cuneiform and the first metatarsal tuberosity  
 - its tendon passes distally, posterior to the lateral malleolus, deep to the superior fibular (peroneal) retinaculum, inferior to the fibular tubercle of the calcaneus as it passes deep to the inferior fibular retinaculum, then turns medially and passes along the fibular sulcus of the cuboid to the medial cuneiform and first metatarsal base.

**A:** everts and plantar flexes the foot (pronates the subtalar and midtarsal joints and plantar flexes the ankle joint); Stabilizes the first metatarsal during the propulsive phase of gait (rising on the toes and pushing forward)

**NS:** superficial fibular (peroneal) nerve

**AS:** fibular (peroneal) and anterior tibial arteries



#### Synovial Sheath

- the tendons of fibularis longus and brevis are contained within a single sheath proximally
- it passes posterior to the lateral malleolus and along the lateral calcaneus to the fibular tubercle
- at the fibular trochlea, the sheath divides to continue with each tendon.

#### Fibular (peroneal) Synovial Sheath

- extends from a level just superior to the lateral malleolus to the level of the cuboid; passes deep to both the superior and inferior fibular retinacula
- the inferior fibular retinaculum has fibers that attach to the fibular tubercle and splits the synovial sheath as the tendons pass around the fibular tubercle

#### Lateral Crural Compartment

- contains the fibularis (peroneal) muscles
- these muscles originate from the lateral surface of the fibular shaft
- receive innervation from the superficial fibular (peroneal) nerve
- receive majority of blood supply from the fibular (peroneal) artery
- in general these muscles are foot everters.

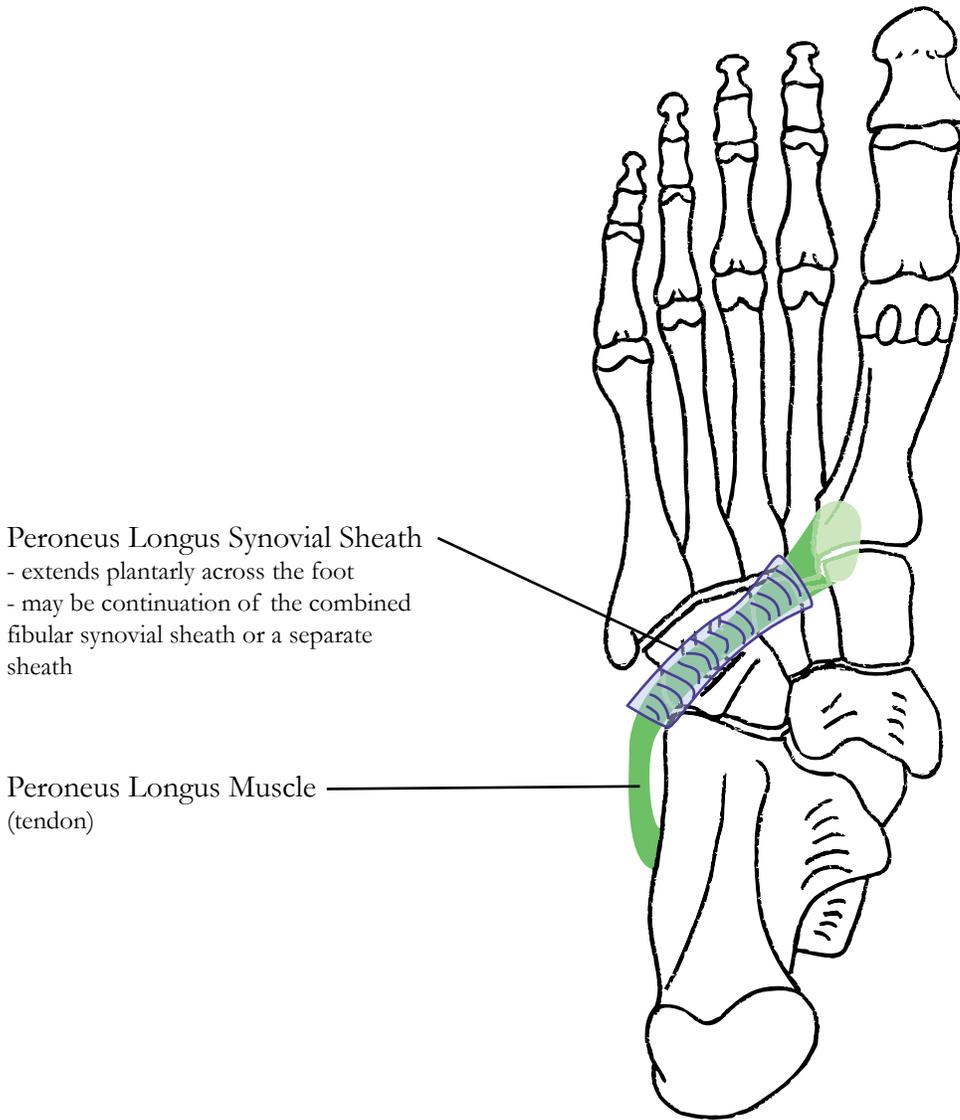
Distal

# Muscles of Leg

## Lateral Crural Compartment

### Dorsal View

Proximal



Peroneus Longus Synovial Sheath  
- extends plantarly across the foot  
- may be continuation of the combined  
fibular synovial sheath or a separate  
sheath

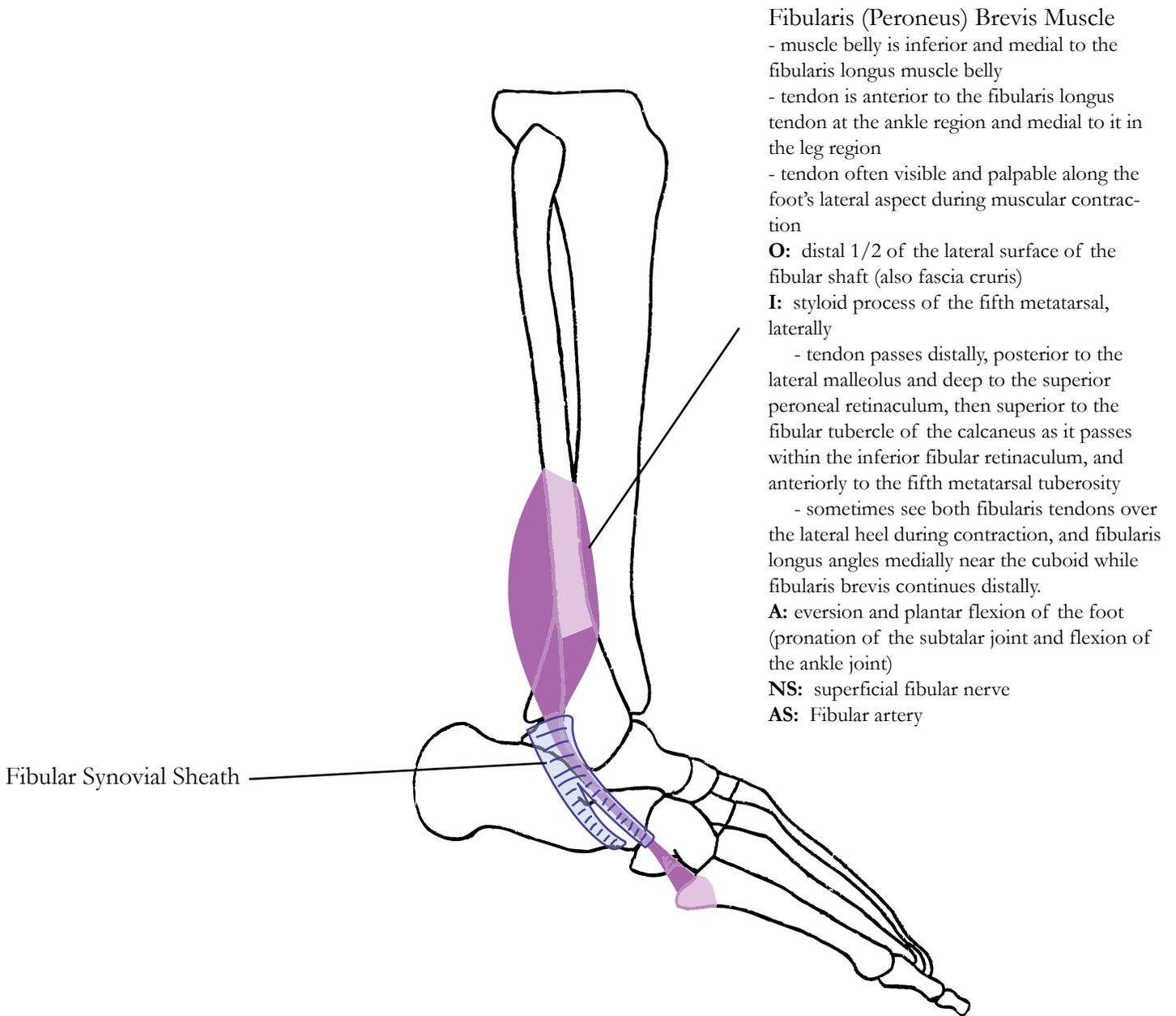
Peroneus Longus Muscle  
(tendon)

Distal

# Muscles of Leg

## Lateral Crural Compartment

### Lateral View

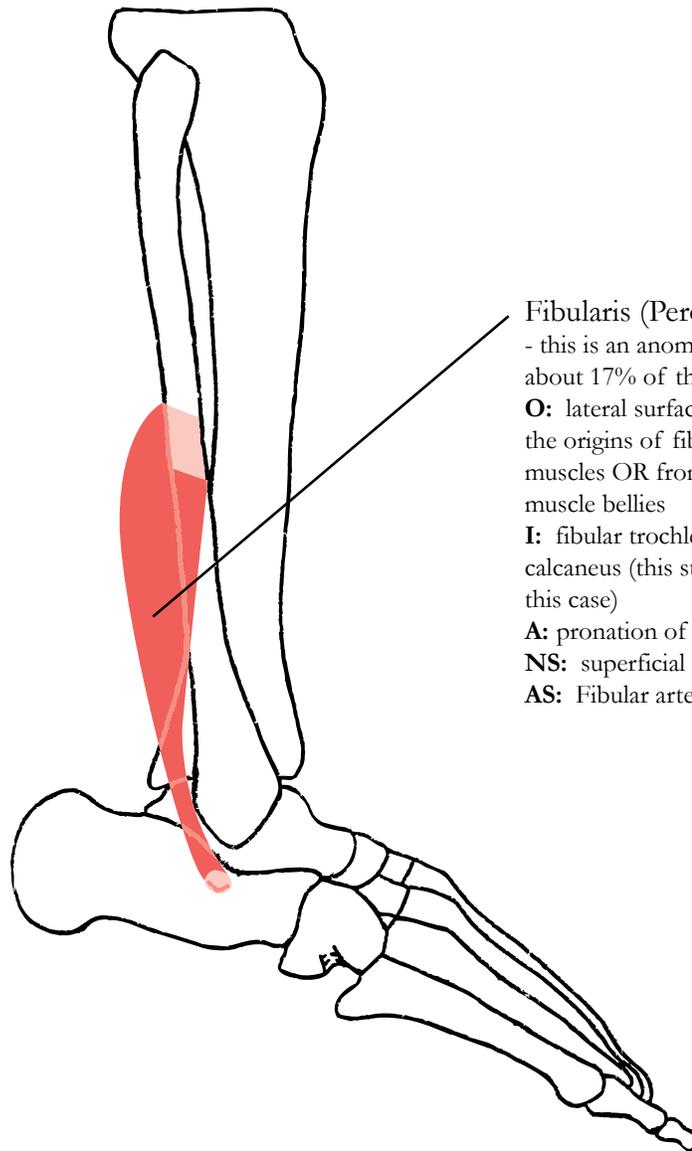


# Muscles of Leg

## Lateral Crural Compartment

### Lateral View

Proximal



Fibularis (Peroneus) Quartus Muscle  
- this is an anomalous muscle which is found in about 17% of the population

**O:** lateral surface of the fibula intermediate to the origins of fibularis longus and brevis muscles OR from fibularis longus and brevis muscle bellies

**I:** fibular trochlea (peroneal tubercle) of the calcaneus (this structure is usually enlarged, in this case)

**A:** pronation of the subtalar joint

**NS:** superficial fibular nerve

**AS:** Fibular artery

Distal

# Muscles of Leg

## Posterior Crural Compartment

### Posterior View

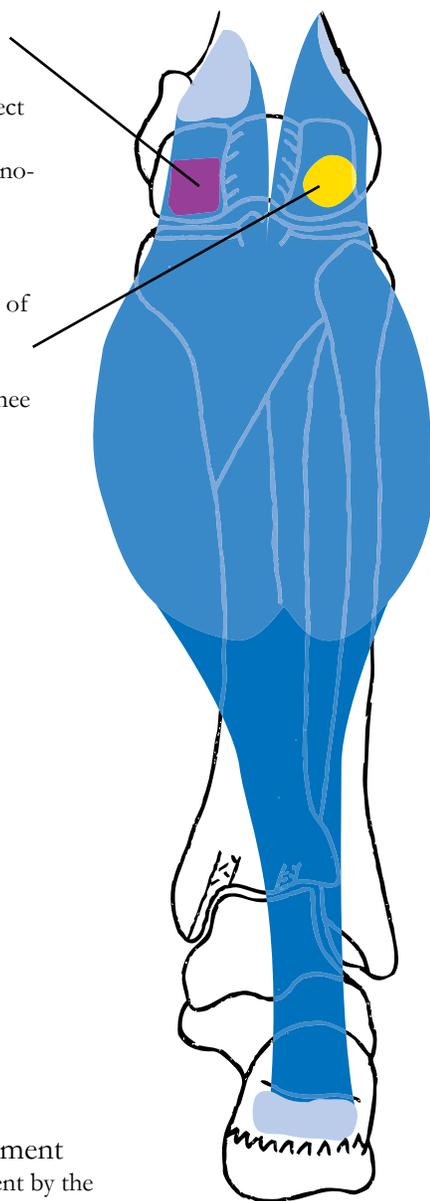
**Medial**

**Proximal**

**Lateral**

**Bursa of the Gastrocnemius muscle**  
 - intermediate to the medial head of the gastrocnemius muscle and the posterior aspect of the knee joint  
 - often communicates with the semimembranosus bursa

**Fabella**  
 - a sesamoid bone located in the lateral head of the gastrocnemius muscle  
 - present in about 30% of the population  
 - easily seen on a lateral radiograph of the knee



#### Gastrocnemius Muscle

- the most superficial muscle of the posterior compartment
- has 2 heads of origin (the medial head is larger) and crosses 2 joints
- often visible and generally palpable at the calf region during muscular contraction

**O:** *medial head:* proximal posterior aspect of the femoral medial supracondylar line and the medial part of the popliteal surface of the femur (also fascia cruris)

*lateral head:* posterolateral surface of the lateral condyle of the femur and the inferior part of the lateral femoral supracondylar line (also the fascia cruris)

**I:** (lateral part of the) middle 1/3 of the posterior surface of the calcaneus via the tendo calcaneus/ calcaneal tendon/ Achilles tendon

- the two heads attach to the gastrocnemius aponeurosis which is also attached to the superficial surface of the soleus muscle

**A:** plantar flexion of the foot; flexion of the leg (can not effectively do both at the same time)

**NS:** tibial nerve

**AS:** one sural artery to each head;

these are branches of the popliteal artery and are functional end arteries

- major supply of blood, without them the structure will die;
- minor supply - posterior tibial and fibular arteries

#### Superficial Posterior Crural Compartment

- separated from deep posterior compartment by the *deep transverse crural intermuscular septum (deep transverse fascial septum of the leg)* which attaches proximally to the soleal line/ popliteal line of the tibia and distally to the interosseus tibiofibular ligament of the distal tibiofibular joint
- these muscles give the calf region its shape
- these muscles are powerful plantar flexors of the ankle joint.

**Distal**

#### Posterior Crural Compartment

- also known as the flexor compartment
- subdivided into superficial and deep groups
- deep receive innervation from tibial nerve and some arterial supply from the posterior tibial artery
- superficial receive some arterial supply from the sural arteries
- in general muscles of this compartment are flexors / plantar flexors of the foot.

# Muscles of Leg

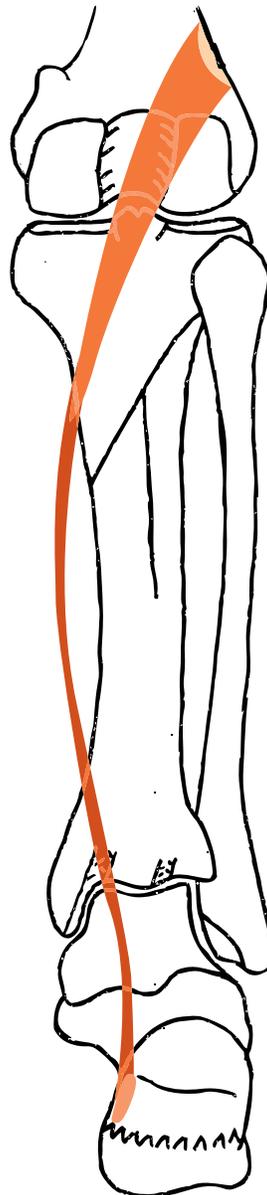
## Posterior Crural Compartment

### Posterior View

Medial

Proximal

Lateral



Distal

#### Plantaris Muscle

- a small muscle with a very long tendon that is found deep to the lateral head of gastrocnemius muscle
- its tendon is located intermediate to the gastrocnemius and soleus muscle
- occasionally is absent

**O:** distal part of the lateral supracondylar line of the femur

**I:** medial edge of the middle 1/3 of the posterior surface of the calcaneus

- its tendon passes inferomedially, intermediate to the gastrocnemius and soleus muscles

**A:** aids in plantar flexion of the ankle joint; aids in flexion of the knee joint

**NS:** tibial nerve

**AS:** sural artery (branch of popliteal artery)

# Muscles of Leg

## Posterior Crural Compartment

### Posterior View

**Medial**

**Proximal**

**Lateral**

#### Triceps Surae

- sometimes referred to as the gastrosoleus muscle or gastroc-soleus group
- considered a single muscle with three heads of origin and a single insertion (shoe shaped origin)

- **A:** plantar flex the foot
- aids in flexion of the leg

#### Gastrocnemius Muscle

- two heads of origin and part of insertion

#### Soleus Muscle

- one head of origin and part of insertion

#### Tendo Calcaneus

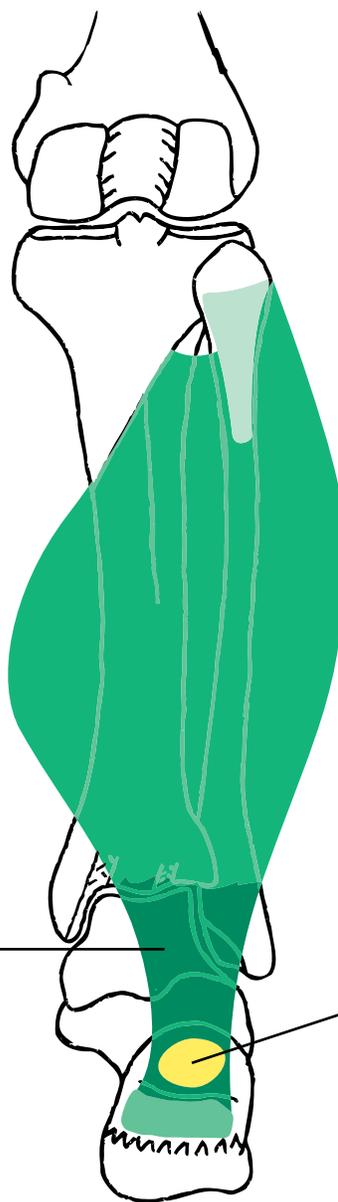
- the large structure that attaches the soleus and gastrocnemius muscles to the calcaneus
- twists internally from proximal to distal; thus the fibers from the gastrocnemius muscle are more laterally placed on the calcaneus and the fibers of the soleus muscle are more medially placed on the calcaneus

#### Watershed area

- an area of decreased blood supply within the tendon
- tendon receives blood from muscle bellies above and from below
- approximately 1.5 inches superior of the insertion, where the tendon is very round (to palpation)

#### Paratendon

- the thin fascial covering of the tendo Achilles which aids in decreasing friction and provides some blood supply
- this tendon has no tendon sheath



#### Soleus Muscle

- a broad flat muscle (named for the fish - sole)
- contractions are slower than gastrocnemius muscle
- often visible at the calf region during muscular contraction

**O:** the middle 1/3 of the medial border of the tibia, the soleal line of the tibia, the tendinous arch of the soleus muscle between the tibia and the fibula that allows the passage of neurovascular structures to the leg, the posterior aspect of the fibular head, and the proximal 1/3 of the posterior surface of the fibula, (a horse-shoe shaped origin)

**I:** the (medial part of the) middle 1/3 of the posterior surface of the calcaneus via the tendo calcaneus; the combined tendon of gastrocnemius and soleus muscles

**A:** plantar flexion of the ankle joint

**NS:** tibial nerve

**AS:** posterior tibial artery, fibular artery, and sural artery

#### Bursae of the tendo calcaneus

- two associated with the tendo calcaneus
- Deep Retrocalcaneal Bursa
  - located between the tendo calcaneus and the trigonum achilleum
- Superficial Retrocalcaneal Bursa
  - located between the tendo calcaneus and the skin at the level of the junction of the superior and middle thirds of the posterior surface of the calcaneus

**Distal**