ANATOMY OF THE FOOT

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Sole of the Foot

Plantar aponeurosis

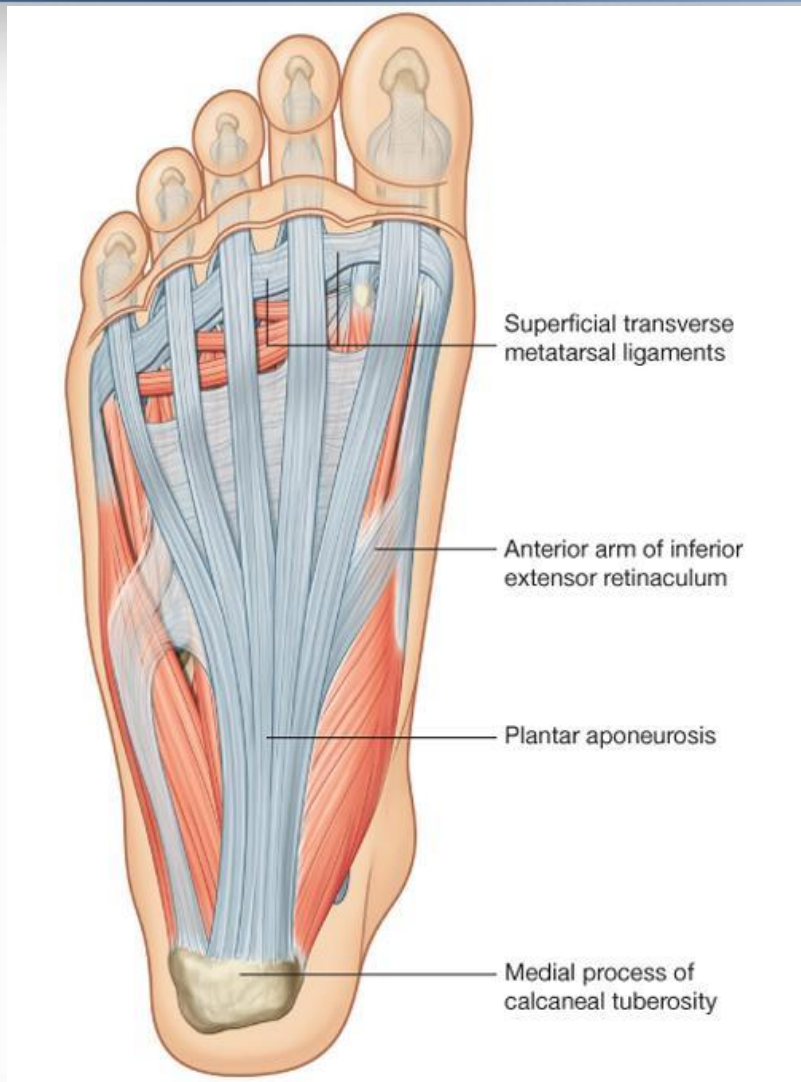
It is a triangular thickening of the deep fascia of sole.

✓ Attachment :

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

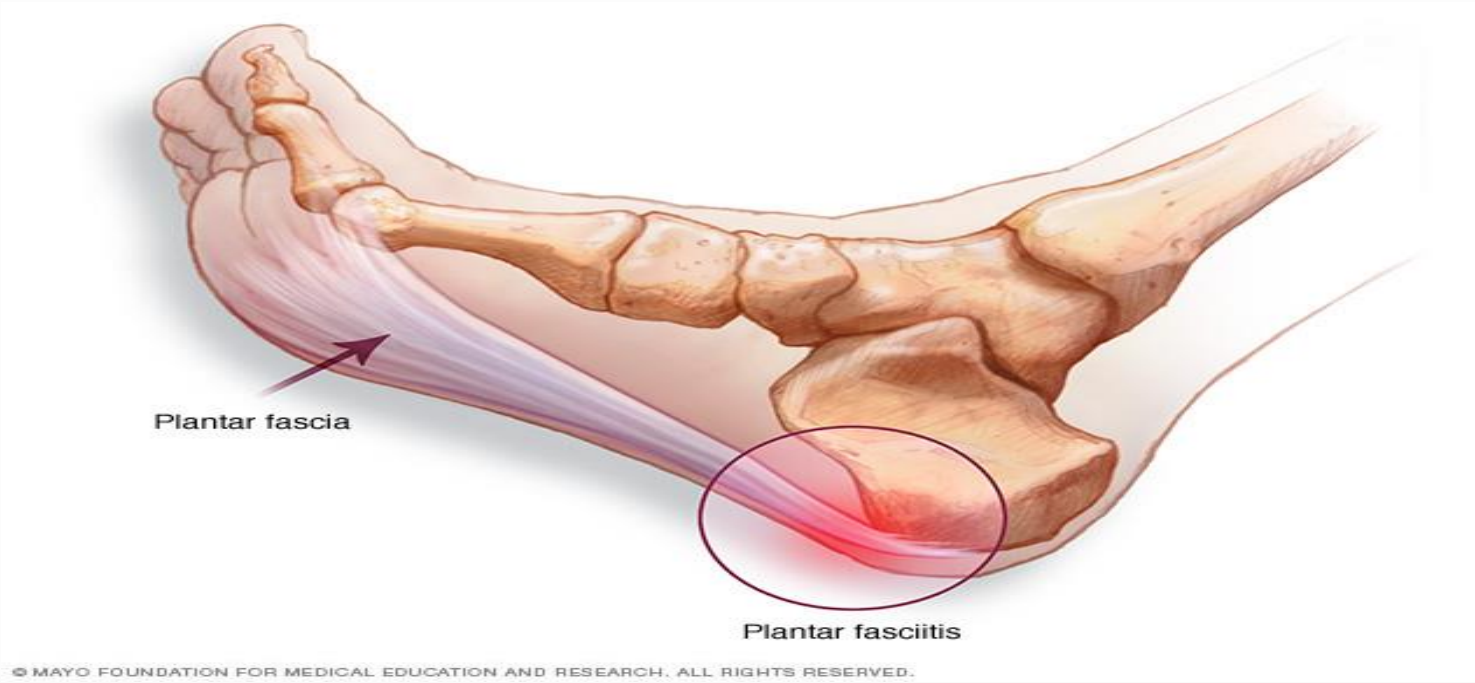
base : it divides into five slips that pass into the toes.

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



Plantar Fasciitis

- ✓ It happen to person who is standing or walking for 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

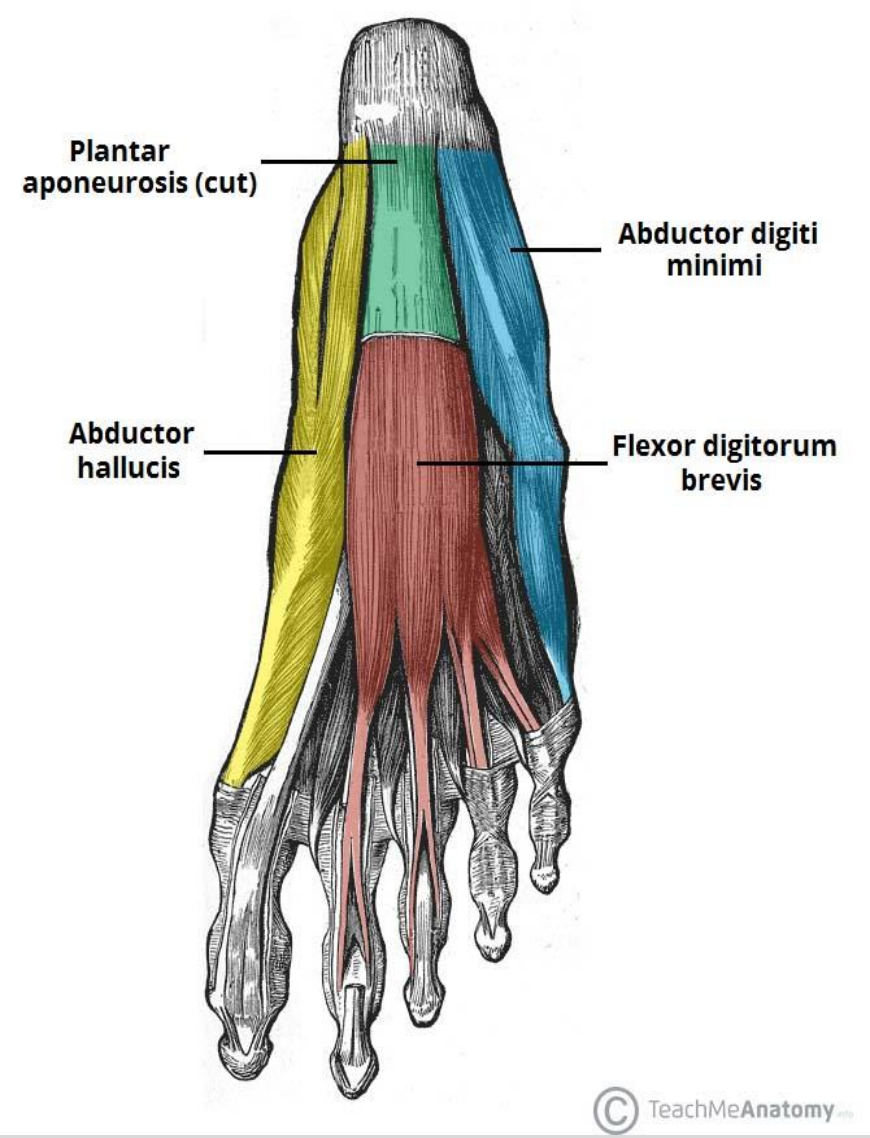
1. Abductor halluces
2. Flexor digitorum brevis
3. Flexor hallucis brevis
4. 1st Lumbiricalis

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



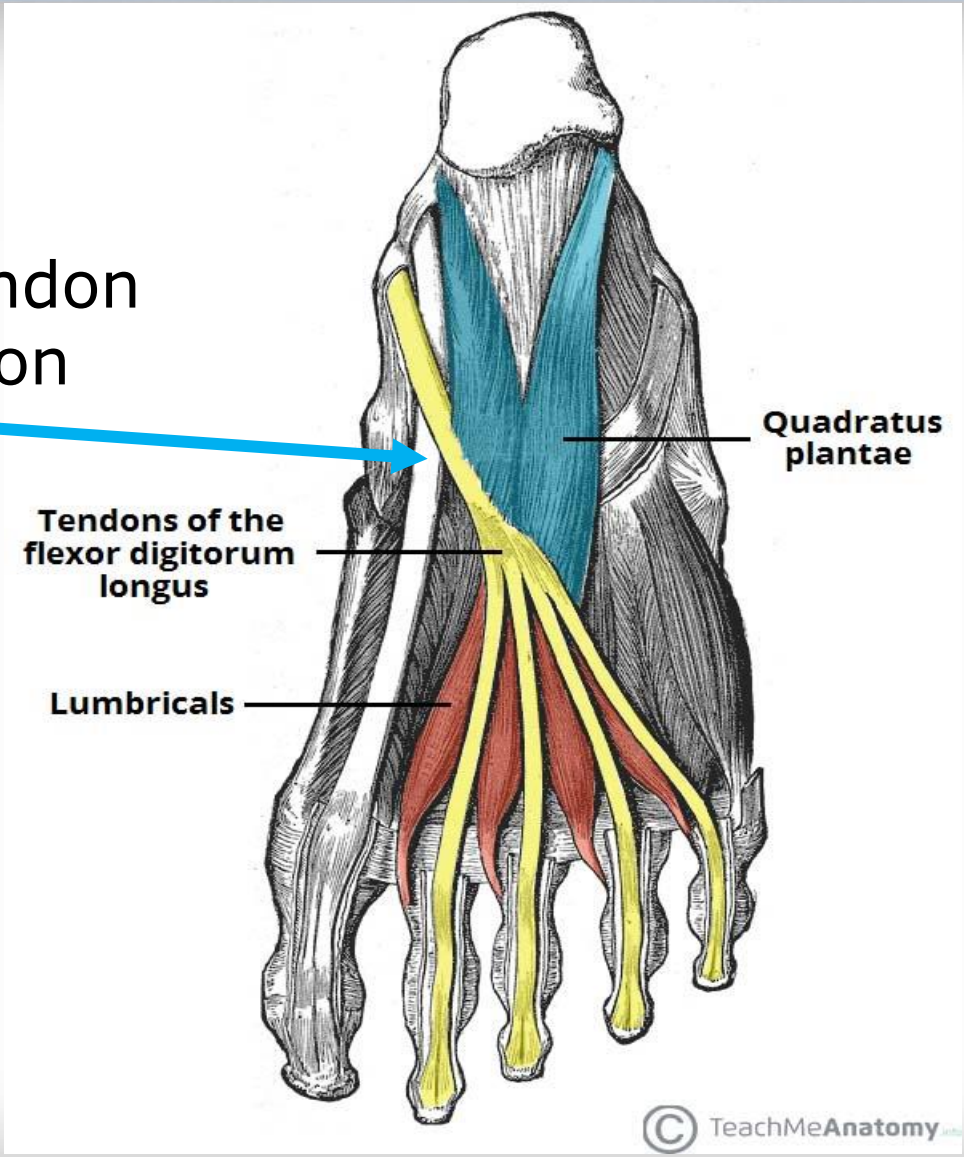
Second layer:

1-Quadratus plantae

2-Lumbricals

3-Flexor digitorum longus tendon

4-Flexor hallucis longus tendon

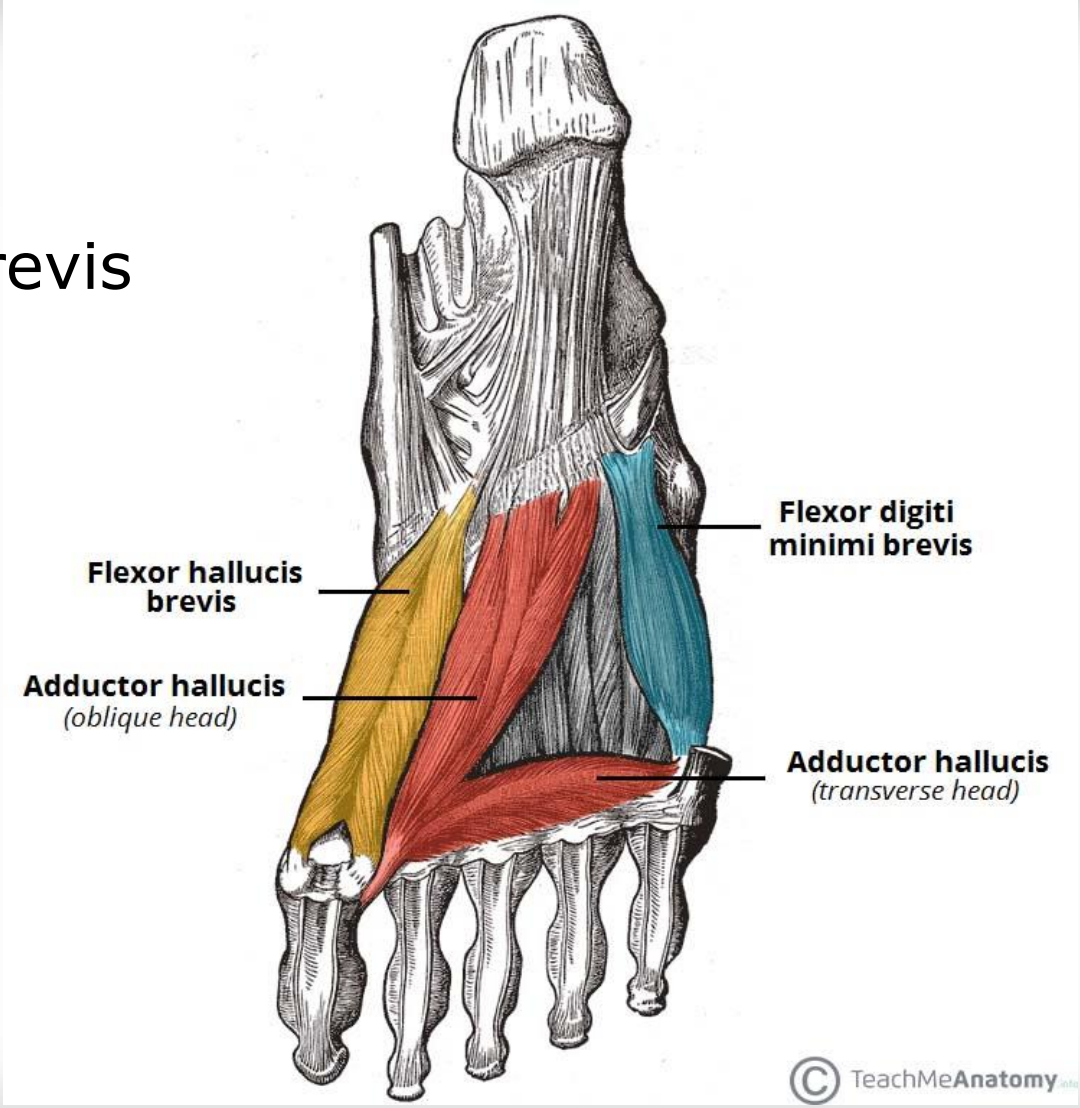


Third layer:

1-Flexor hallucis brevis

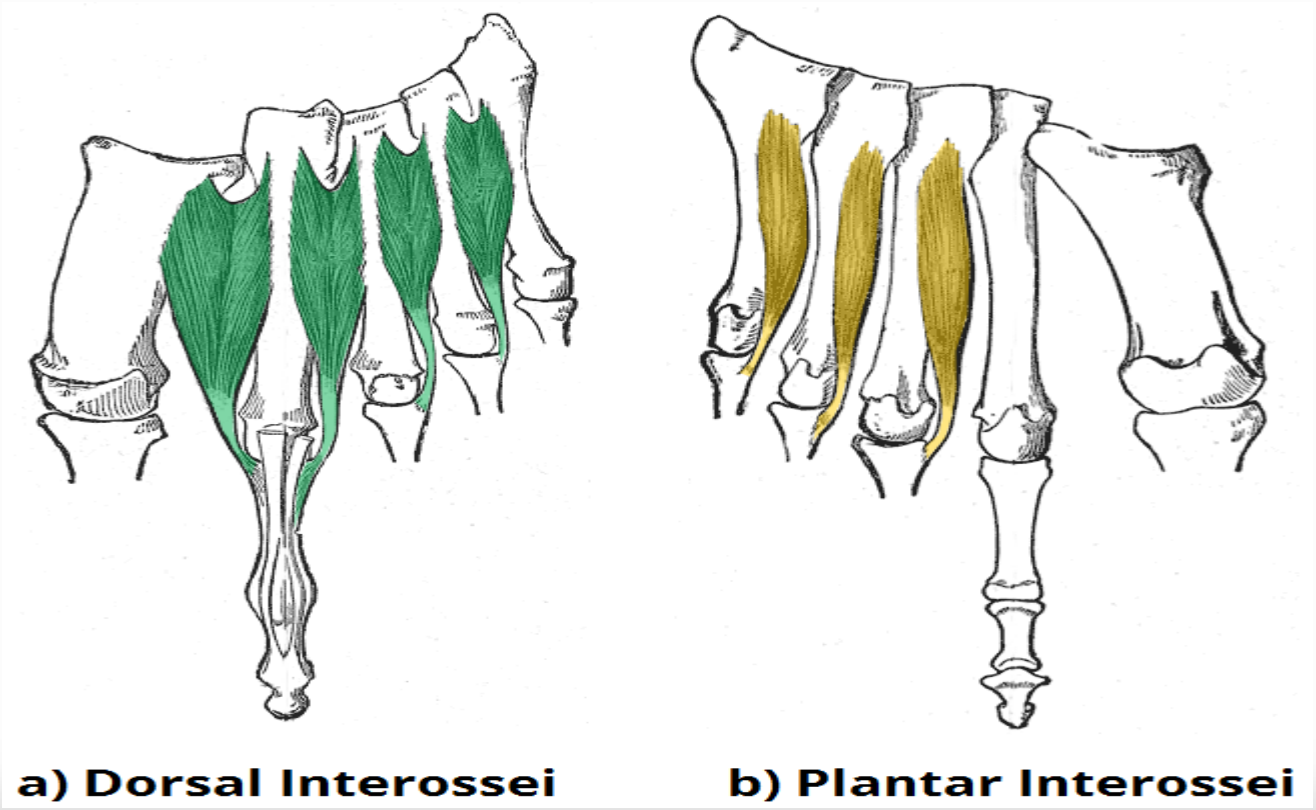
2-Adductor hallucis

3- Flexor digiti minimi brevis



Fourth layer

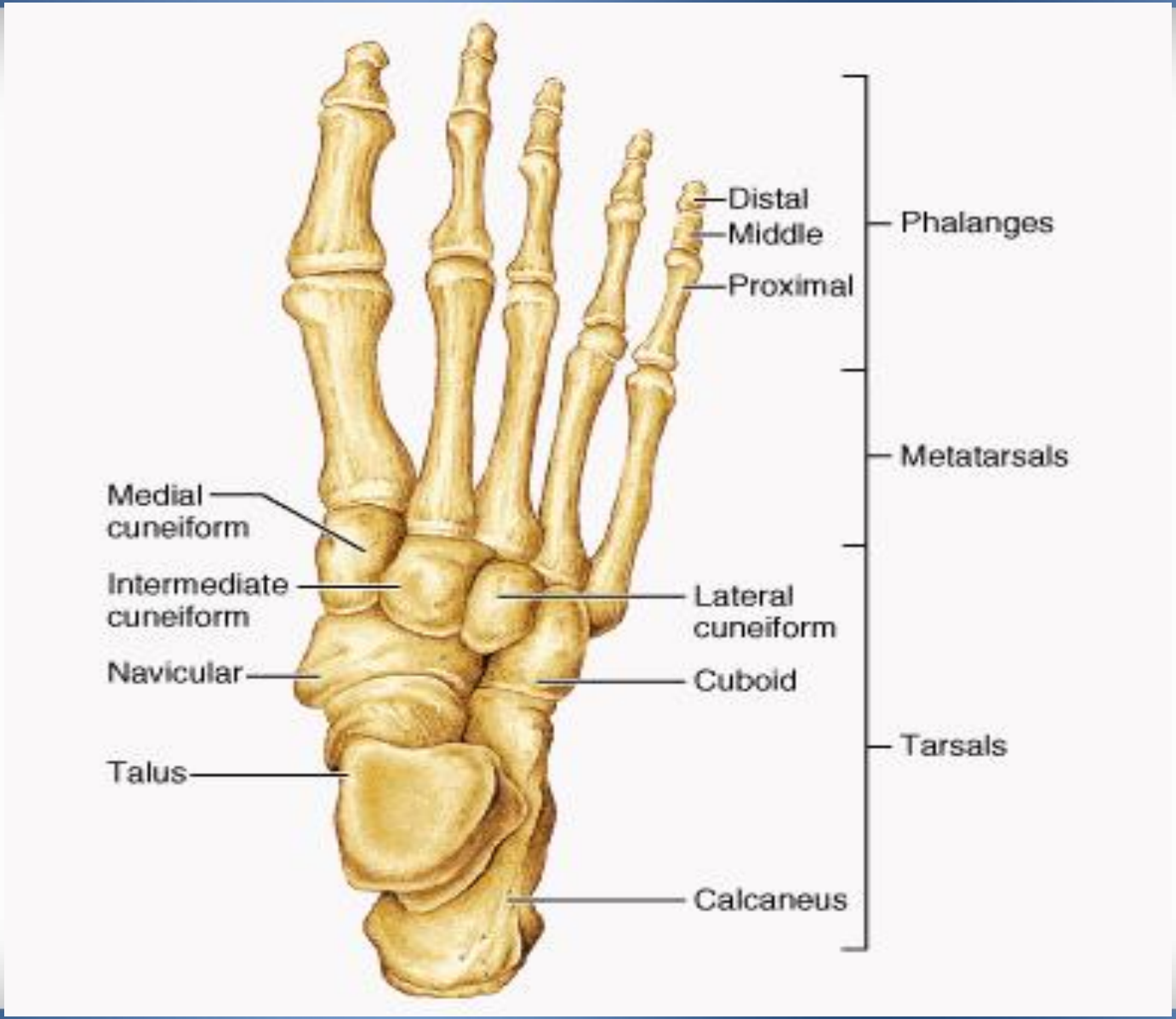
1- Interossei (four dorsal and 3 plantar)
2- Peroneus longus tendon
3- Tibialis posterior tendon



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

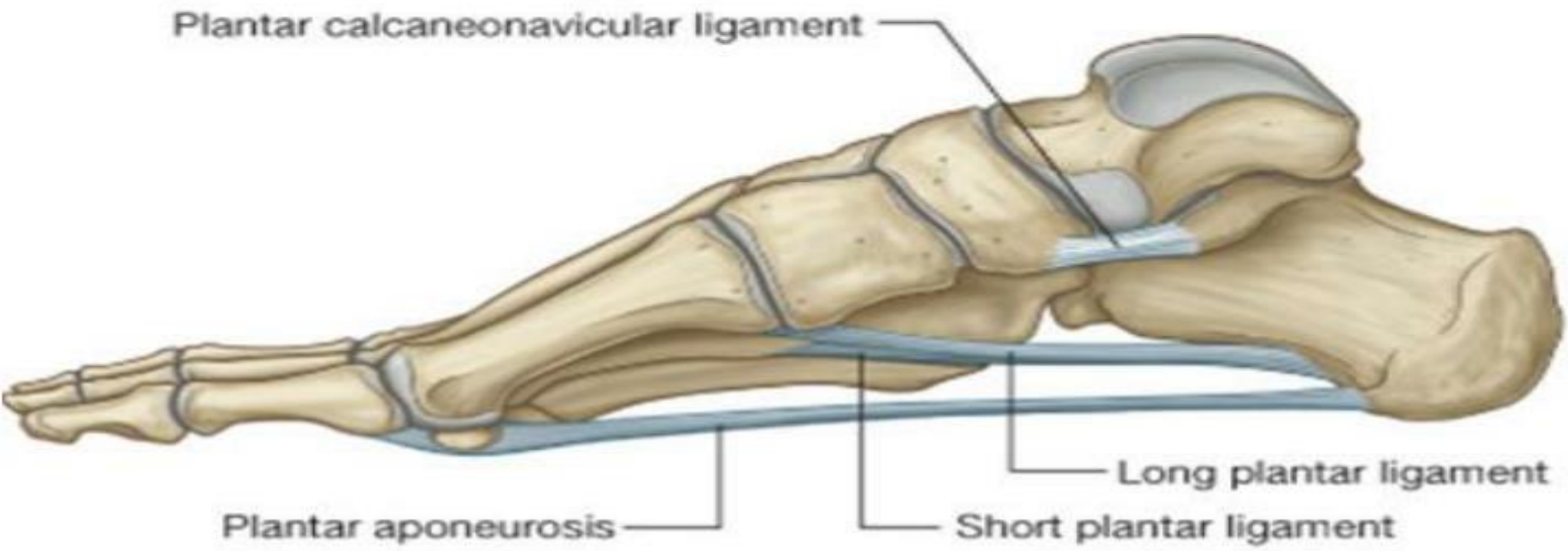
- **Plantar calcaneonavicular ligament (spring ligament).**

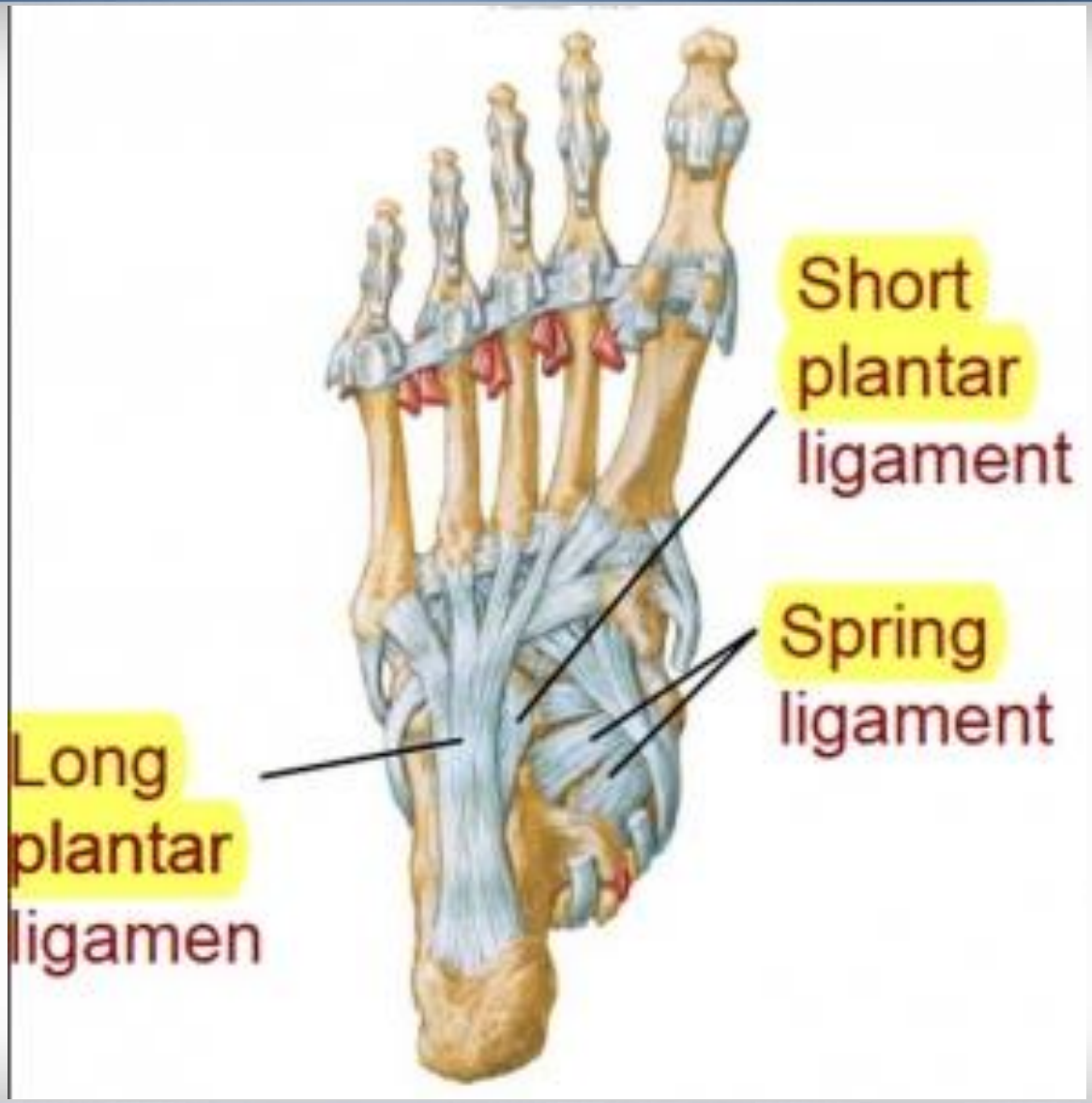
- **Short plantar ligament :** lies deep to the above ligament, extends from calcaneus to cuboid bone.

- **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)




Short plantar ligament
Spring ligament
Long plantar ligamen

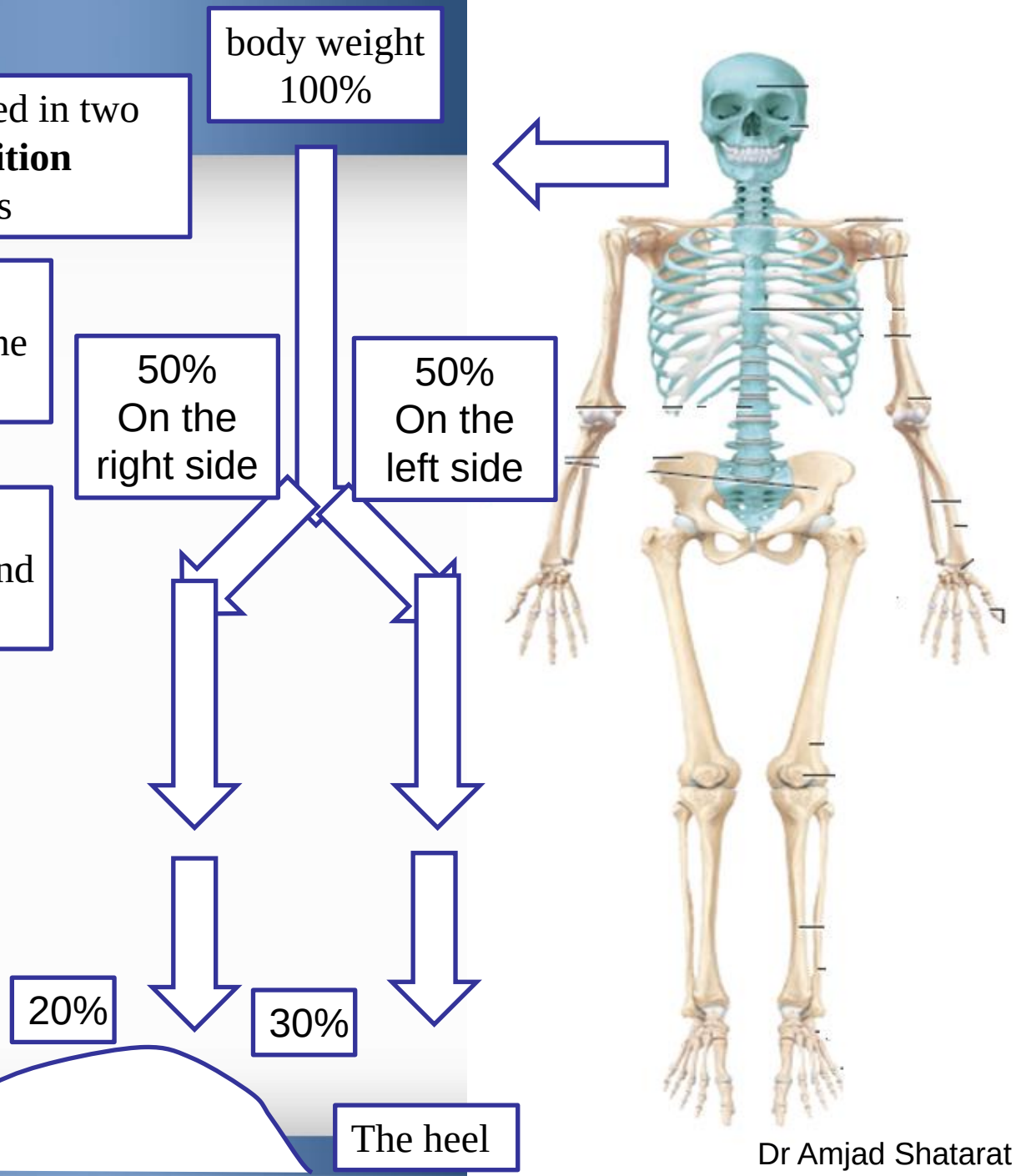
Arches of the Foot

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%.

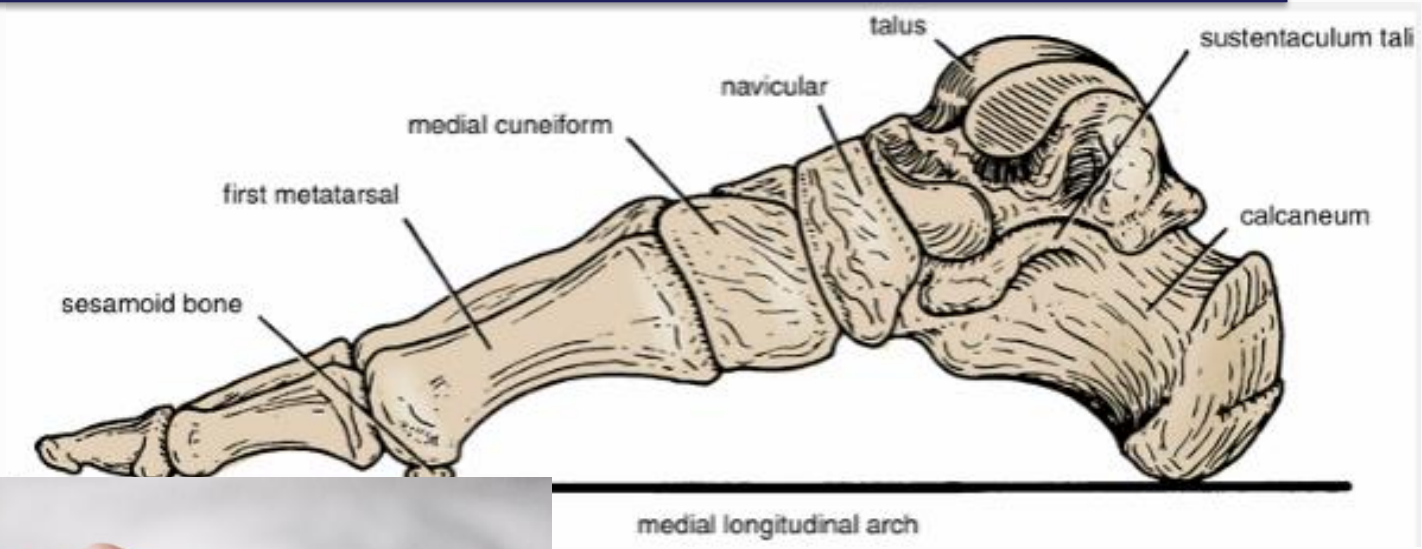
Usually, the arches are fully developed by age 12 or 13.



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

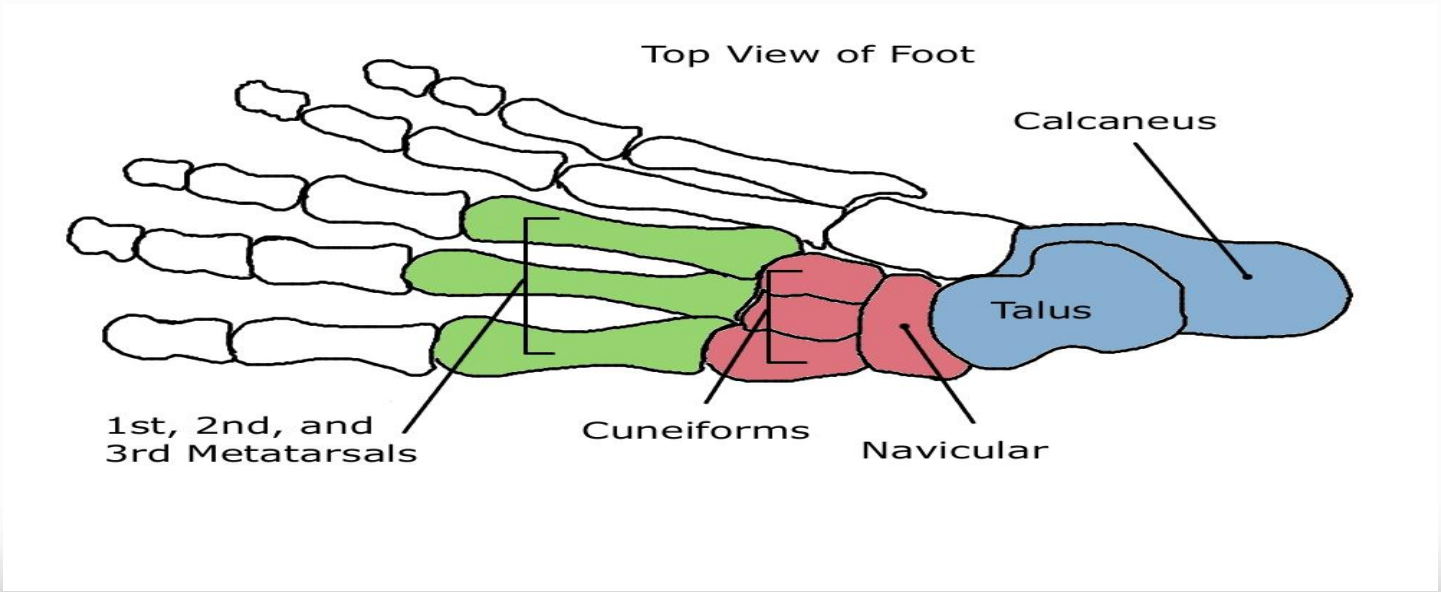
The foot has 3 Arches
1. Medial Longitudinal Arch
2. lateral Longitudinal Arch
3. Transverse Arch

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
✓ Calcaneum, talus Navicular ✓ The 3 cuneiform bones ✓ The medial 3 metatarsals	✓ Calcaneum, cuboid ✓ Lateral 2 metatarsals.	✓ 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
(1)Bony Factor -The rounded head of the **talus** is the keystone **(2)Ligamentous factors** • Medial part of the plantar aponeurosis. • Plantar calcaneo-navicular ligament **(spring ligament)** **(3)Muscular factors :** • Flexor halluces longus, bervis •Abductor halluces • Medial 1/2 of flexor digitorum longus, bervis •Tibialis posterior.	**(1)Bony Factor** The **cuboid** is the keystone **(2)ligamentous factors** • Lateral part of plantar aponeurosis. • Long plantar ligament. • Short plantar ligament. **(3)Muscular factors :** •Abductor digiti minimi •Lateral 1/2 of flexor digitorum longus,bervis • Peroneus longus •Peroneus brevis	**(1)Bony Factor** -The marked wedge shaping of the **cuneiform** -Bases of the **metatarsal** bones **(2) Ligamentous factors :** Transverse metatarsal ligaments. Strong plantar ligaments **(3) Muscular factors :** • Peroneus longus •Peroneus brevis

Factors maintains Arches of the foot (Read only)

Medial Longitudinal Arch	Lateral Longitudinal Arch	Transverse arch
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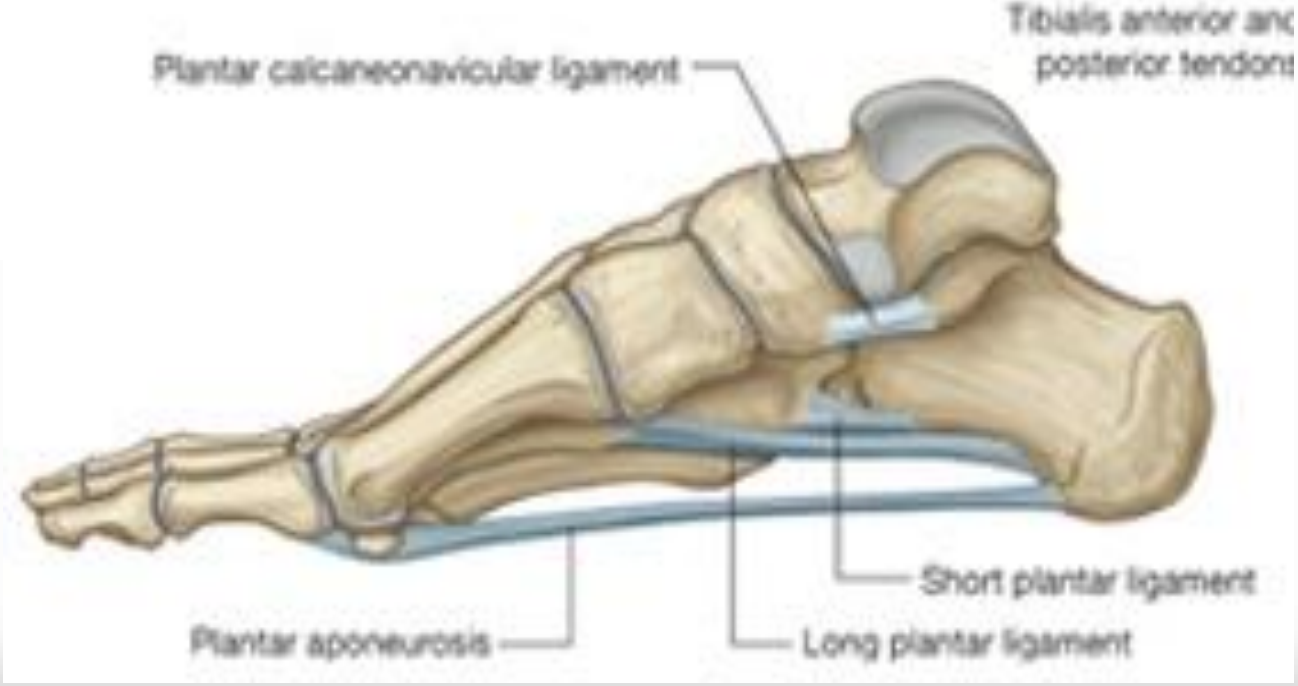
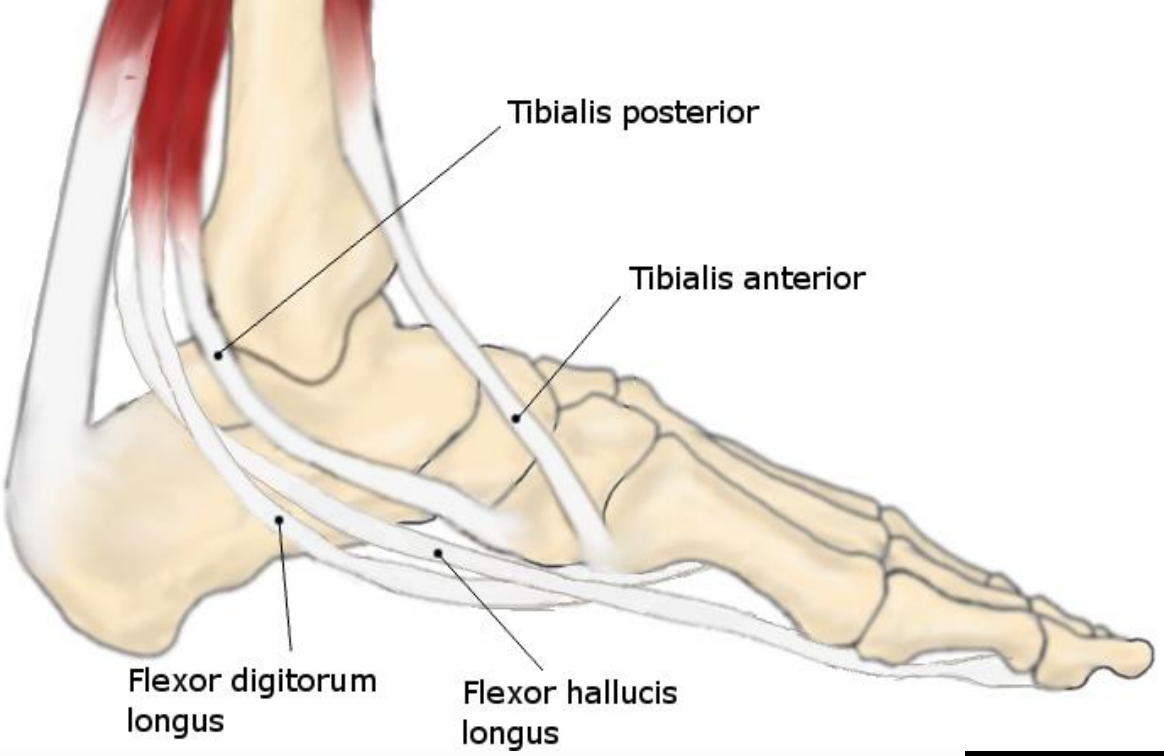
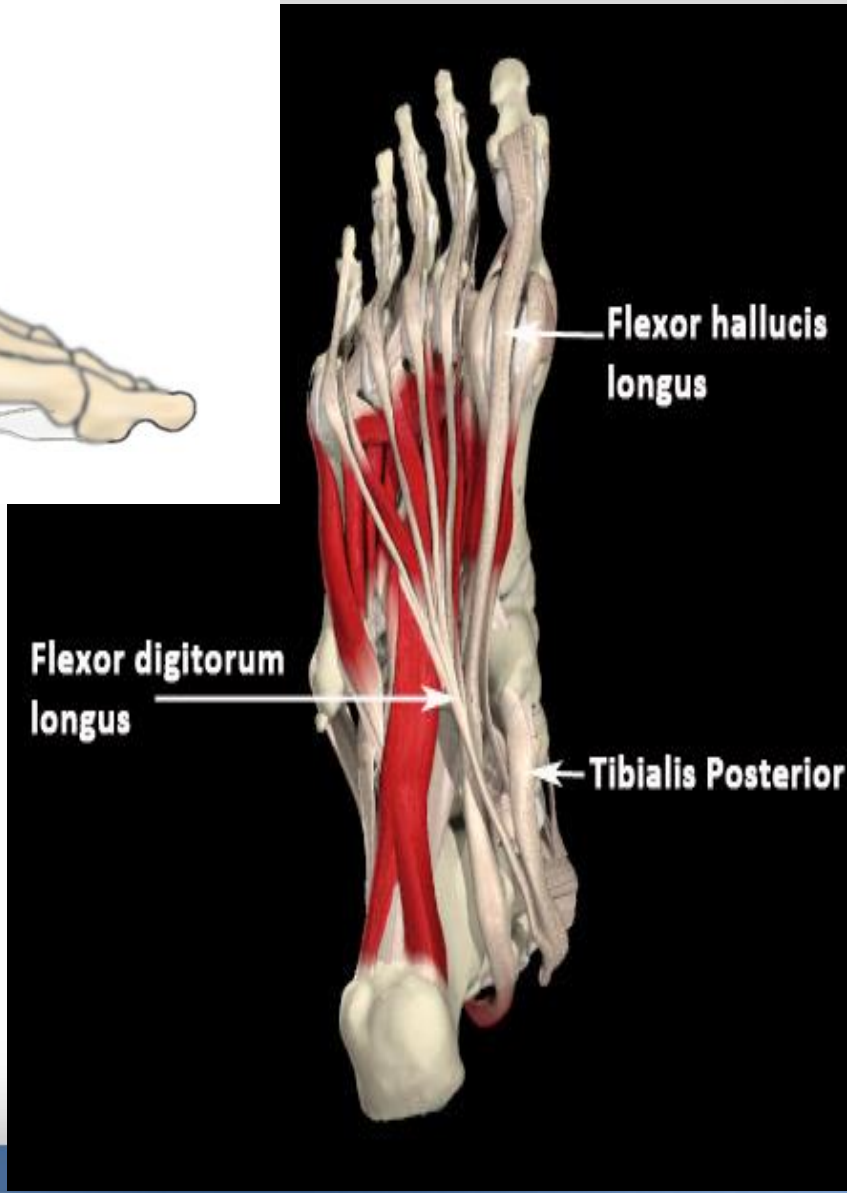
Short plantar ligament
Spring ligament
Long plantar ligamen


Plantar calcaneonavicular ligament
Short plantar ligament
Plantar aponeurosis
Long plantar ligament

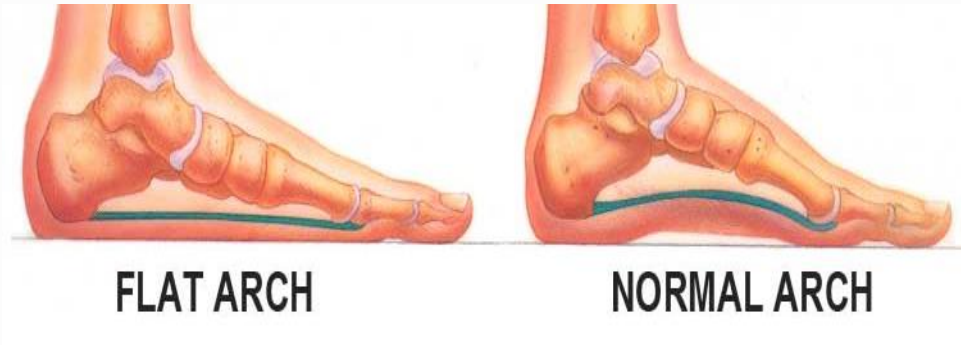

Tibialis posterior
Tibialis anterior
Flexor digitorum longus
Flexor hallucis longus


Flexor hallucis longus
Flexor digitorum longus
Tibialis Posterior

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



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

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