



ANATOMY OF THE FOOT

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Sole of the Foot

Plantar aponeurosis

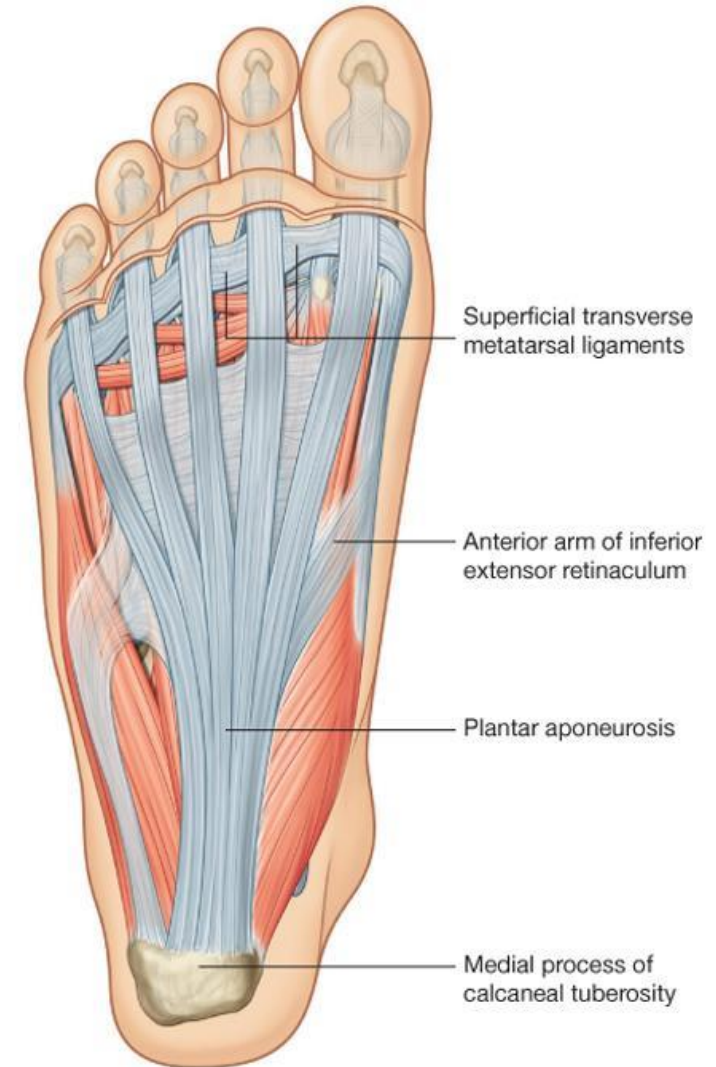
It is a triangular thickening of the deep fascia of sole.

✓ Attachment :

apex: is attached to the medial and lateral tubercles of the calcaneus

base : it divides into five slips that pass into the toes.

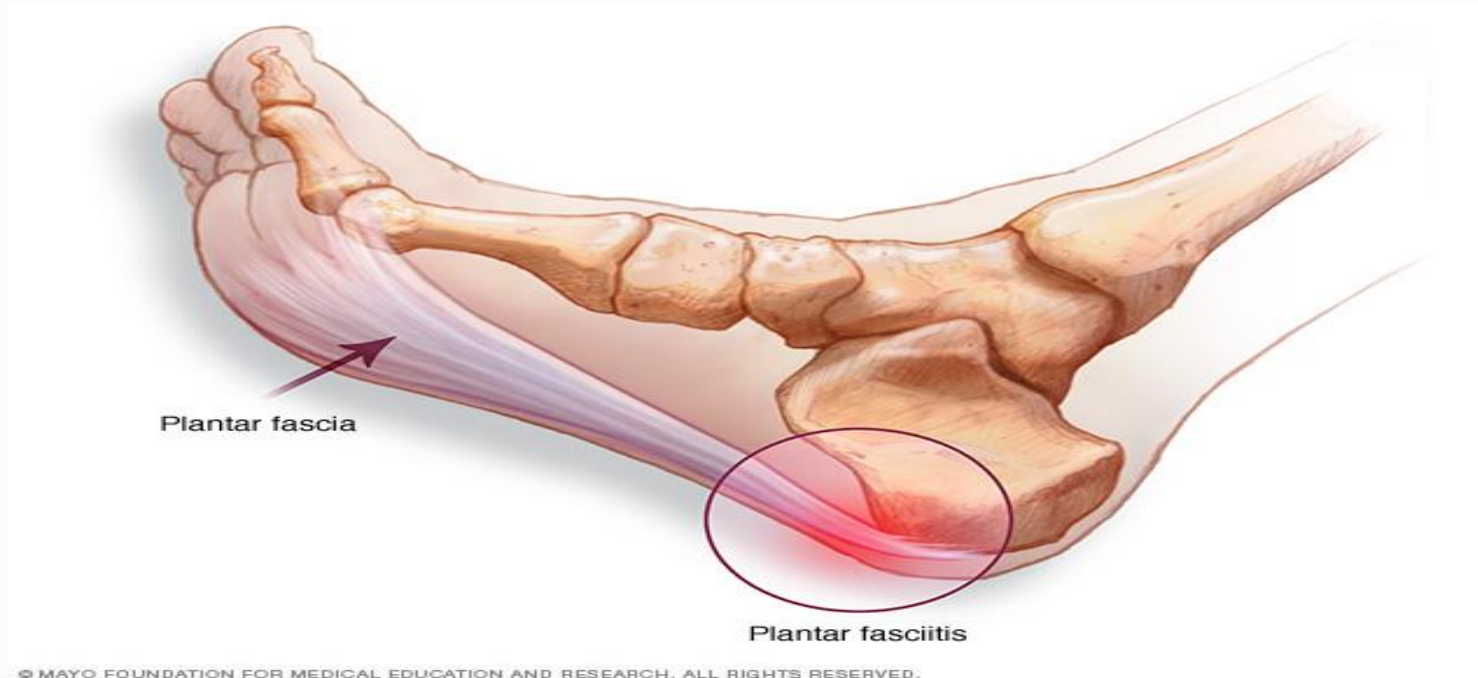
✓ Function : protects the underlying nerves, blood vessels, and muscles



Drake: Gray's Anatomy for Students, 2nd Edition.
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Plantar Fasciitis

- ✓ It happens to a person who is standing or walking for a long time.
- ✓ It causes pain and tenderness of the sole of the foot.
- ✓ Repeated attacks of this condition induce ossification in the posterior attachment of the aponeurosis



Muscles of the Sole of the Foot

- The muscles of the sole are arranged in four layers from the inferior layer superiorly.
- The 2nd and 4th layers contains tendons of muscle of posterior and lateral compartment of the leg

All the muscles of the foot are supplied **by lateral plantar nerve**

EXCEPT

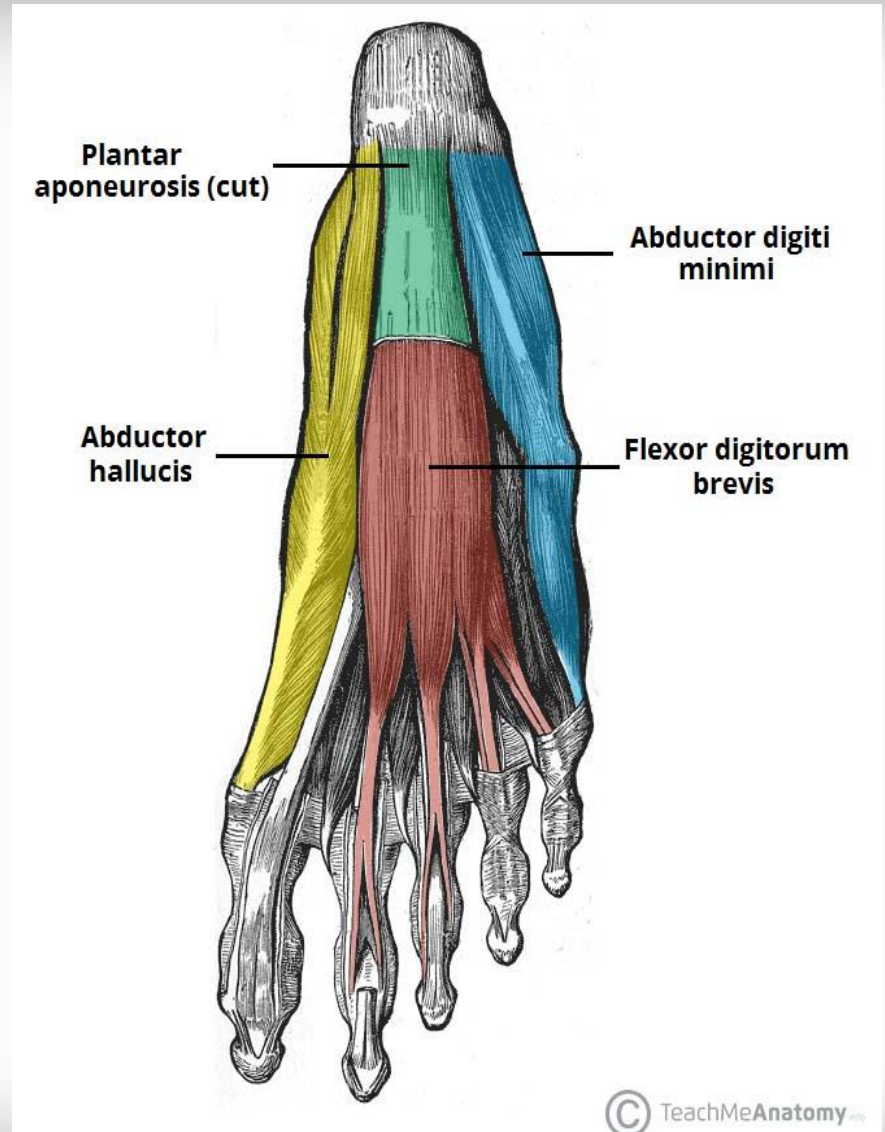
1. Abductor hallucis
2. Flexor digitorum brevis
3. Flexor hallucis brevis
4. 1st Lumbricalis

Are supplied by medial plantar nerve

Muscles of the Sole of the Foot

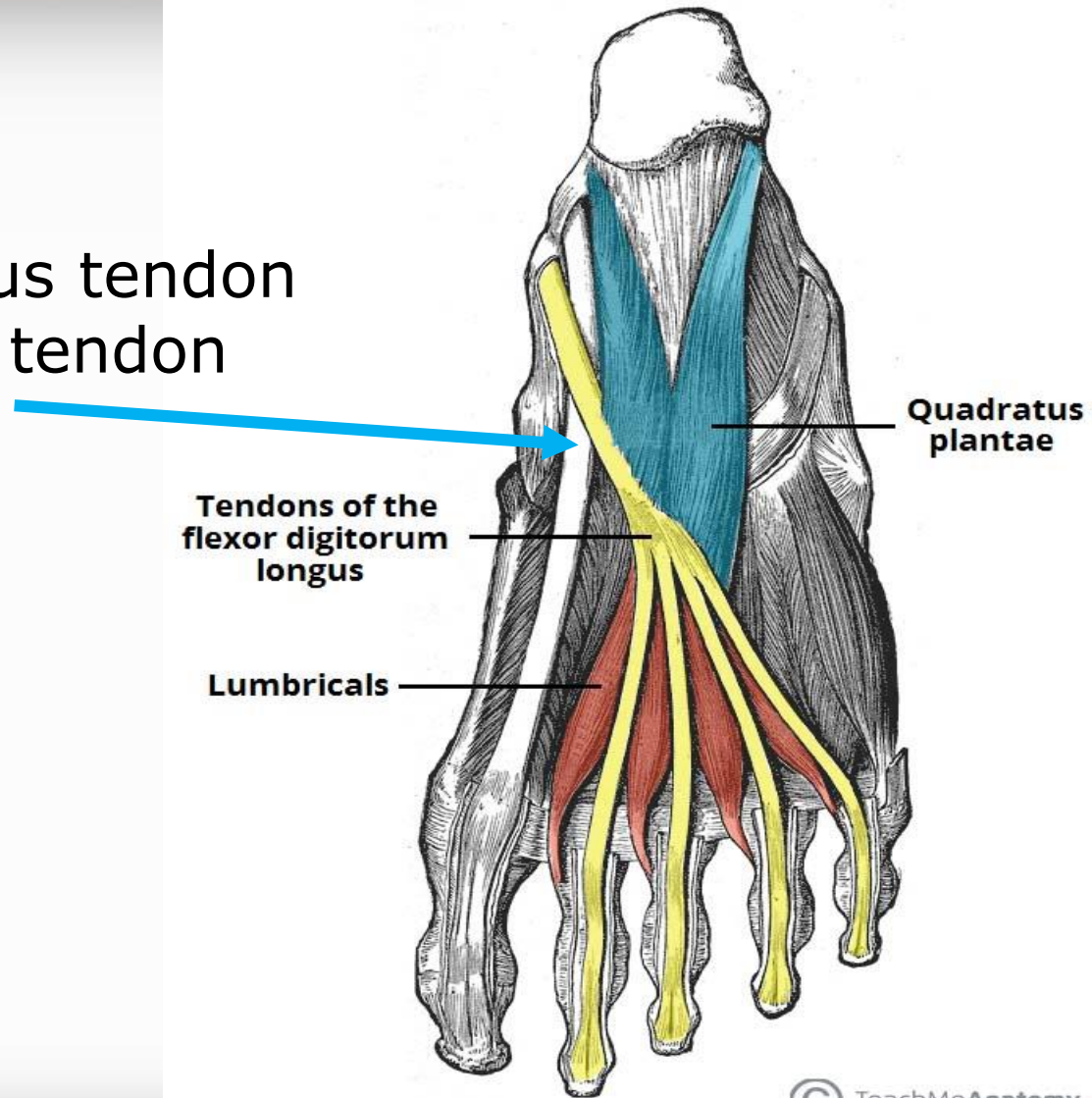
First layer:

- 1- Abductor hallucis
- 2- Flexor digitorum brevis
- 3- Abductor digiti minimi



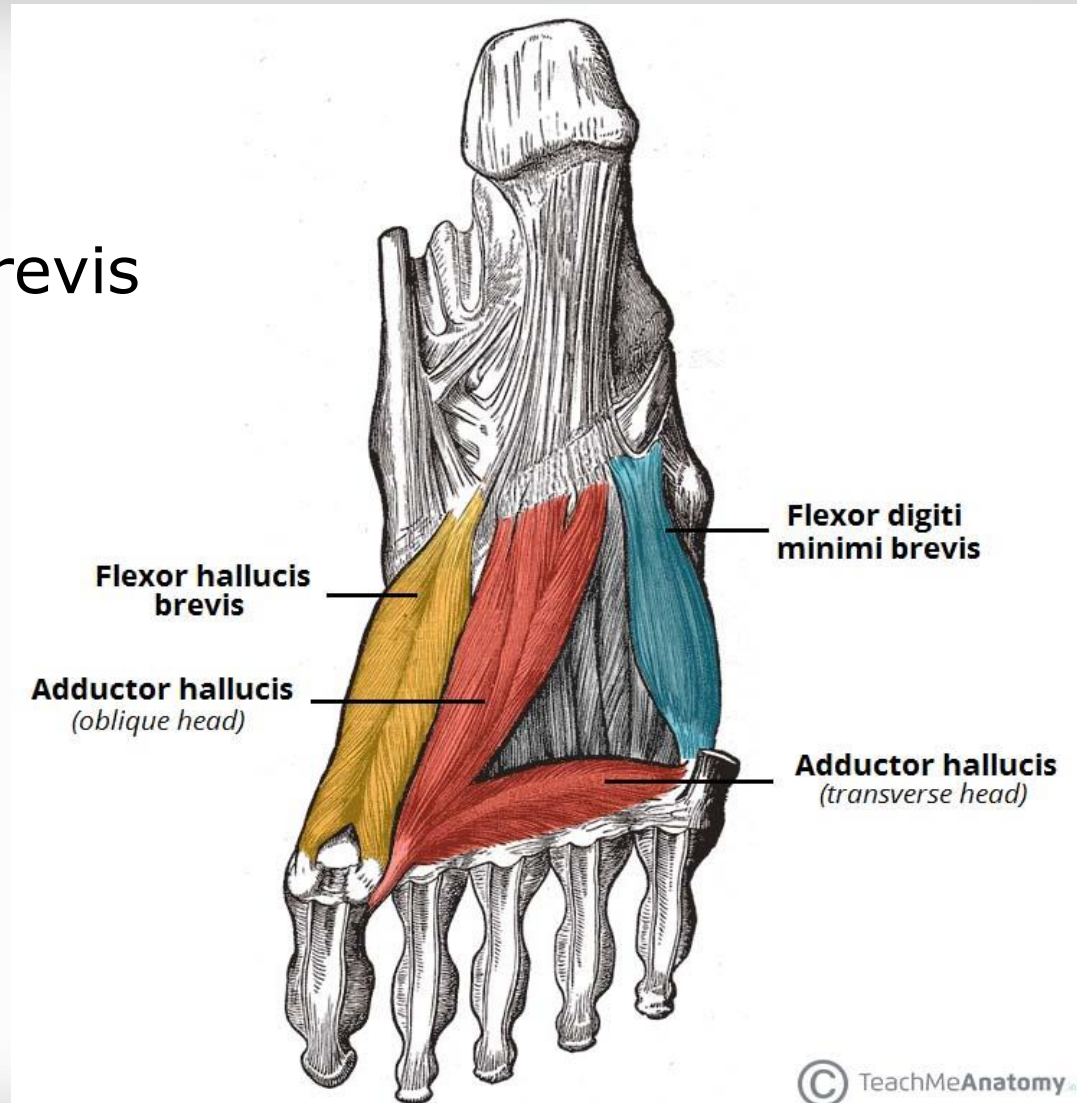
Second layer:

- 1-Quadratus plantae
- 2-Lumbricals
- 3-Flexor digitorum longus tendon
- 4-Flexor hallucis longus tendon



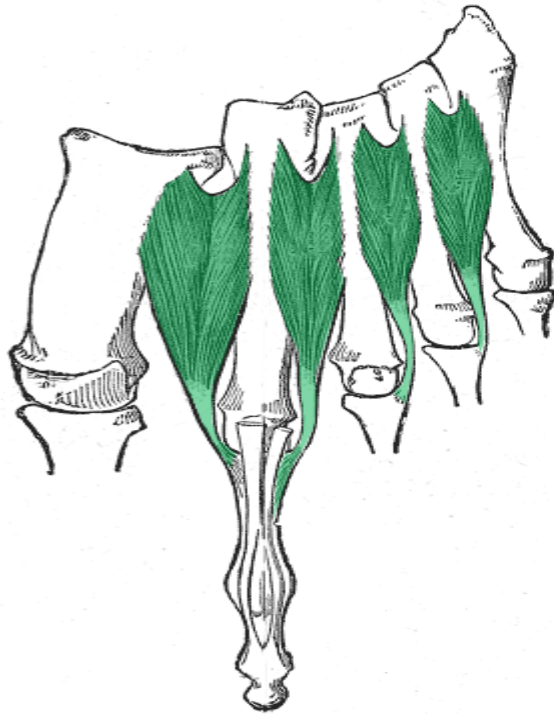
Third layer:

- 1-Flexor hallucis brevis
- 2-Adductor hallucis
- 3- Flexor digiti minimi brevis

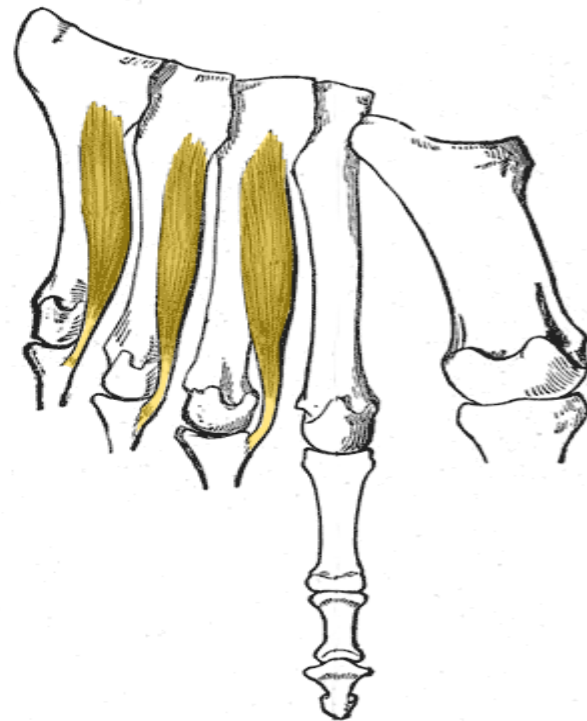


Fourth layer

- 1- Interossei (four dorsal and 3 plantar)
- 2- Peroneus longus tendon
- 3- Tibialis posterior tendon



a) Dorsal Interossei



b) Plantar Interossei

Muscles of the foot

1st Layer

2nd layer

3rd layer

4th layer

1- **Abductor**
hallucis

1-Quadratus
plantae

1-**Flexor**
hallucis
brevis

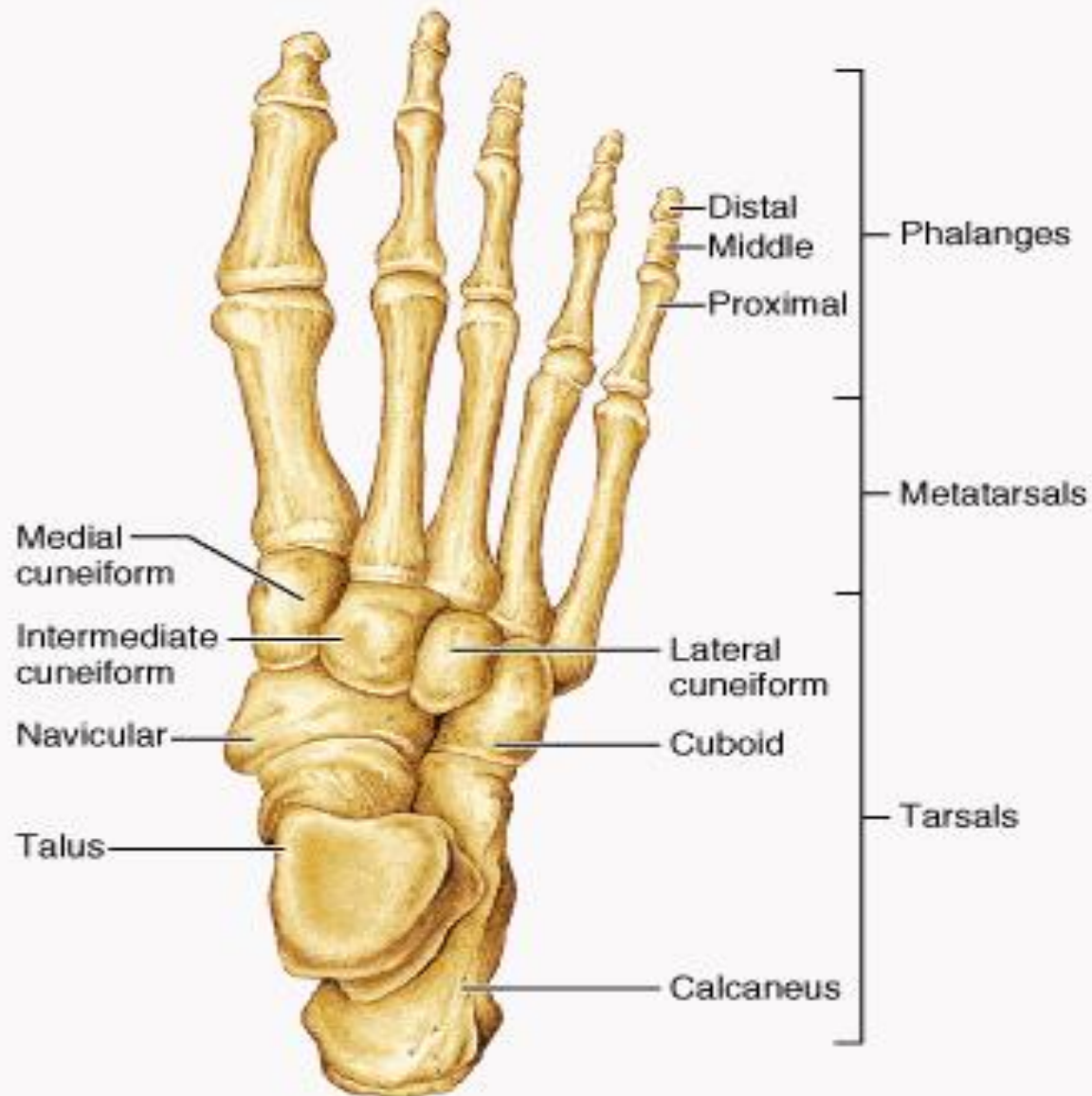
2- Flexor
digitorum
brevis

2-Adductor
hallucis

3-**Abductor**
digiti minimi

3- **Flexor**
digiti minimi
brevis

Bones of the Foot

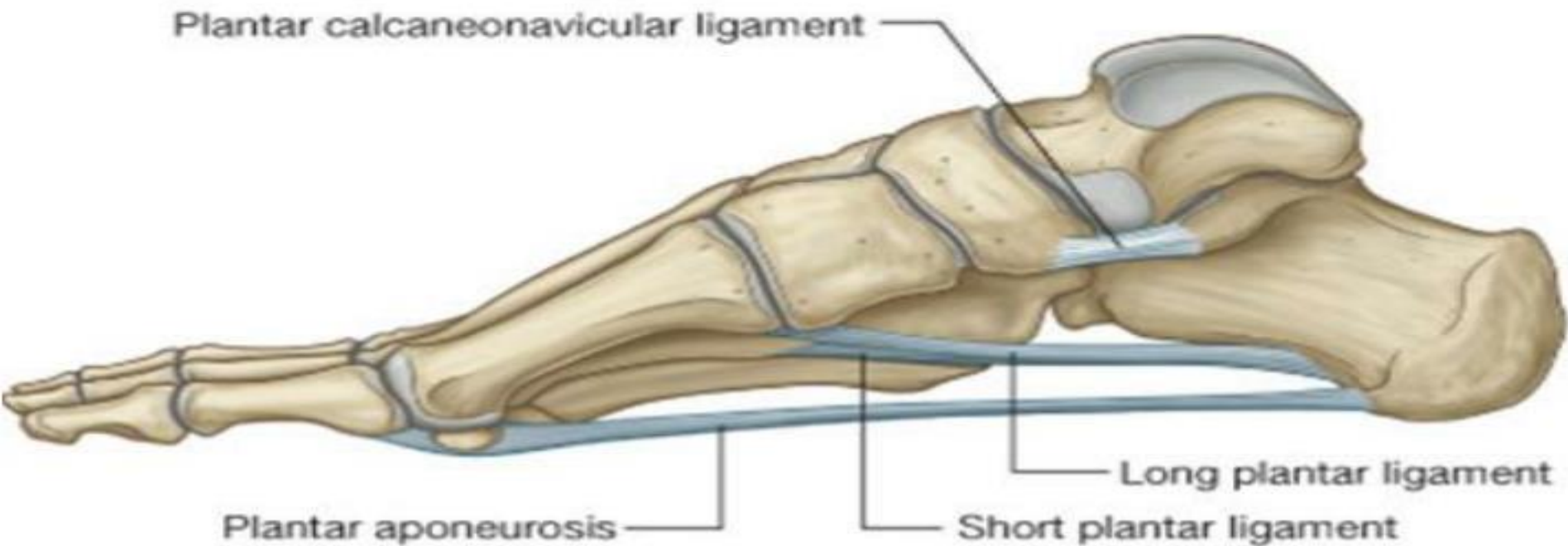


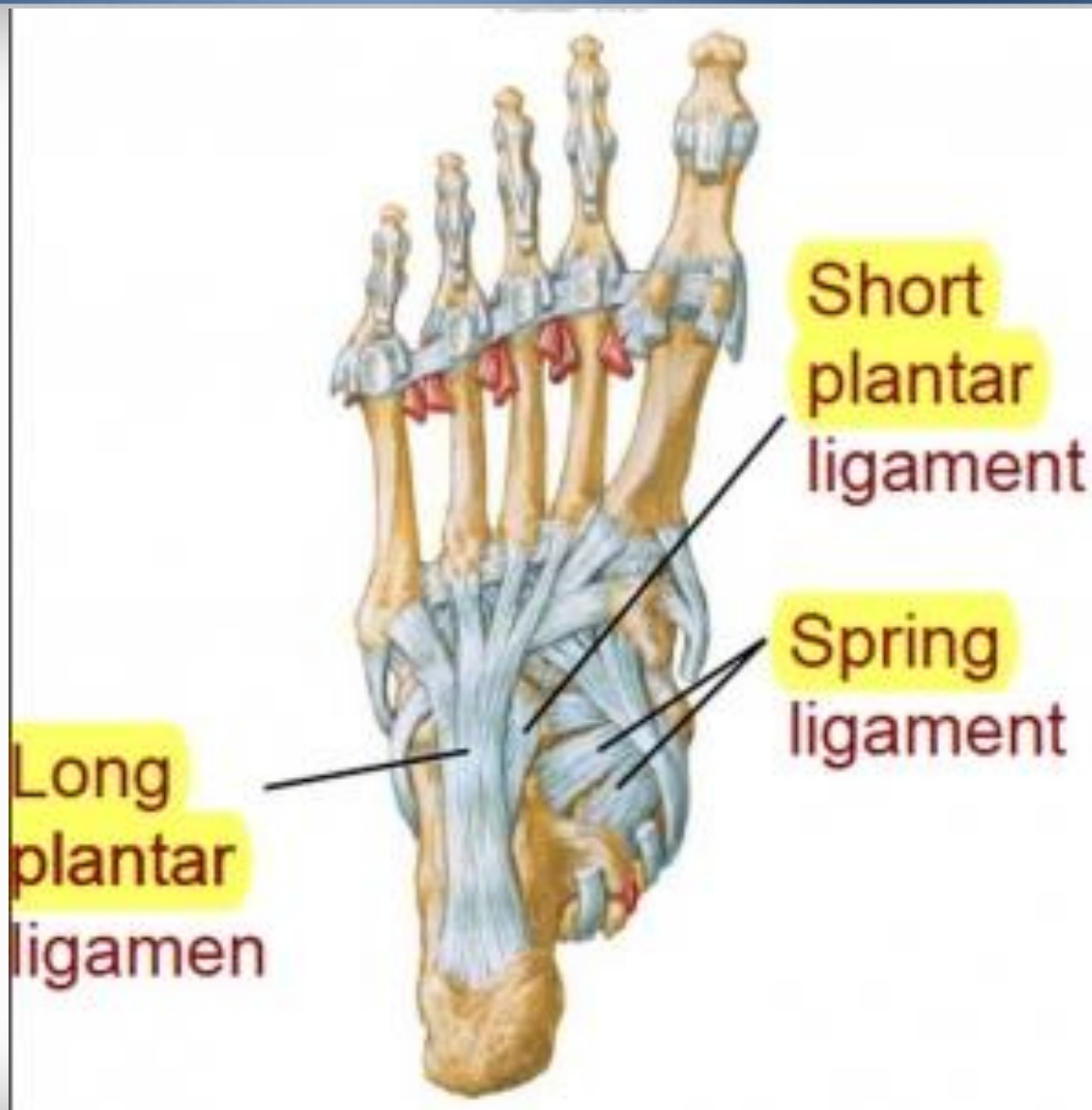
Important ligament of the Foot

- **Plantar calcaneonavicular ligament (spring ligament).**
- **Short plantar ligament :** lies deep to the above ligament, extends from calcaneus to cuboid bone.
- **Long plantar ligament :** from calcaneus and cuboid to the bases of the middle 3 metatarsal bones.

MAJOR LIGAMENTS OF FOOT

- Plantar calcaneonavicular ligament (spring ligament) (M)
- Long plantar ligament (L)
- Plantar calcaneocuboid ligament (short plantar ligament) (L)





Arches of the Foot

The bones of the foot are arranged in two arches that are held in position by ligaments and tendons

The arches provide an ideal distribution of body weight over the soft and hard tissues of the foot

Normally, the ball of the foot carries about 40% of the weight and the heel carries about 60%.

Usually, the arches are fully developed by age 12 or 13.

body weight
100%

50%
On the
right side

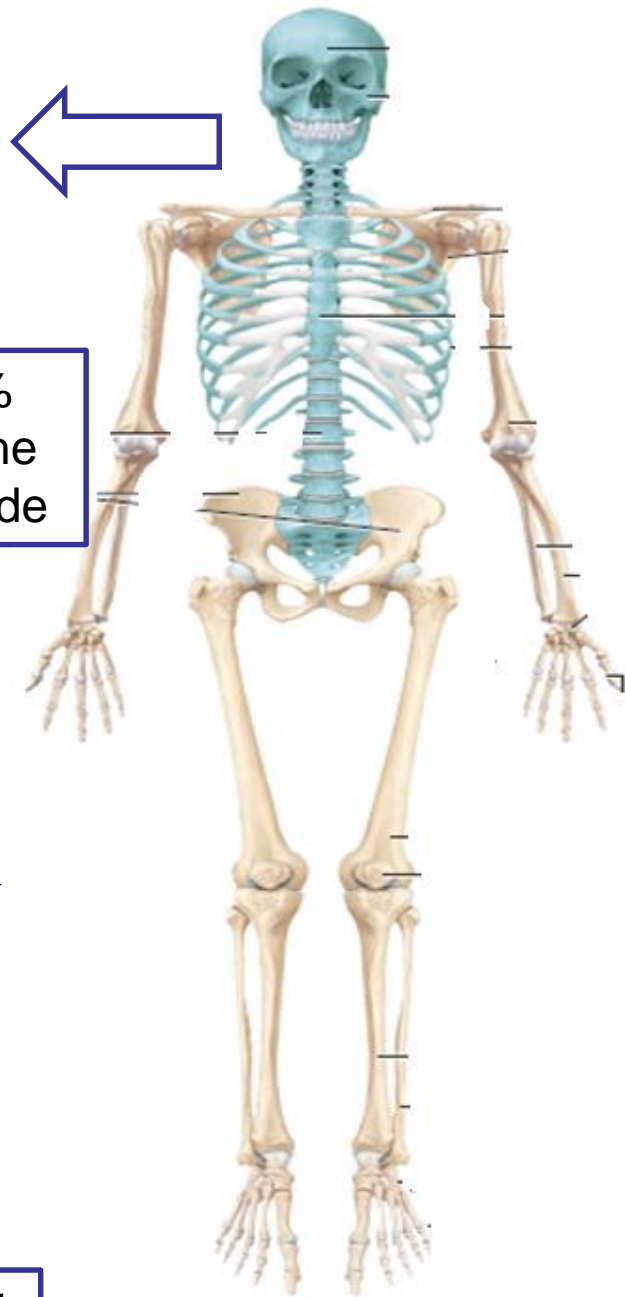
50%
On the
left side

20%

30%

The ball of the foot

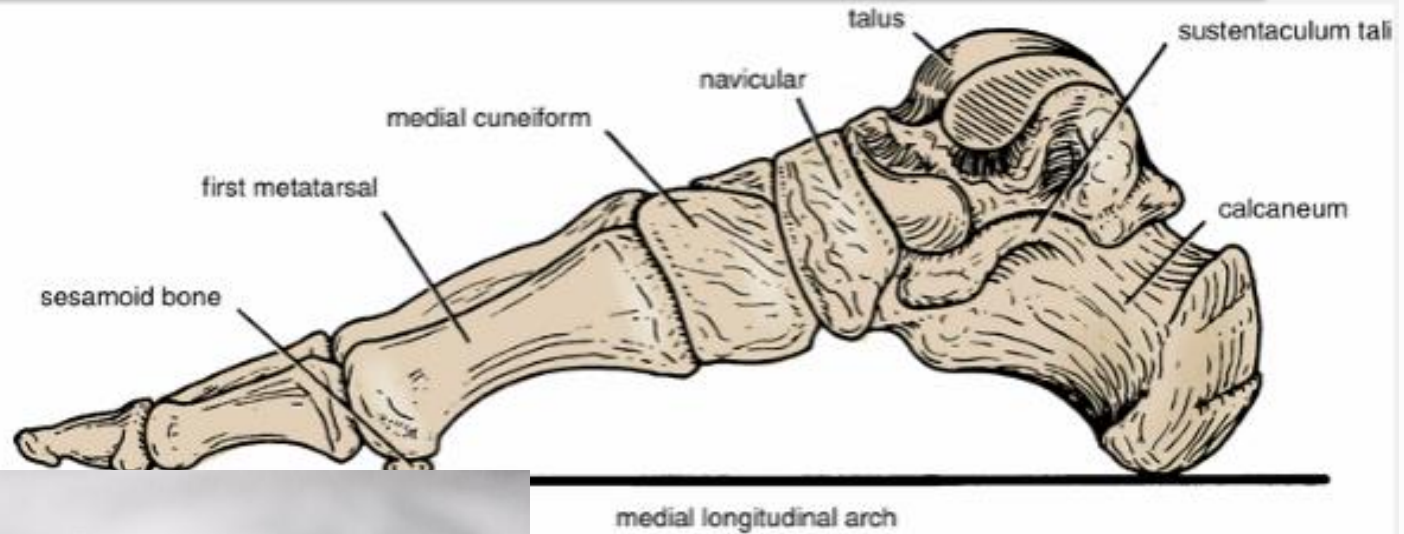
The heel



The Arches of the Foot

A segmented structure can hold up weight only if it is built in the form of an arch. The foot has three such arches:

In the young child, the foot appears to be flat because of the presence of a large amount of subcutaneous fat on the sole of the foot.



Arches of the foot

The foot has 3 Arches

1. Medial Longitudinal Arch
2. lateral Longitudinal Arch
3. Transverse Arch

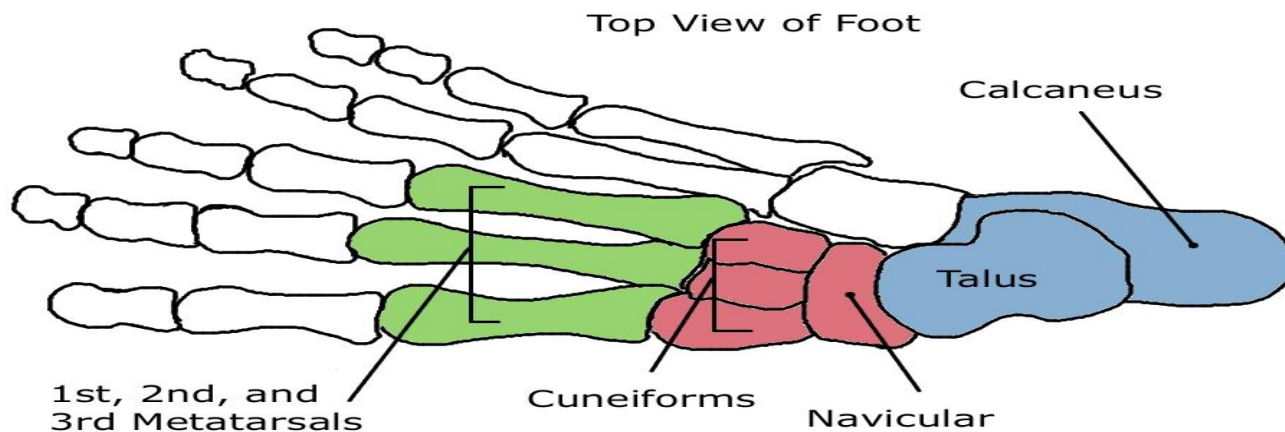
Function of arches of the foot

- (1) Protect the soft tissues and neurovascular of the sole
- (2) Distribution of the body weight



Arches of the foot

| Medial Longitudinal Arch | Lateral Longitudinal Arch | Transverse arch |
|---|--|---|
| <ul style="list-style-type: none">✓ Calcaneum, talus Navicular✓ The 3 cuneiform bones✓ The medial 3 metatarsals | <ul style="list-style-type: none">✓ Calcaneum, cuboid✓ Lateral 2 metatarsals. | <ul style="list-style-type: none">✓ Bases of the 5 metatarsals.✓ The 3 cuneiform and cuboid. |

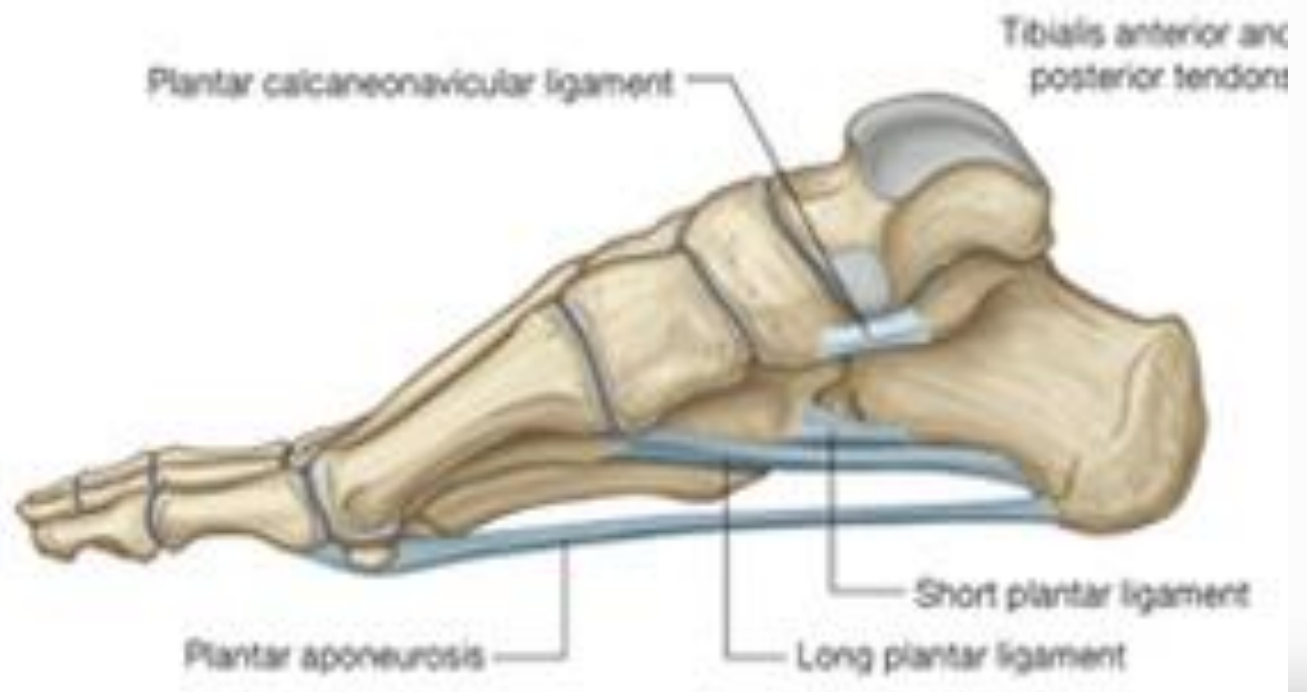
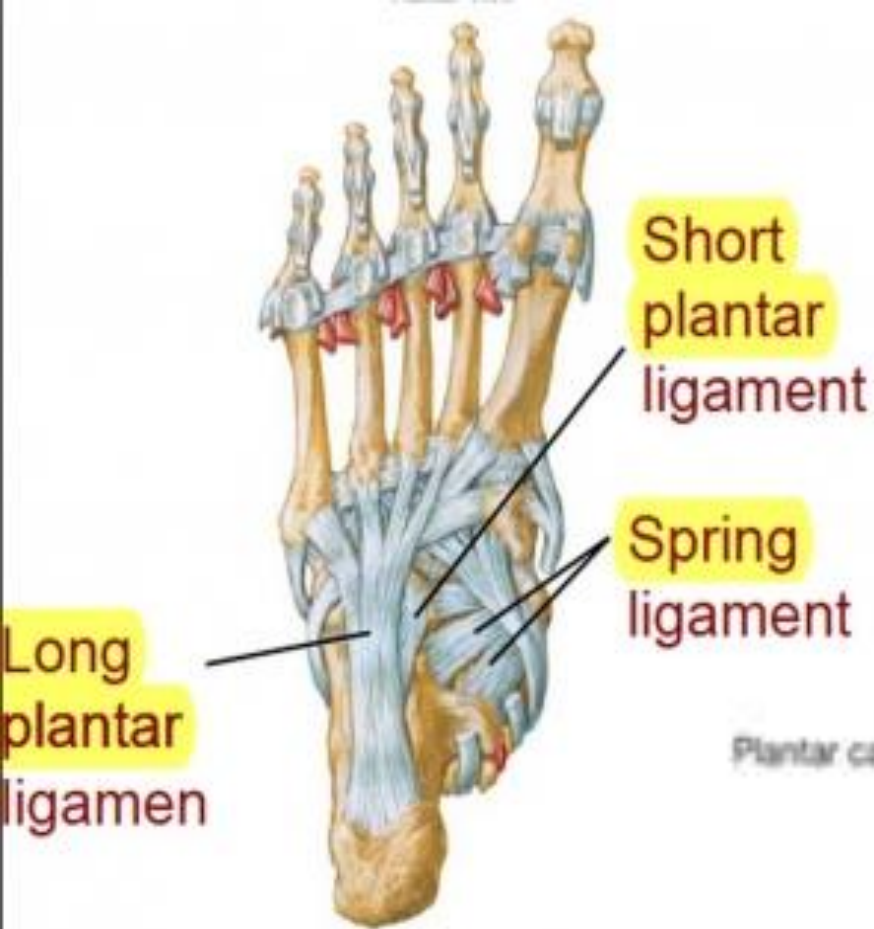


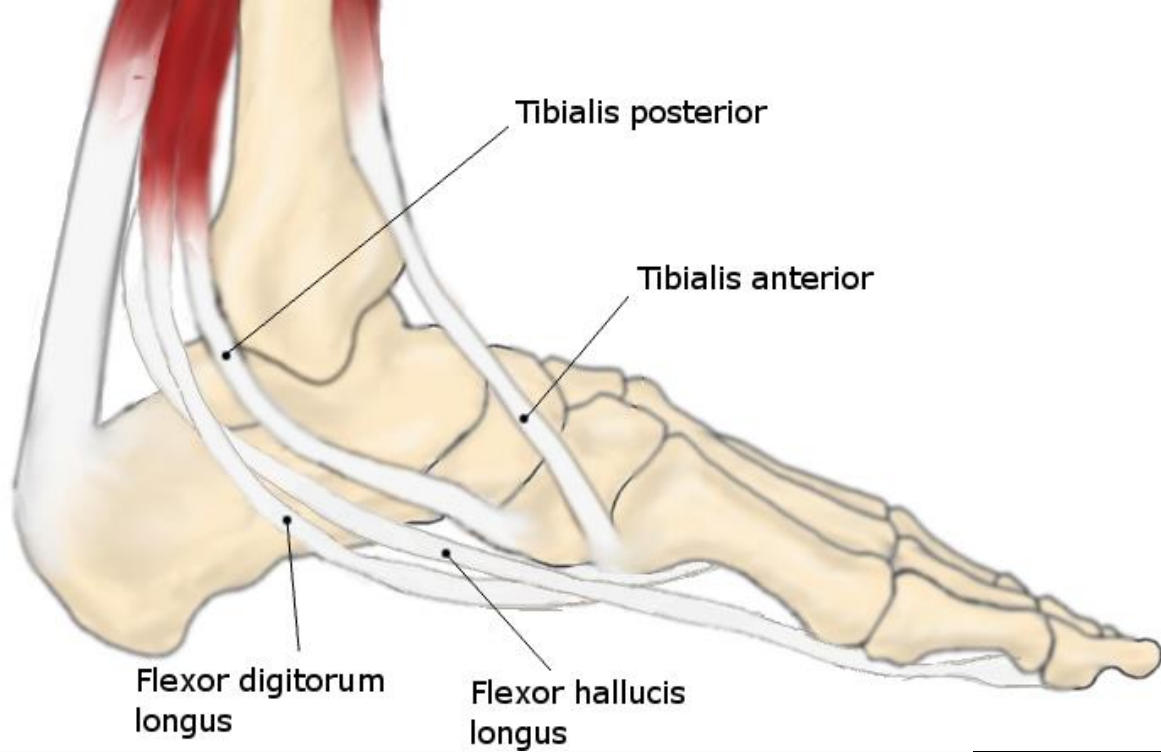
Factors maintains Arches of the foot (Read only)

| Medial Longitudinal Arch | Lateral Longitudinal Arch | Transverse arch |
|--|--|--|
| <p>(1)Bony Factor -The rounded head of the talus is the keystone</p> <p>(2)Ligamentous factors</p> <ul style="list-style-type: none">• <u>Medial</u> part of the plantar aponeurosis.• Plantar calcaneo-navicular ligament (spring ligament) <p>(3)Muscular factors :</p> <ul style="list-style-type: none">• Flexor hallucis longus, bervis• Abductor hallucis• Medial 1/2 of flexor digitorum longus, bervis• Tibialis posterior. | <p>(1)Bony Factor The cuboid is the keystone</p> <p>(2)ligamentous factors</p> <ul style="list-style-type: none">• <u>Lateral</u> part of plantar aponeurosis.• Long plantar ligament.• Short plantar ligament. <p>(3)Muscular factors :</p> <ul style="list-style-type: none">• Abductor digiti minimi• Lateral 1/2 of flexor digitorum longus, bervis• Peroneus longus• Peroneus brevis | <p>(1)Bony Factor -The marked wedge shaping of the cuneiform</p> <ul style="list-style-type: none">-Bases of the metatarsal bones <p>(2) Ligamentous factors :</p> <p>Transverse metatarsal ligaments. Strong plantar ligaments</p> <p>(3) Muscular factors :</p> <ul style="list-style-type: none">• Peroneus longus• Peroneus brevis |

Factors maintains Arches of the foot (Read only)

| Medial Longitudinal Arch | Lateral Longitudinal Arch | Transverse arch |
|---|---|--|
| <p data-bbox="19 257 656 314">(2) Ligamentous factors</p> <ul data-bbox="19 342 734 599" style="list-style-type: none">• Medial part of the plantar aponeurosis.• Plantar calcaneo-navicular ligament (spring ligament) <p data-bbox="19 628 579 685">(3) Muscular factors :</p> <ul data-bbox="19 714 734 1256" style="list-style-type: none">• Flexor hallucis longus• Flexor hallucis bervis• Abductor hallucis• Medial 1/2 of flexor digitorum longus• Medial 1/2 of flexor digitorum bervis | <p data-bbox="753 257 1178 357">(2) ligamentous factors</p> <ul data-bbox="753 399 1333 799" style="list-style-type: none">• Lateral part of plantar aponeurosis.• Long plantar ligament.• Short plantar ligament. <p data-bbox="753 828 1313 885">(3) Muscular factors :</p> <ul data-bbox="753 913 1333 1270" style="list-style-type: none">• Abductor digiti minimi• Lateral 1/2 of flexor digitorum longus• Lateral 1/2 of flexor digitorum bervis | <p data-bbox="1371 257 1719 357">(3) Muscular factors :</p> <ul data-bbox="1371 399 1912 456" style="list-style-type: none">• Peroneus longus |

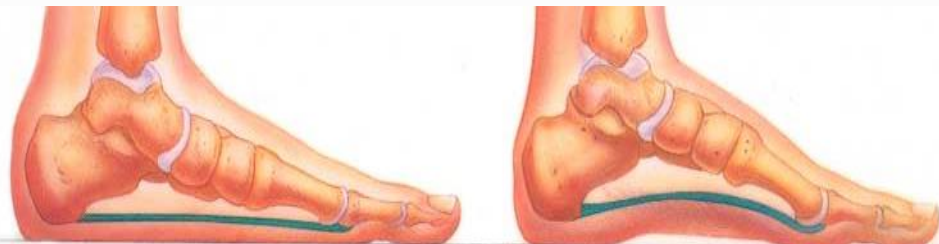




Flat foot

Is a condition in which the medial longitudinal arch is depressed or collapsed.

The causes of flat foot are both congenital and acquired



FLAT ARCH

NORMAL ARCH



Pes cavus (clawfoot) :

- ✓ Is a condition in which the medial longitudinal arch is excessively high.
- ✓ Most cases are caused by muscle imbalance, as in poliomyelitis



Test For Flat Feet



1



2



3



T H A N K Y O U