



Massage Techniques 10A

The muscles of leg

Overview of the Region

The feet are the foundation of the human body and the pivot points for its locomotion. The principal muscles controlling the feet are found in the leg. Tendons of these muscles reach various points in the foot via the ankle, usually making right-angle turns and covering long distances to do so. The complex structure of the leg, ankle, and foot, along with its massive weight-bearing requirements, makes it vulnerable to a wide variety of injuries and chronic myofascial problems.

Because they serve as the foundation, the feet, ankles, and legs affect and are profoundly affected by posture. For balanced posture, the weight of the body should rest at a point just forward of the ankle. The body will compensate in a variety of ways to ensure that the weight does not fall behind this point. If the weight falls in front of this point, the calf and foot muscles must work constantly to keep the body from falling forward. Chronic tightness and trigger points in the calf muscle are usually attributable to this imbalance and are very common.

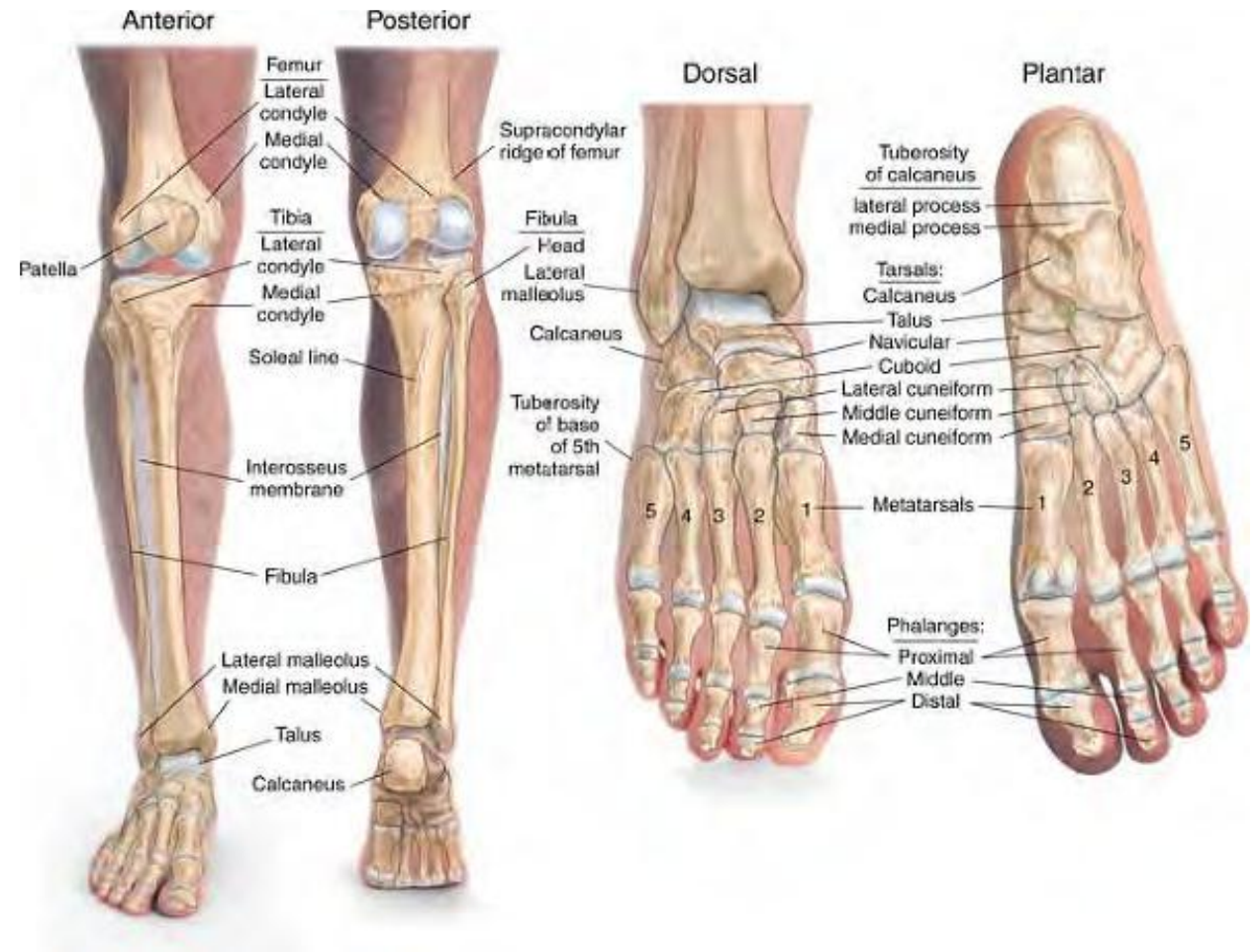
Note that the bones and joints in the leg, ankle, and foot are similar in number to those in the forearm, wrist, and hand, but their functions and the demands placed on them are quite different.

The ankle joint itself allows for virtually no lateral or medial movement. External and internal rotation of the feet are accomplished primarily at the hip. The foot is capable of external and internal rotation, inversion, eversion, supination, and pronation. Chronic supination or pronation of the foot is a dysfunction requiring correction appropriate to its cause.

The principal movements of the foot at the ankle are plantar and dorsal flexion. These are the primary movements of locomotion, and they are accompanied by complex activity in both the muscles of the foot that reside on the leg and the intrinsic muscles of the foot. In locomotion, weight is transferred successively from the back to the front, as the action proceeds from the heel strike to the function of the toes in pushing off. Many other movements involve intricate coordination of these muscles: running, climbing, diving, dancing, to name but a few. The healthy foot and leg are well equipped to carry out these activities with impressive dexterity.

Aside from traumatic injuries, the most stressful activity for the legs, ankles, and feet is simply standing for long periods of time. If the posture is out of balance, standing places tremendous stress on these structures, as already described. But even if the posture is good, muscles function best either in motion or at rest not under constant stress.

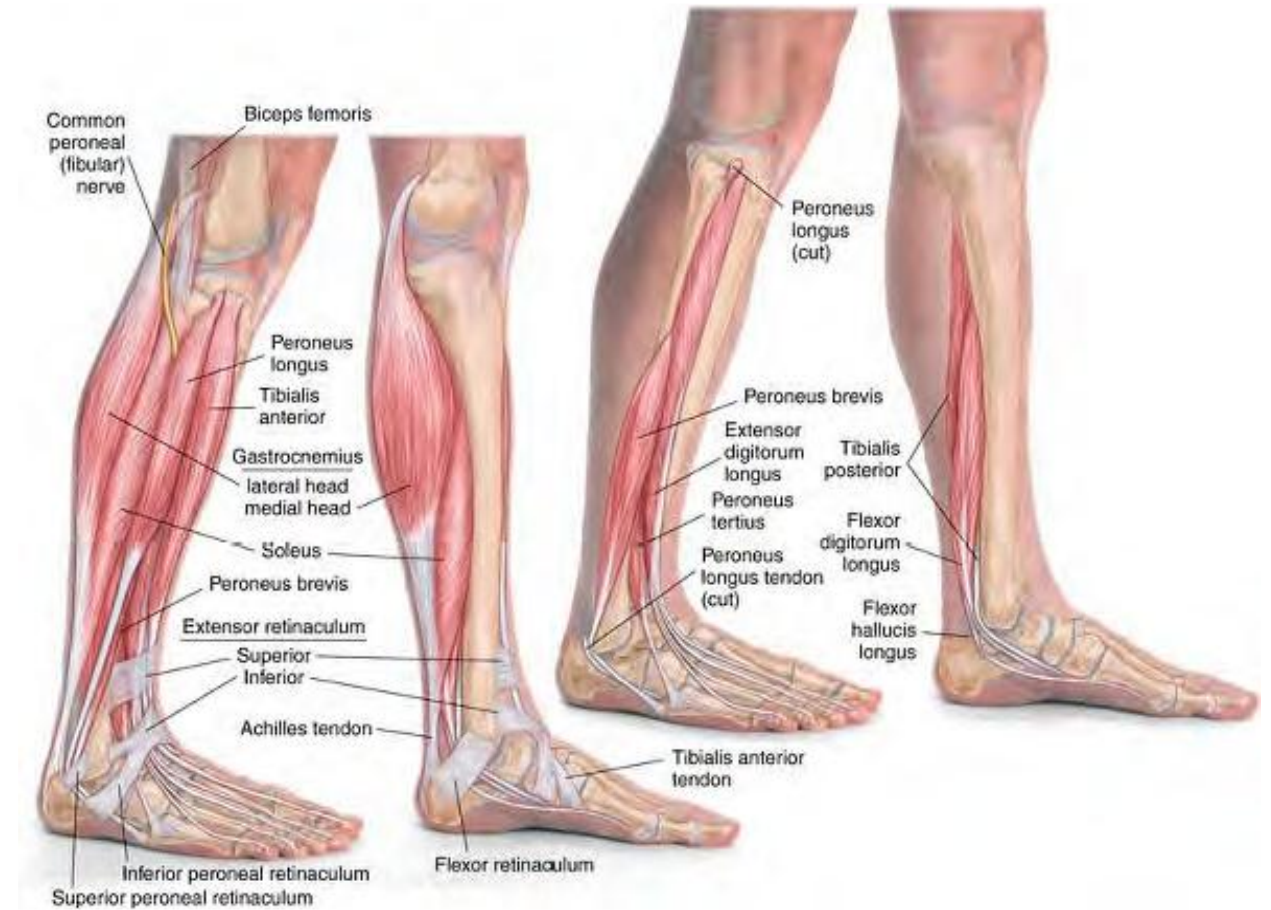
Skeletal features of the leg and foot



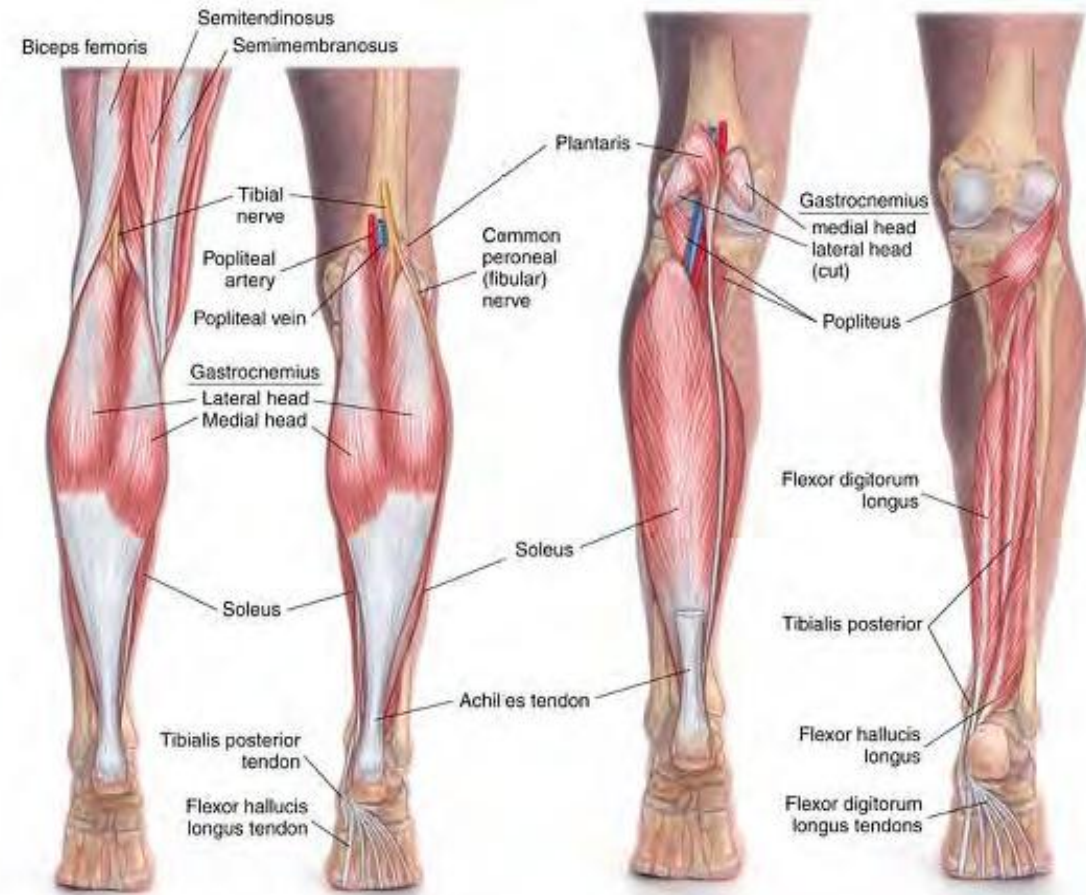
Muscles of the leg, anterior view



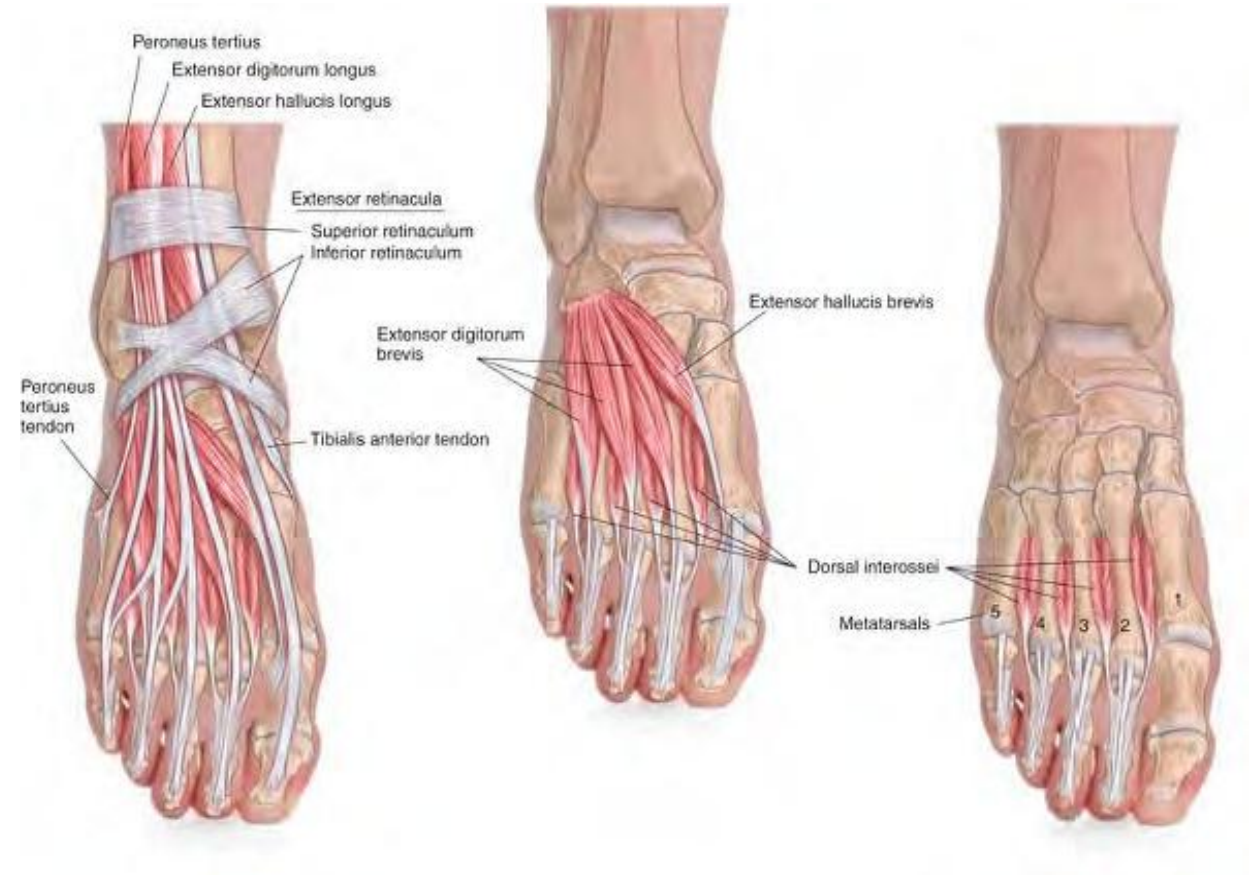
Muscles of the leg, lateral and medial views



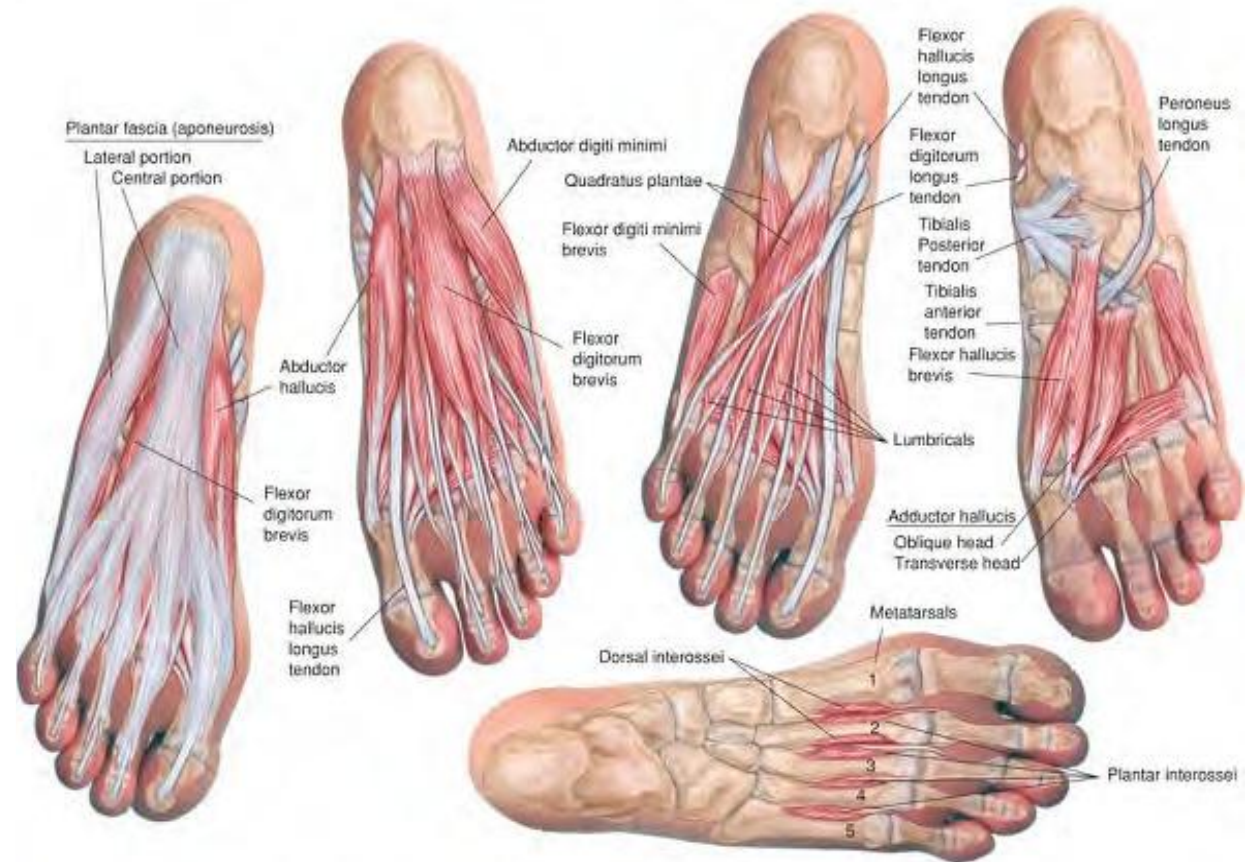
Muscles of the leg, posterior view



Intrinsic muscles of the foot,
dorsal view



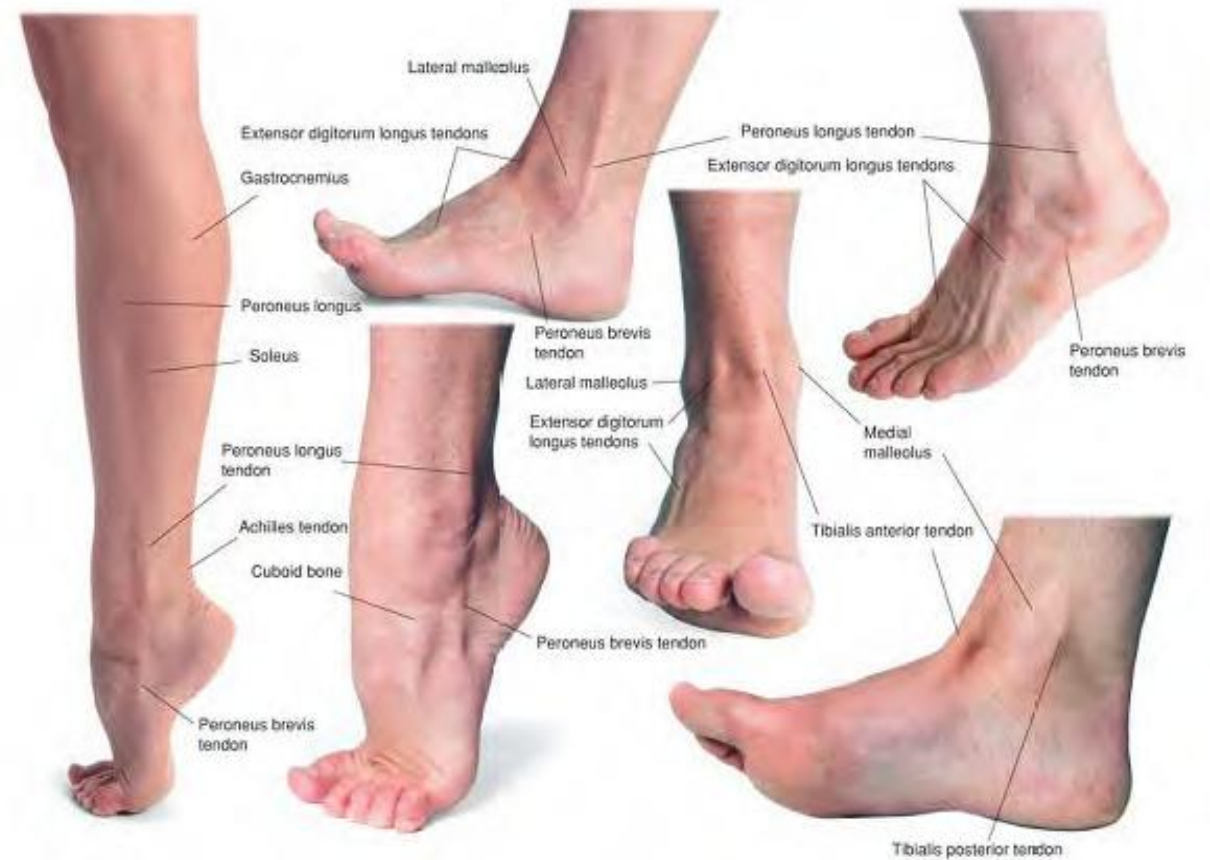
Intrinsic muscles of the foot, plantar view



Surface Anatomy of the leg and foot



Surface Anatomy of the leg and foot



Connective Tissue of the Leg and Foot

Crural Fascia

Etymology Latin cruralis, belonging to the legs + fasciae, of the bandage

Comment

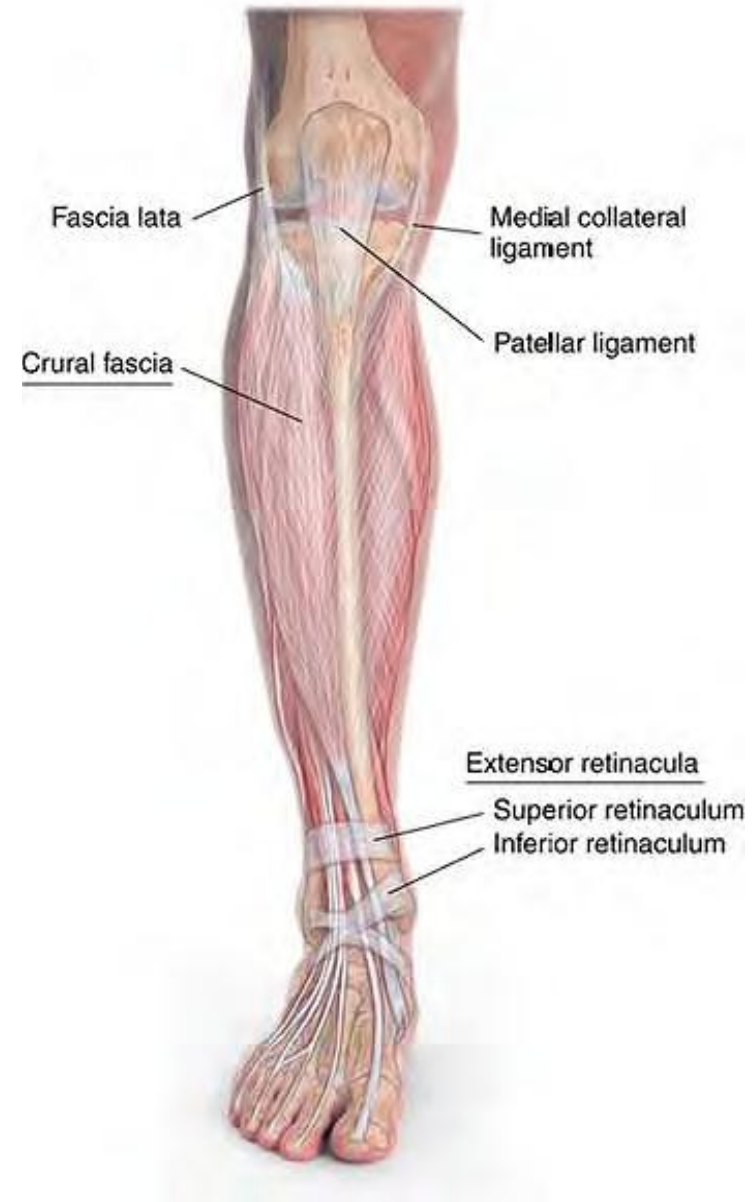
The crural fascia is the deep fascia of the entire lower limb. It is continuous with the fascia lata, attaches to the ligaments of the patella, and thickens at the ankle to form the retinacula.

Treatment of the crural

fascia, including the fascia over the tibia, frees the structures of the leg.

Palpation. Not palpable

Anatomy of the crural fascia



Manual Therapy

Fascial Stripping. The client lies supine. The therapist stands at the client's feet. Place the heel of the hand on the medial side of the leg just superior to the ankle. Pressing firmly into the tissue, slide the heel of the hand in a cephalad and posterior direction. Repeat this procedure, with the hand just above the previous starting position. Repeat the same procedure, proceeding up the leg as far as the medial condyle. You may also use the elbow or supported thumb for this procedure.

Deep stroking of the crural fascia
with supported thumb



Deep stroking of the crural fascia
with the heel of the hand (A) and
the elbow (B)



Flexor, Extensor, and Peroneal Retinacula

Flexor Retinaculum

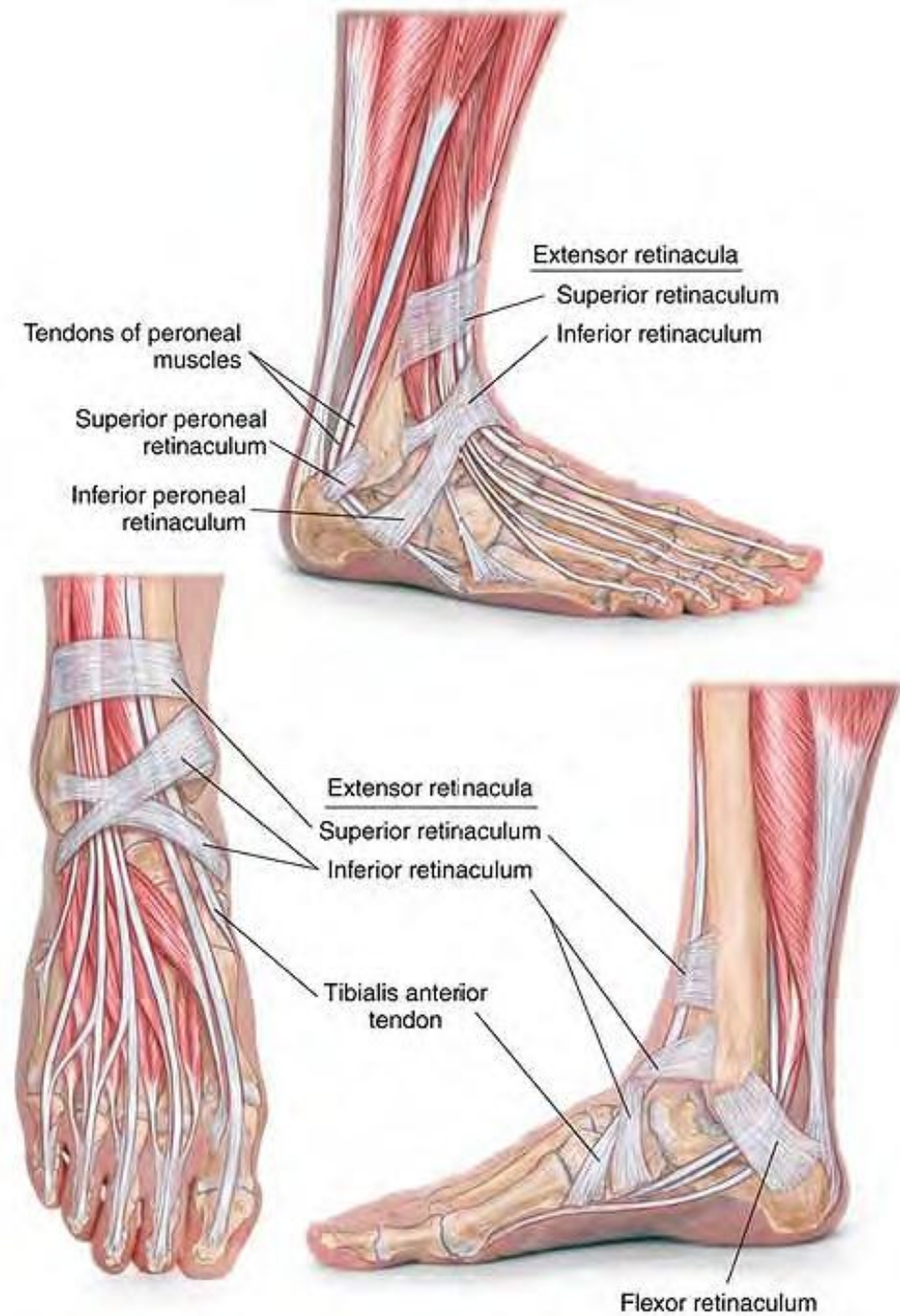
Etymology Latin flexor, bender + retinaculum, band or halter (from retinere, to hold back)

Overview

The flexor retinaculum is a wide band passing from the medial malleolus to the medial and upper border of the calcaneus and to the plantar surface as far as the navicular bone. It holds in place the tendons of the tibialis posterior, flexor digitorum longus, and flexor hallucis longus.

Palpation. Not palpable

Anatomy of the flexor, extensor,
and peroneal retinacula



Inferior Extensor Retinaculum

Etymology Latin inferior, lower + extensor, extender + retinaculum, band or halter (from retinere, to hold back)

Overview. The inferior extensor retinaculum is a Y-shaped ligament restraining the extensor tendons of the foot distal to the ankle joint.

Etymology Latin superior, higher + extensor, extender + retinaculum, band or halter (from retinere, to hold back)

Superior Extensor Retinaculum

Overview. The superior extensor retinaculum is a ligament that binds the extensor tendons proximal to the ankle joint; it is continuous with (a thickening of) the deep fascia of the leg.

Peroneal Retinaculum

Etymology. Latin peroneus from Greek perone, fibula + Latin retinaculum, band or halter (from retinere, to hold back)

Overview

The peroneal retinaculum consists of superior and inferior fibrous bands that retain the tendons of the peroneus longus and brevis in position as they cross the lateral side of the ankle.

Manual Therapy for the Retinacula

Comment. Although there are distinct retinacula of the ankle, they are treated together.

Cross-fiber Stroking. The client lies supine. The therapist stands at the client's feet. Place the thumb on the dorsum of the foot just below the ankle, over the navicular bone. Pressing firmly into the tissue, slide the thumb up the ankle about three inches. Repeat this procedure (Fig. 10-5B), moving laterally around the ankle all the way to the Achilles tendon. Repeat this procedure, moving around the ankle medially all the way to the Achilles tendon. Note that the distal aspect of the retinaculum lies more distal on the foot on the lateral side.

Deep stroking of the ankle retinacula, medial to lateral



Deep stroking of the flexor
retinaculum: (A) supported thumb,
(B) unsupported thumb



Plantar Fascia (Plantar Aponeurosis)

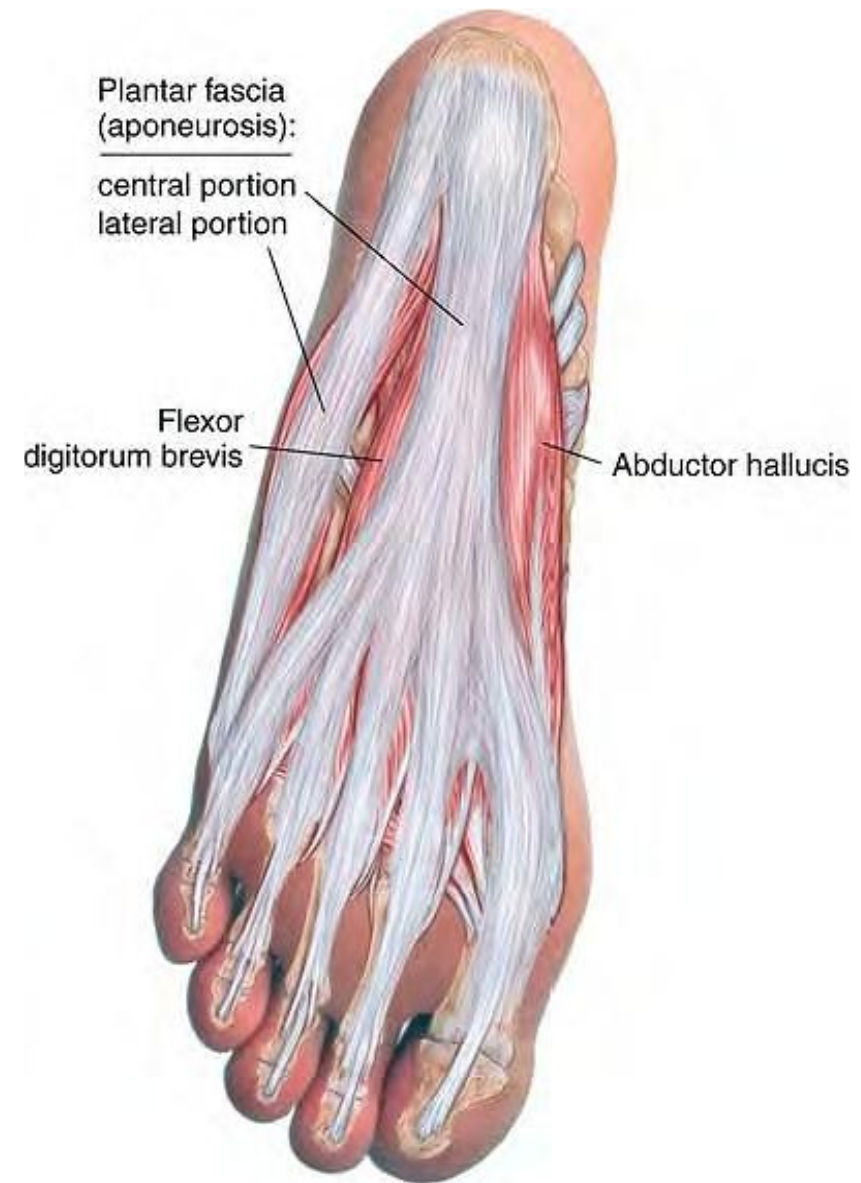
Overview

The plantar fascia is the very thick, central portion of the fascia investing the plantar muscles; it radiates toward the toes from the medial process of the calcaneal tuberosity and provides attachment to the short flexor muscle of the toes.

Palpation

Not discernible

Anatomy of the plantar fascia



Manual Therapy

The client lies prone, the feet on a pillow or bolster. The therapist stands or sits at the client's feet. Place the thumb or supported thumb on the plantar aspect of the foot on the medial side, just proximal to the base of the big toe.

Pressing firmly into the tissue, glide the thumb to the heel. Repeat this procedure, starting just lateral to the previous starting position. Repeat the same procedure until the entire plantar surface has been treated. This procedure can be carried out for the entire plantar surface with the knuckles.

Deep stroking of the plantar fascia
with the thumbs



Deep stroking of the plantar fascia
with the knuckles

