

Articulated Foot

SKELETON OF FOOT

The skeleton of the foot consists of the following bones:

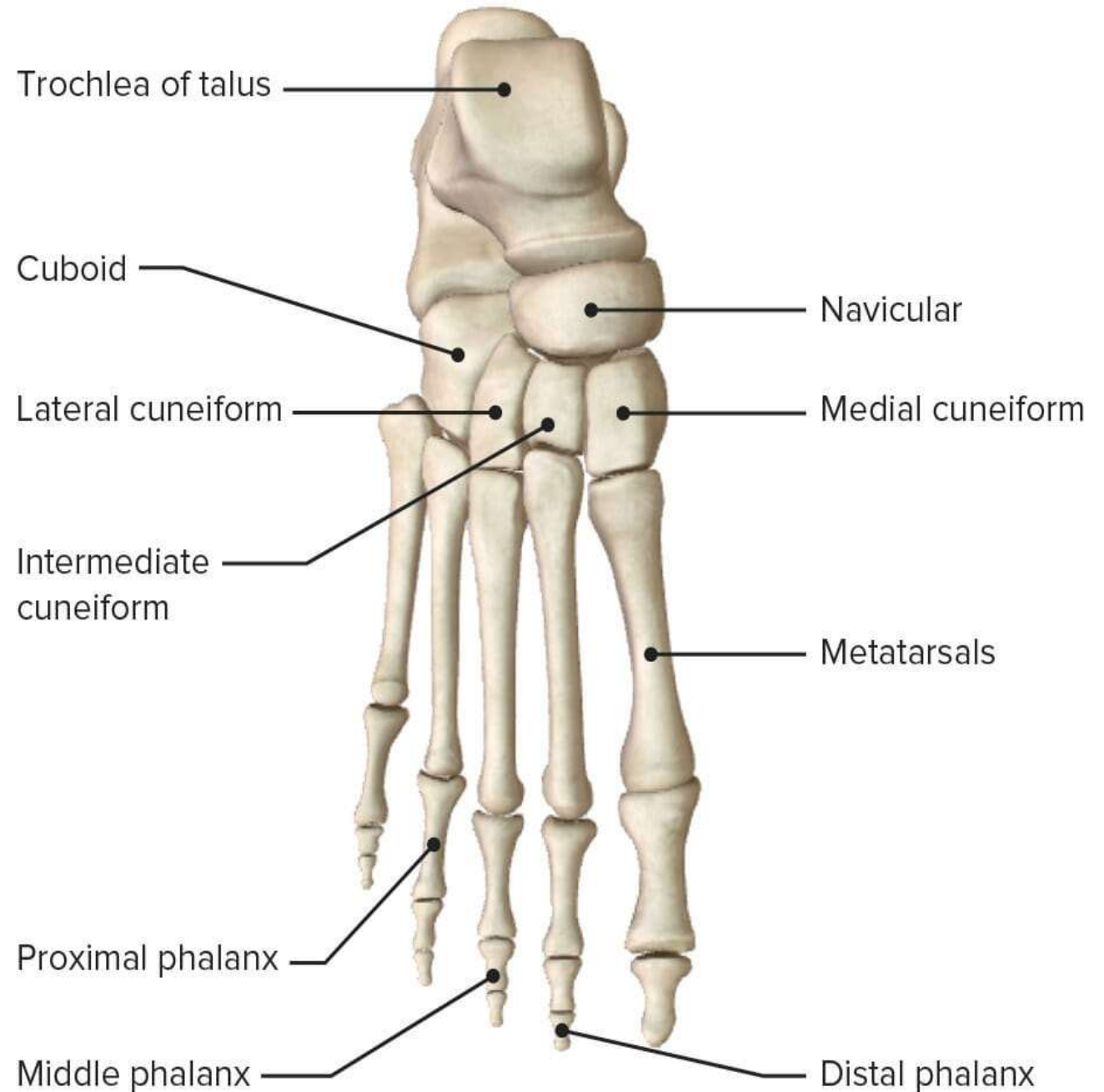
- Tarsals
- Metatarsals
- Phalanges



TARSAL BONES

These are arranged in three rows:

- (a) Proximal row consists of talus and calcaneus
- (b) Middle row consists of navicular.
- (c) Distal row consists of three cuneiforms (medial, intermediate, and lateral) and cuboid.



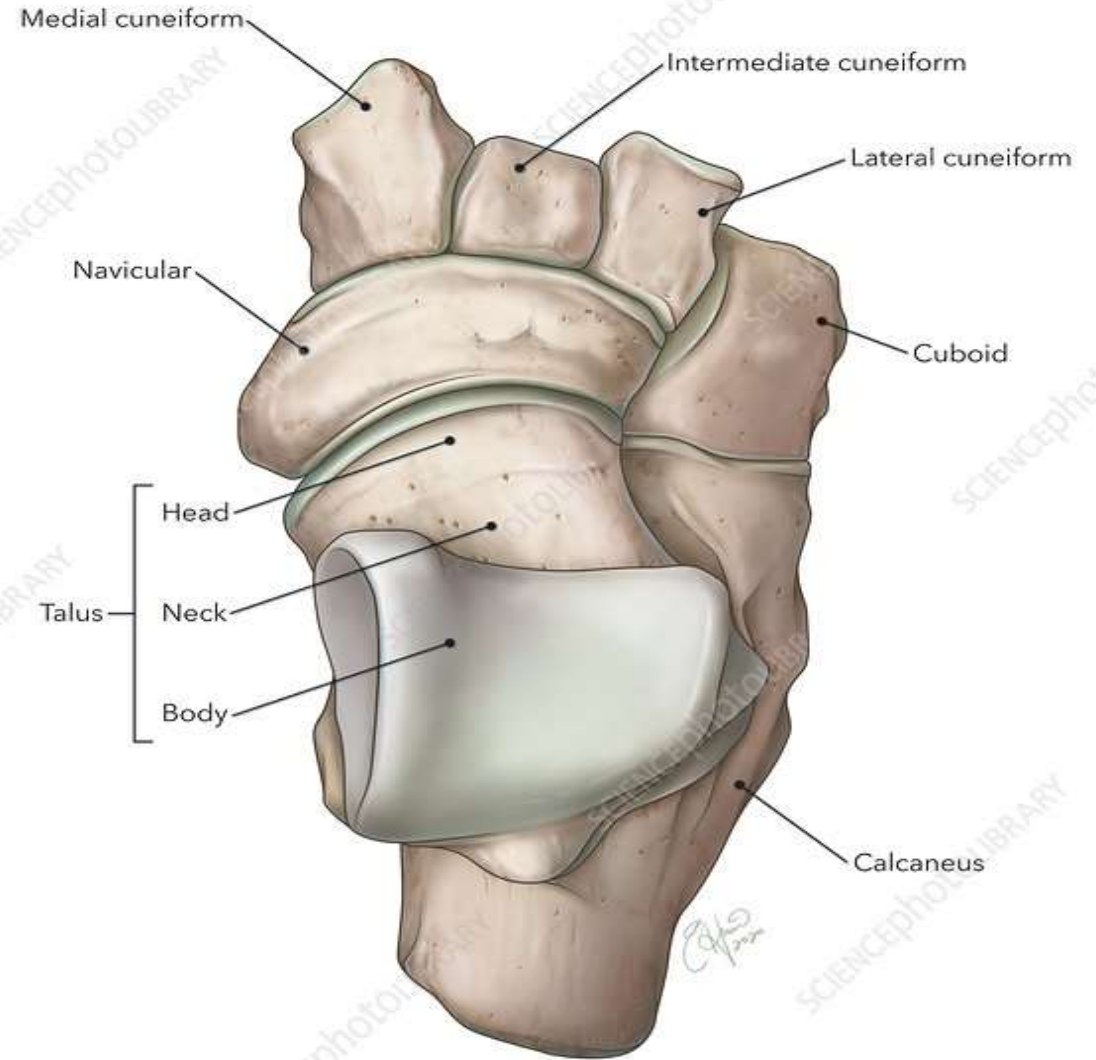
TALUS

Features and Attachments :

The talus presents a head, a neck, and a body.

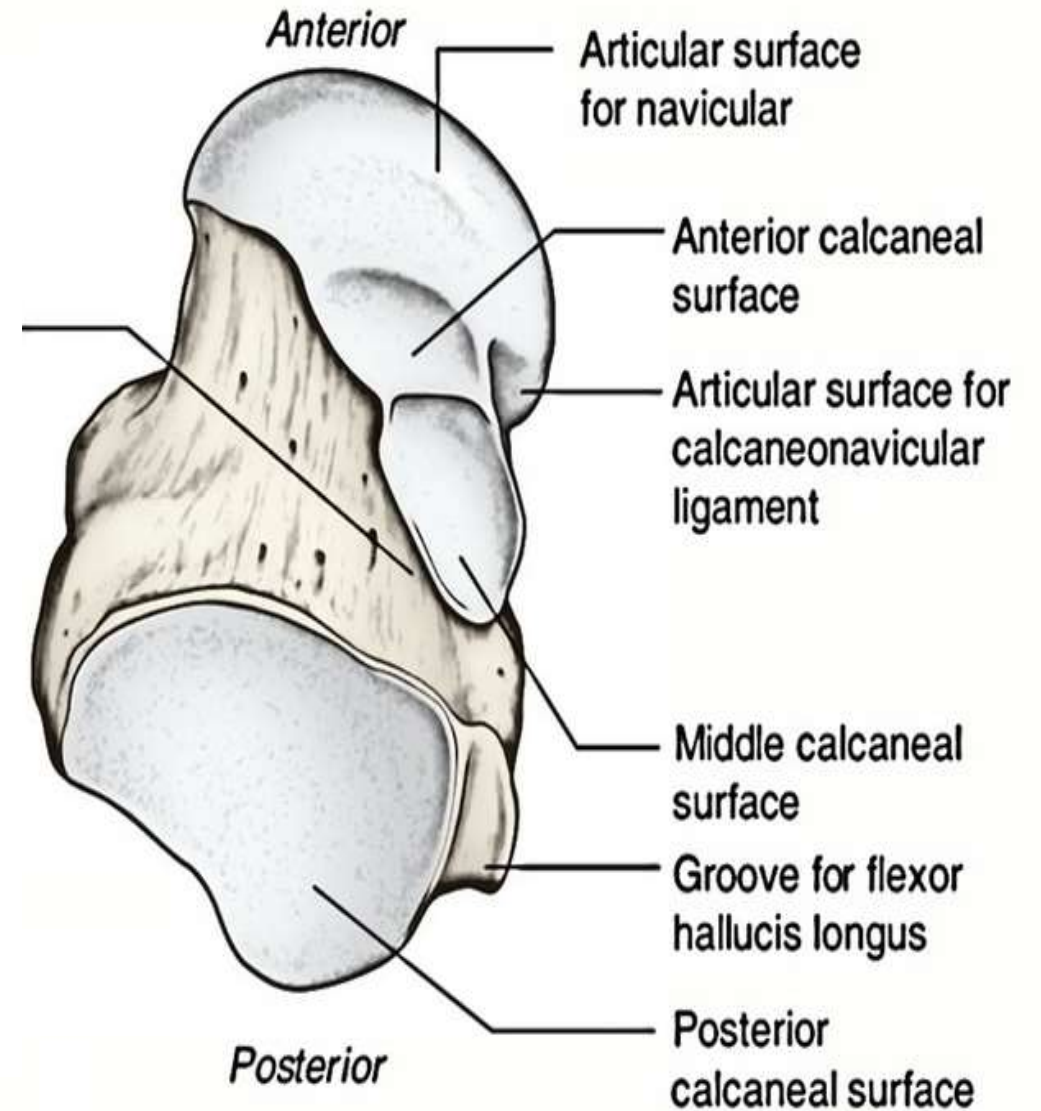
Head

1. It is directed forward, medially, and slightly downward.
2. Its anterior surface presents a convex articular surface which articulates with the concavity of navicular bone



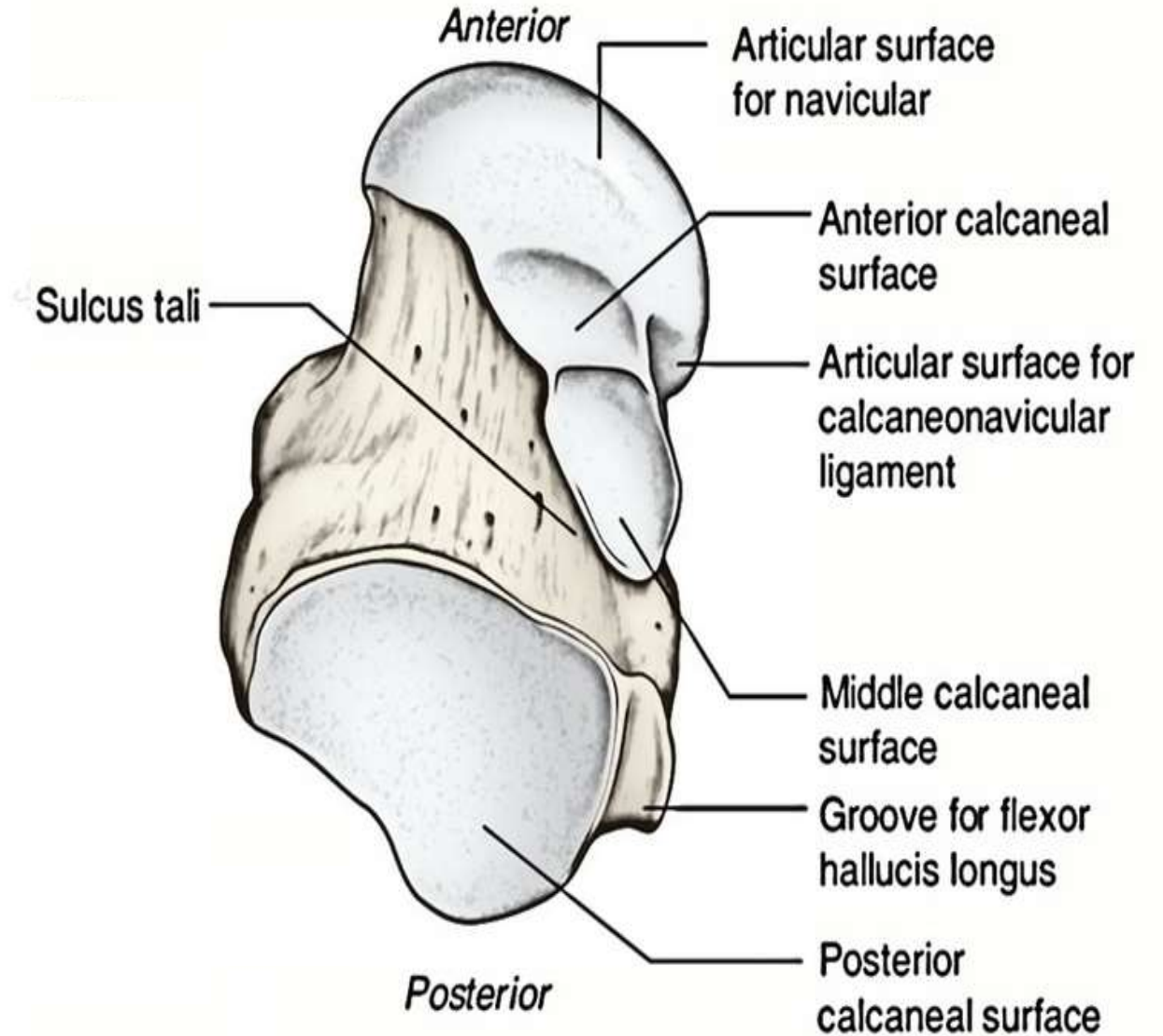
Its inferior surface presents three articular facets:

- (a) Posterior facet is largest and articulates with the middle facet of calcaneus and forms a plane synovial subtalar joint.
- (b) Middle facet articulates with a spring ligament.
- (c) Anterolateral facet articulates with the anterior facet of calcaneus.



Neck

1. It is a constriction between the head and the body.
2. It projects forward and medially from the body making an angle of 150° with the body (neck–body angle).
3. Plantar surface of the neck presents a narrow deep groove called sulcus tali which forms sinus tarsi with the corresponding groove of calcaneus.

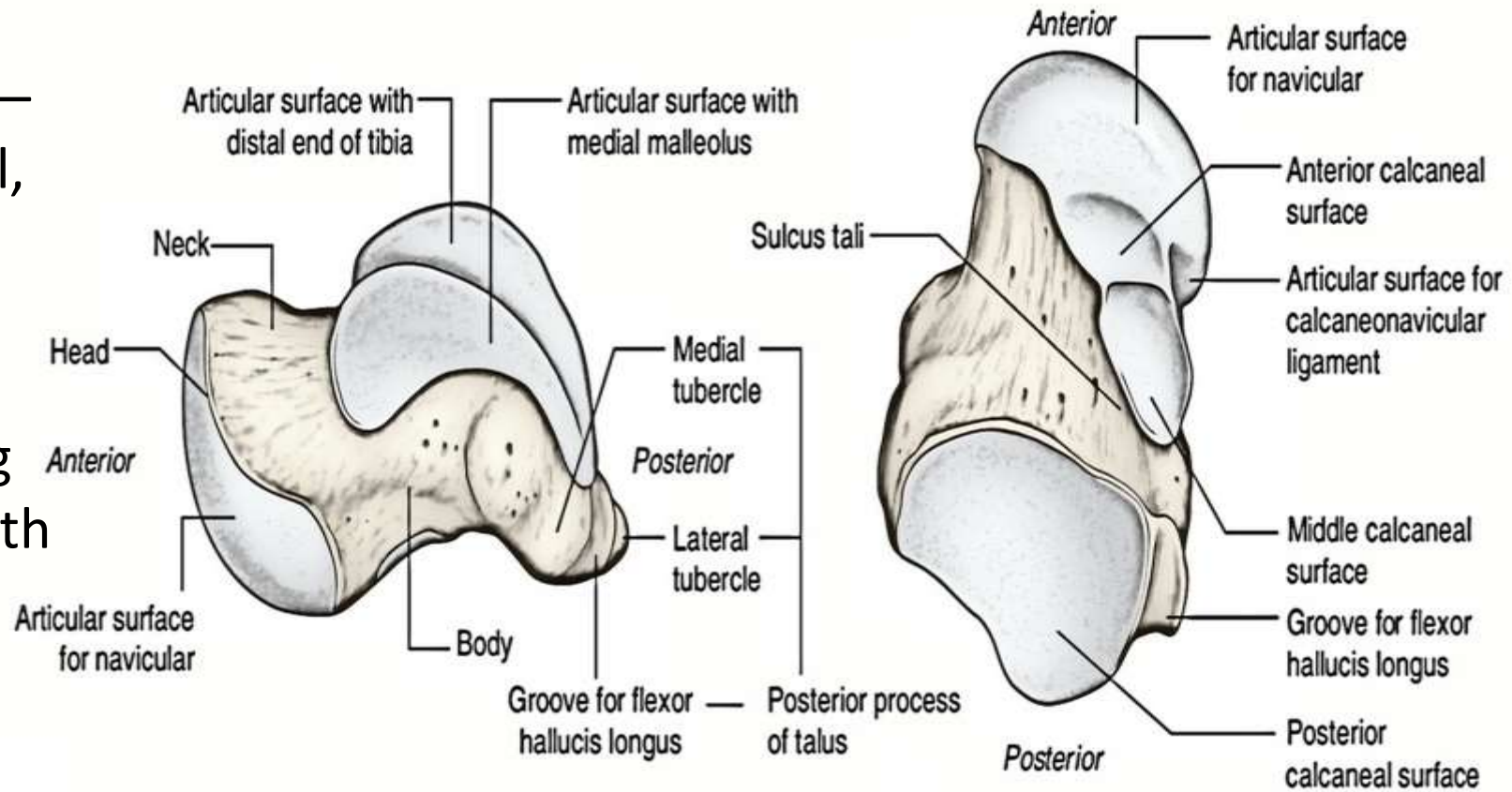


Body

The body of talus is cuboidal in shape. It presents five surfaces—superior, inferior, medial, lateral, and posterior.

Superior surface: It presents trochlear articular surface being wide anteriorly. It articulates with the distal surface of the tibia.

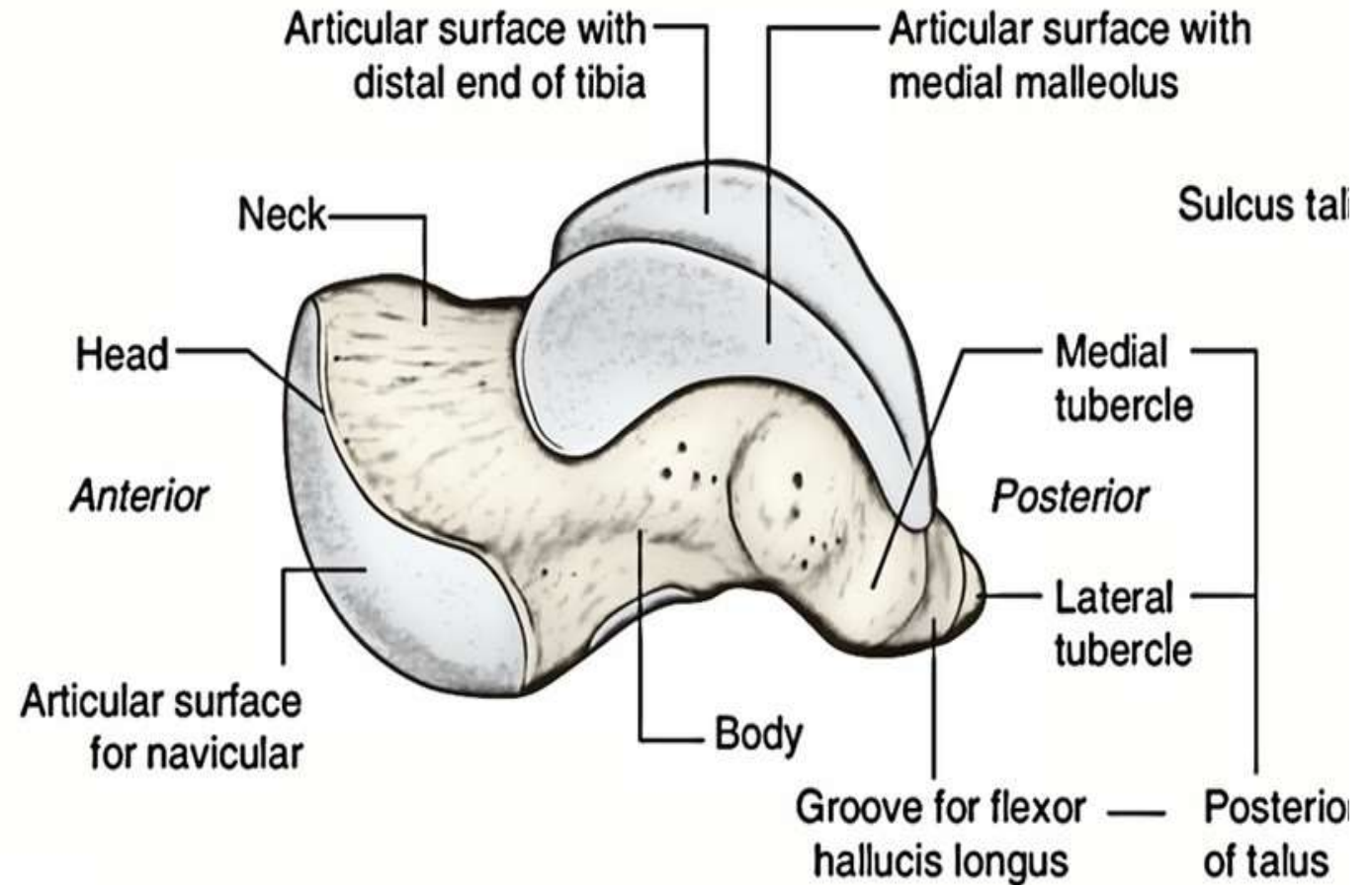
Inferior surface: It presents a large oval concave facet which articulates with the posterior facet of calcaneus to form the subtalar joint.

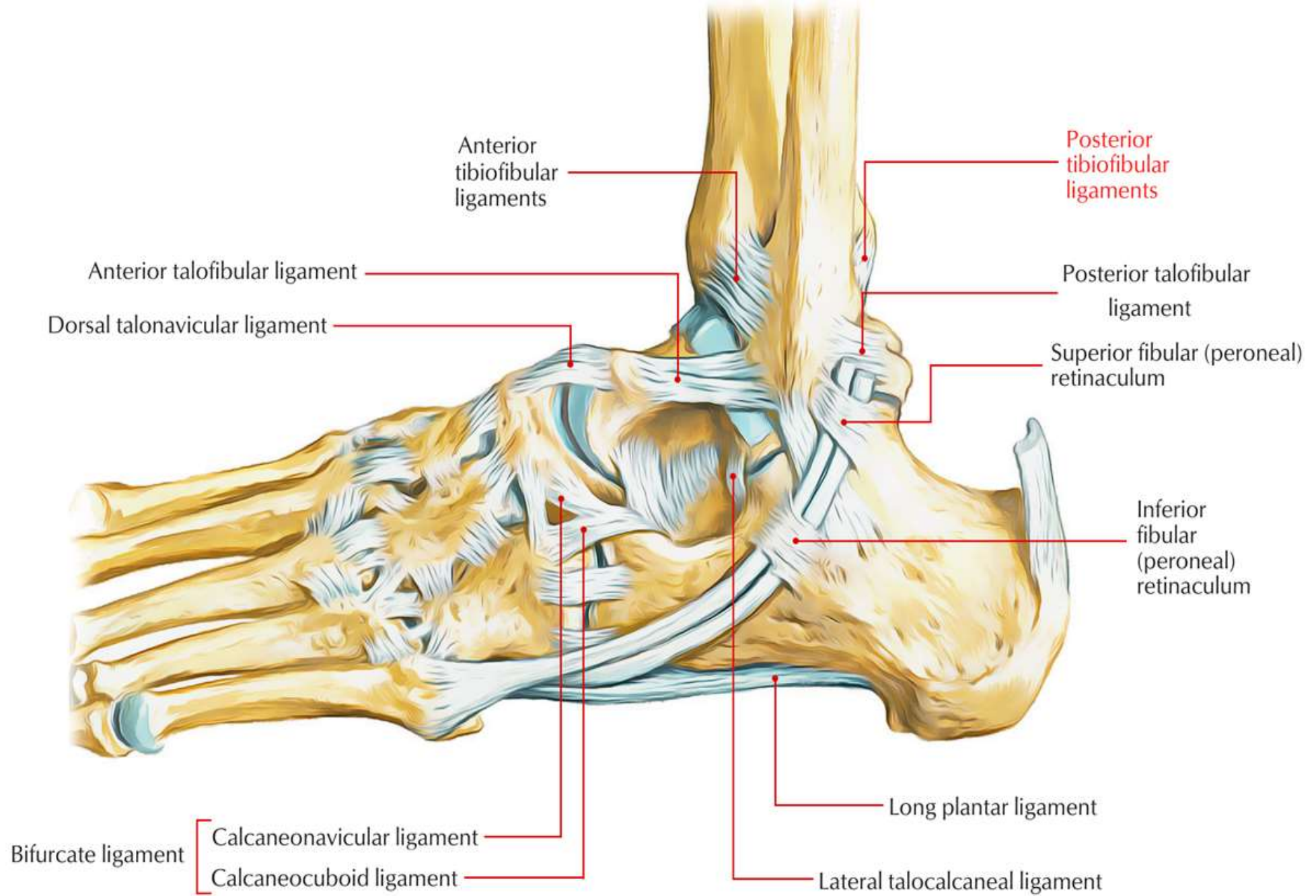


Medial surface: Its upper part presents a comma-shaped articular facet which articulates with the medial malleolus

Lateral surface: It presents a triangular articular facet to articulate with lateral malleolus.

Posterior surface: It is narrow and projects backward as the posterior process of talus. It presents an oblique groove bounded by a small medial and large lateral tubercles. The groove lodges the tendon of flexor hallucis longus





Side Determination and Anatomical Position :

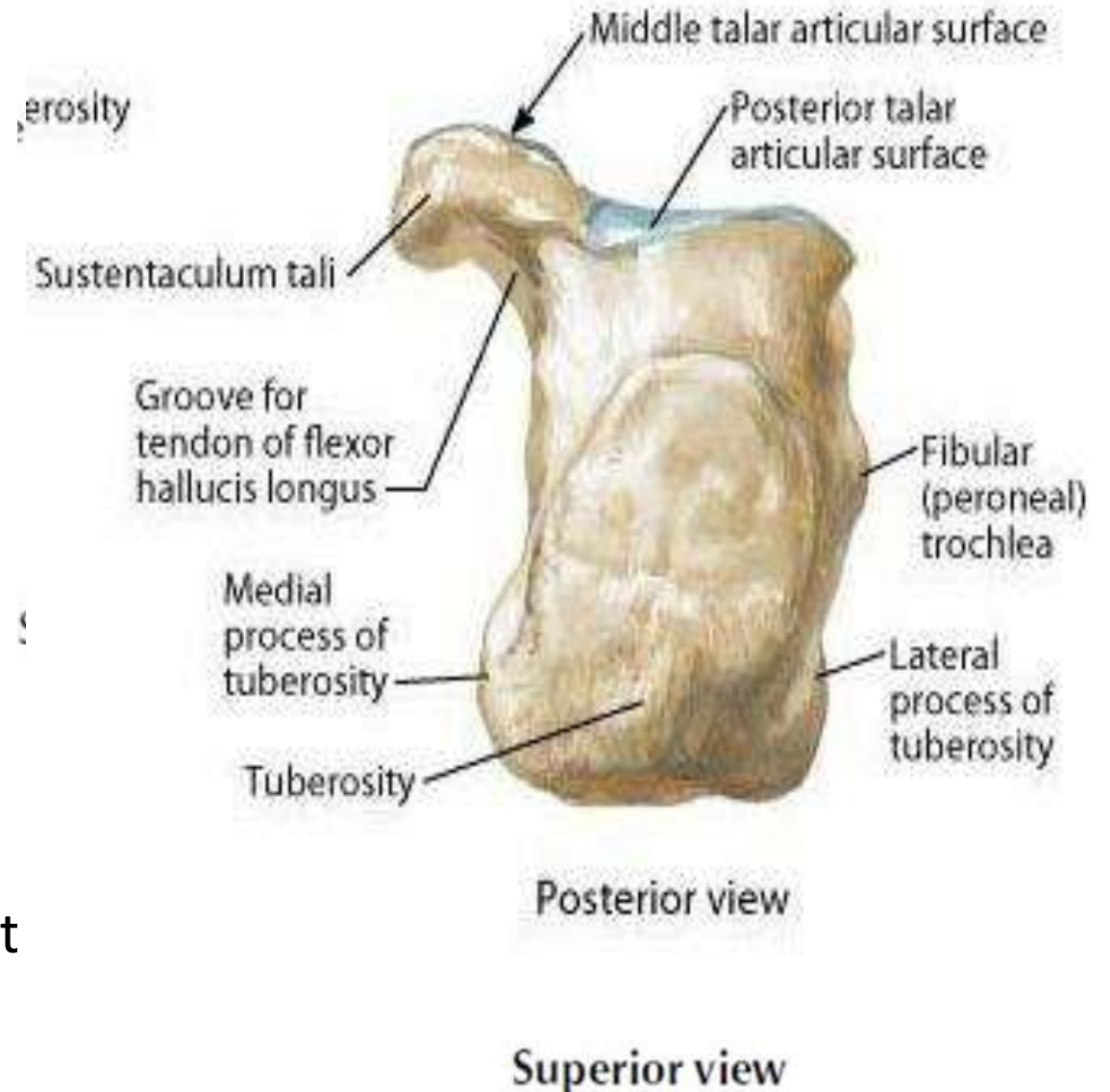
1. Its rounded head is directed forward.
2. Its trochlear articular surface faces upward.
3. Triangular articular surface on the side of body faces laterally while the comma-shaped articular surface on the side of body is directed medially.

Calcaneus

Has six surfaces—anterior, posterior, superior, plantar, lateral, and medial.

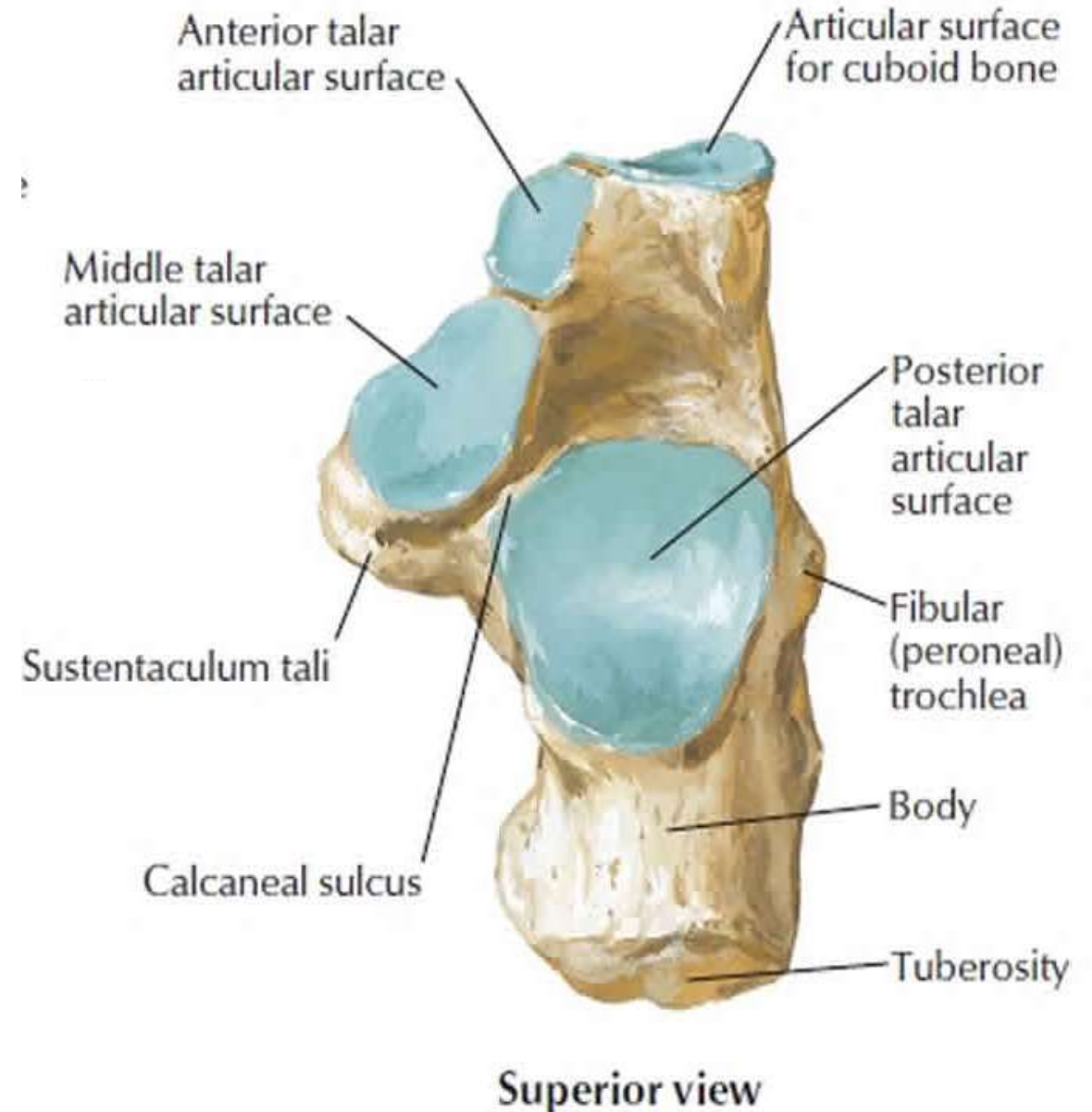
Anterior surface- It is the smallest and bears a concavo-convex articular facet to articulate with cuboid.

Posterior surface- is divided into three parts:
(a) Upper one-third is smooth and related to a synovial bursa.
(b) Middle one-third provides attachment to tendocalcaneus and plantaris
(c) Lower one-third is subcutaneous and weight bearing during standing posture.



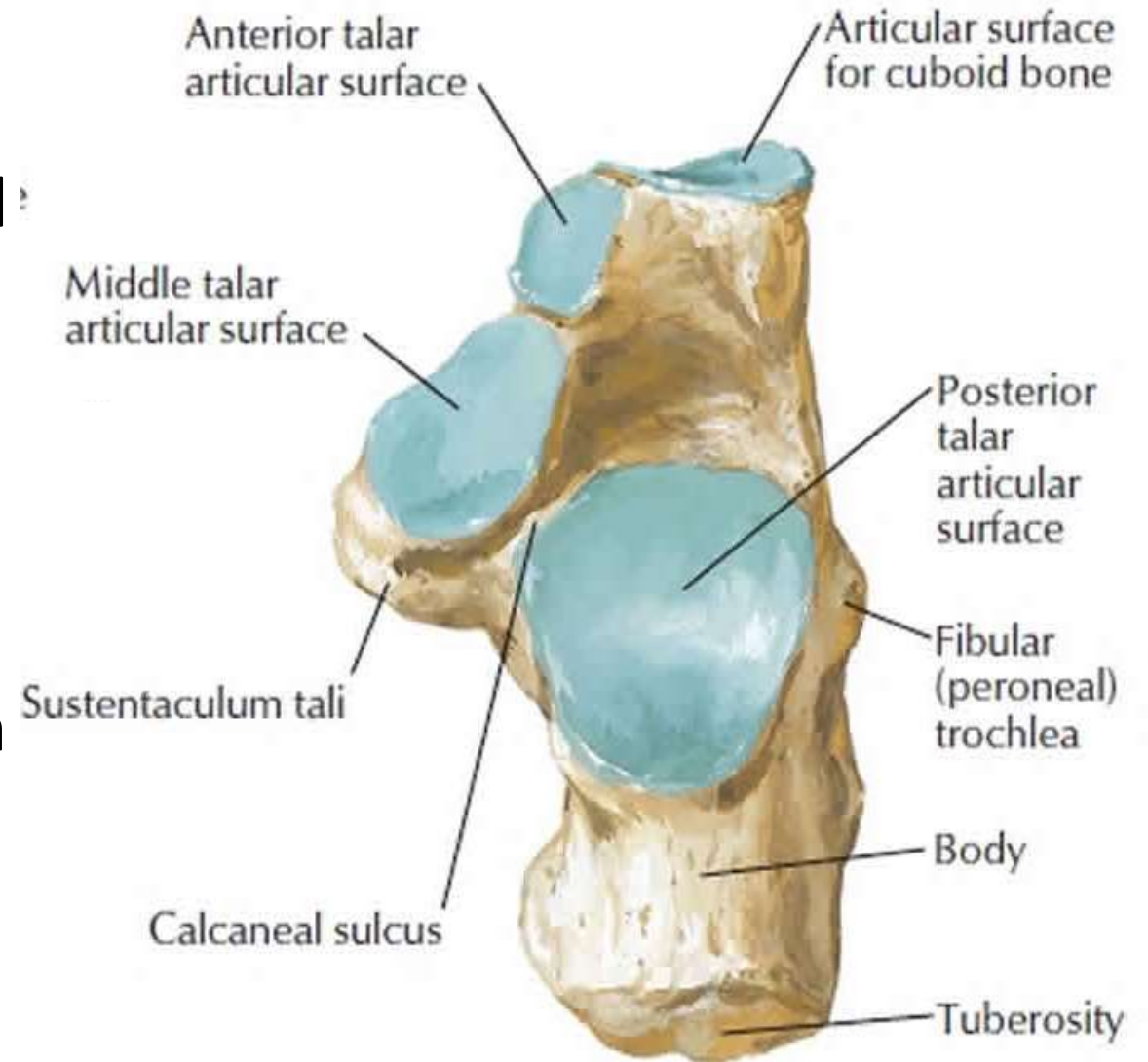
Superior (dorsal) surface - is divided into the following three areas:

- (a) Posterior one-third (non-articular)
 - (b) Middle one-third (articular)
 - (c) Anterior one-third (partly articular and partly nonarticular)
2. Posterior one-third is rough and covered with pad of fibrofatty tissue deep to tendocalcaneus.
 3. Middle one-third bears a large oval facet—the posterior facet for talus.
 4. Anterior one-third more anteriorly presents two articular facets called middle and anterior facets for talus.



5. Non-articular part of anterior one-third behind the articular facets is divided into medial narrow and lateral wide parts:

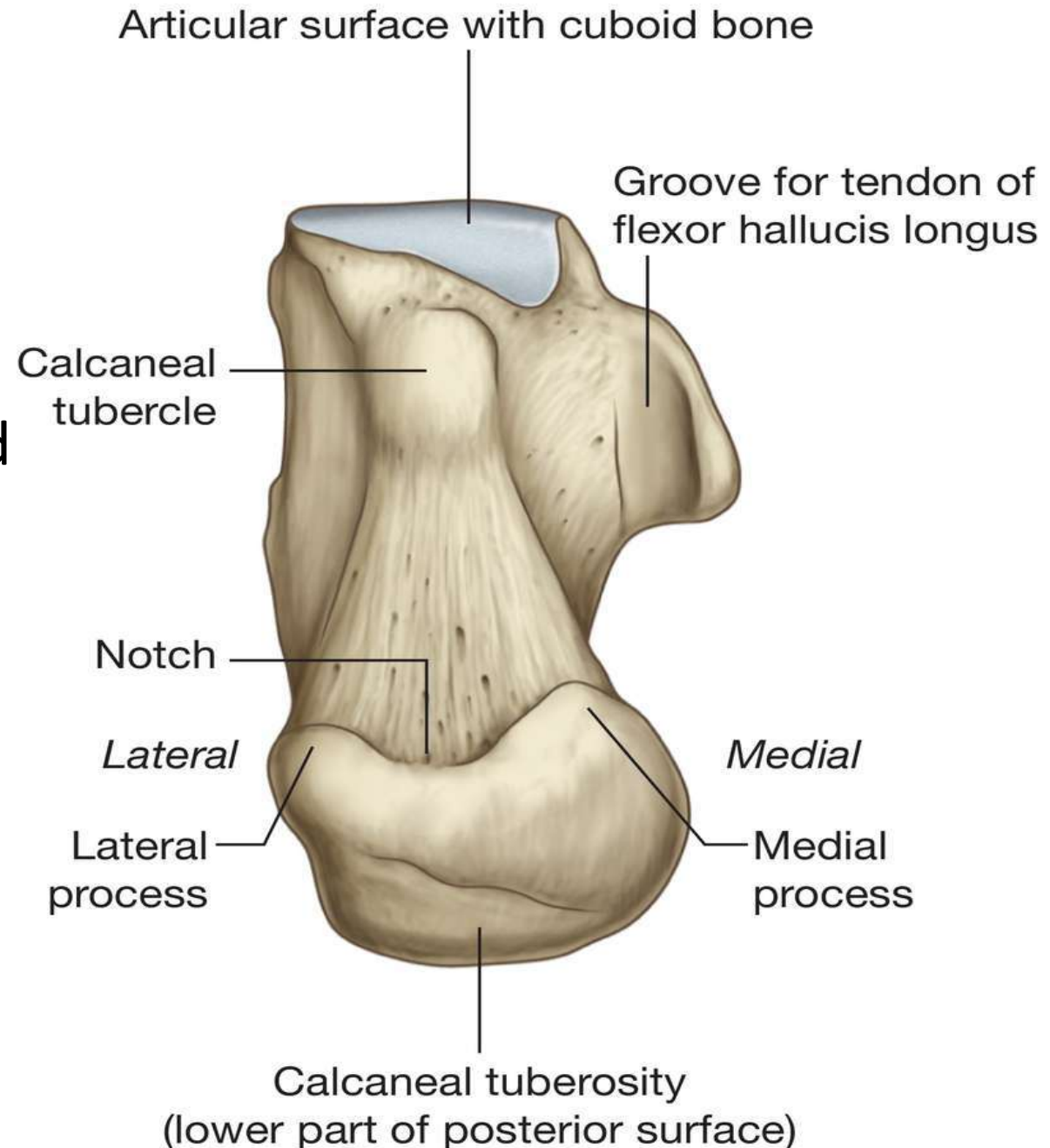
- (a) Medial narrow part is grooved and called sulcus calcanei
- (b) Lateral part is large and provides attachments to: (i) Extensor digitorum brevis. (ii) Inferior extensor retinaculum. (iii) Stem of bifurcate ligament



Superior view

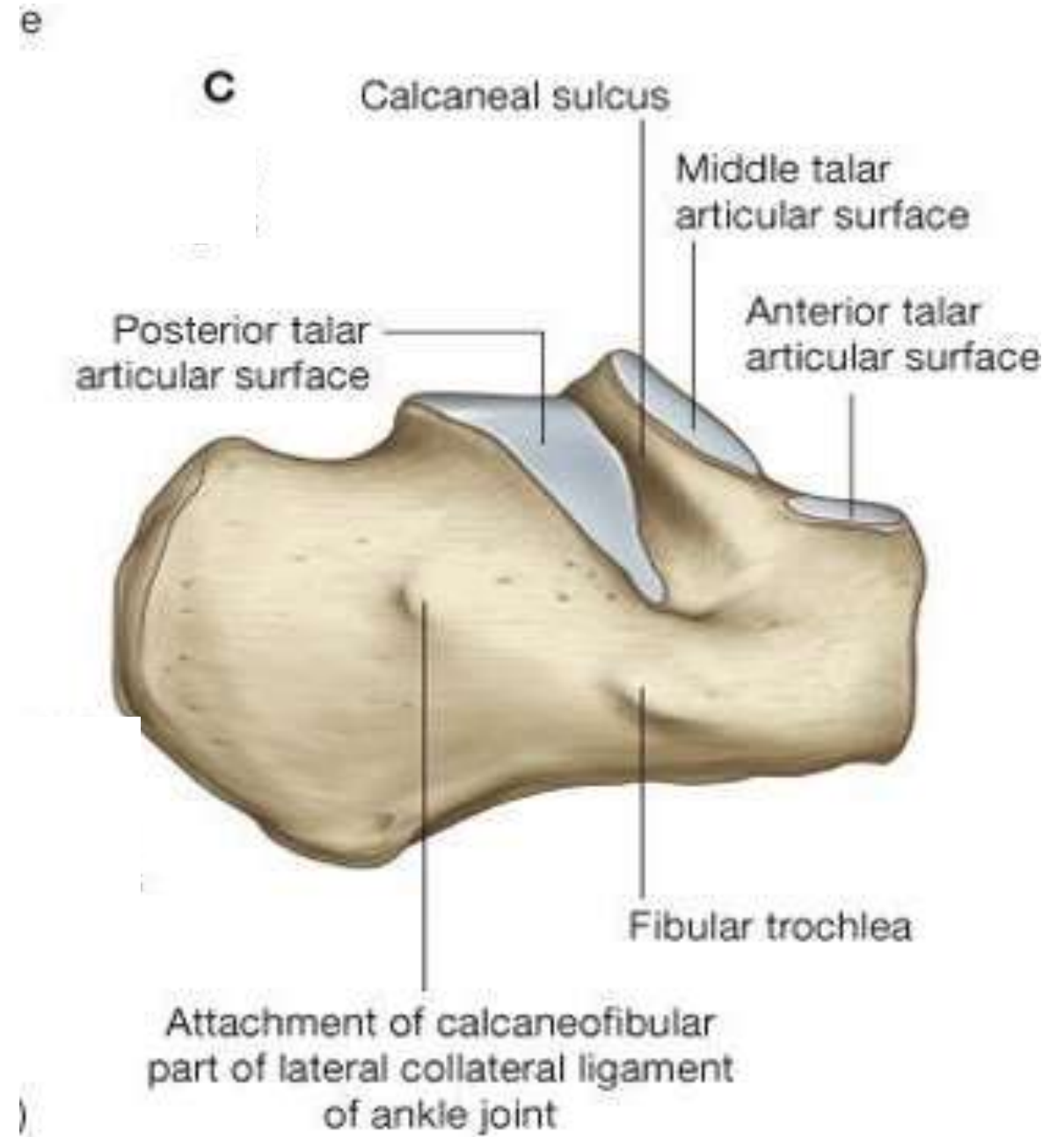
Plantar (inferior) surface - It is rough and marked by three tubercles.

1. A small tubercle at the anterior end called anterior tubercle.
 2. An elevation at its posterior end called calcaneal tuberosity presenting a large medial and small lateral tubercles.
 3. Triangular area between the three tubercles provides attachment to the long plantar ligament.
- A groove in front of the anterior tubercle gives attachment to short plantar ligament.



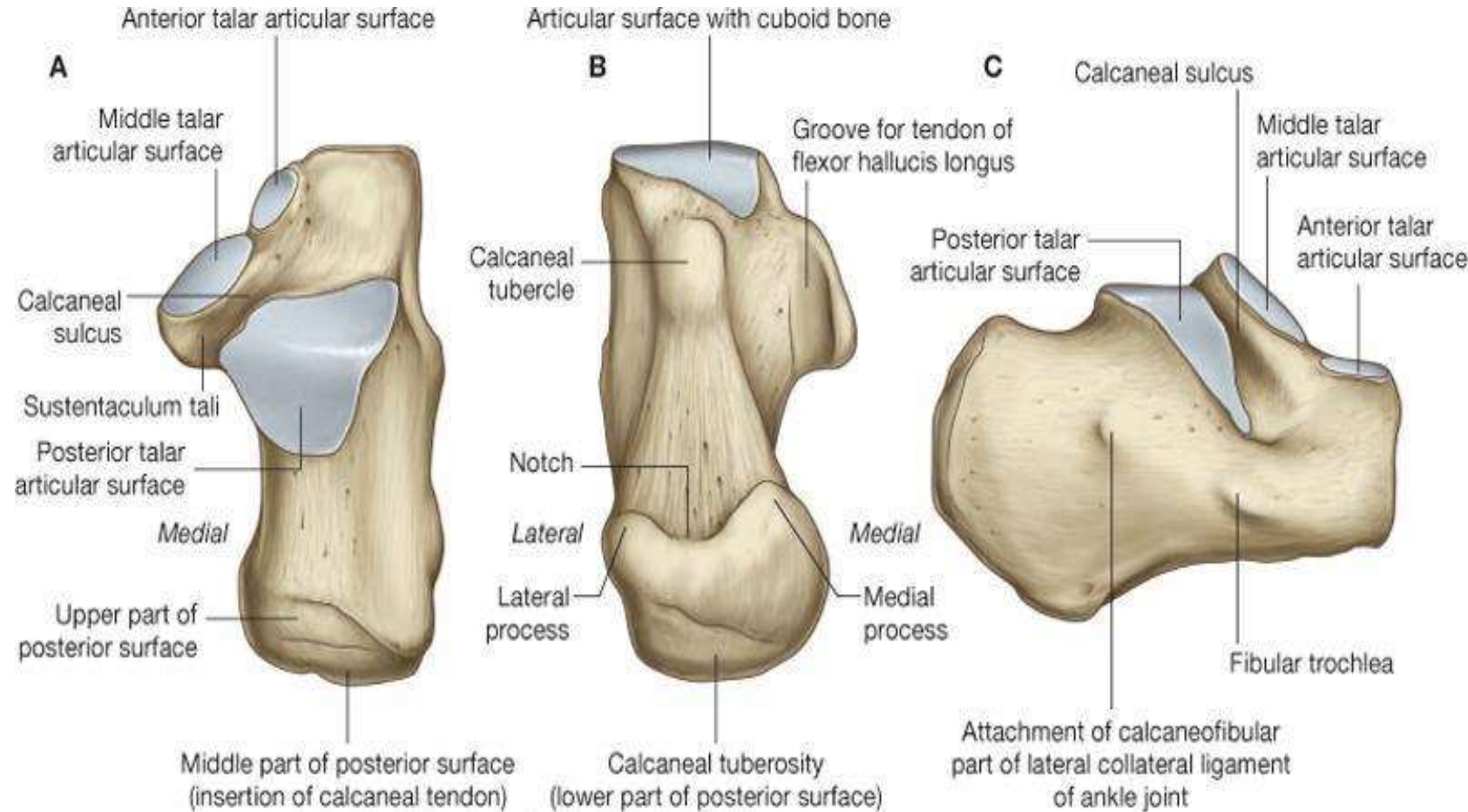
Lateral surface

1. It is almost flat and subcutaneous.
2. It presents a small elevation in its anterior part called peroneal trochlea (tubercle) which lies 2 cm below the tip of lateral malleolus.
3. Peroneal trochlea lies between the groove for the tendon of peroneus brevis above and the groove for the tendon of peroneus longus below.



Medial surface

1. It is concave from above downward.
2. A shelf-like projection called sustentaculum tali projects from its upper anterior part.
3. Superior surface of sustentaculum tali bears a facet for talus while its inferior surface bears a groove for the tendon of flexor hallucis longus.
4. Tendon of flexor digitorum longus is related to the medial surface of sustentaculum tali.



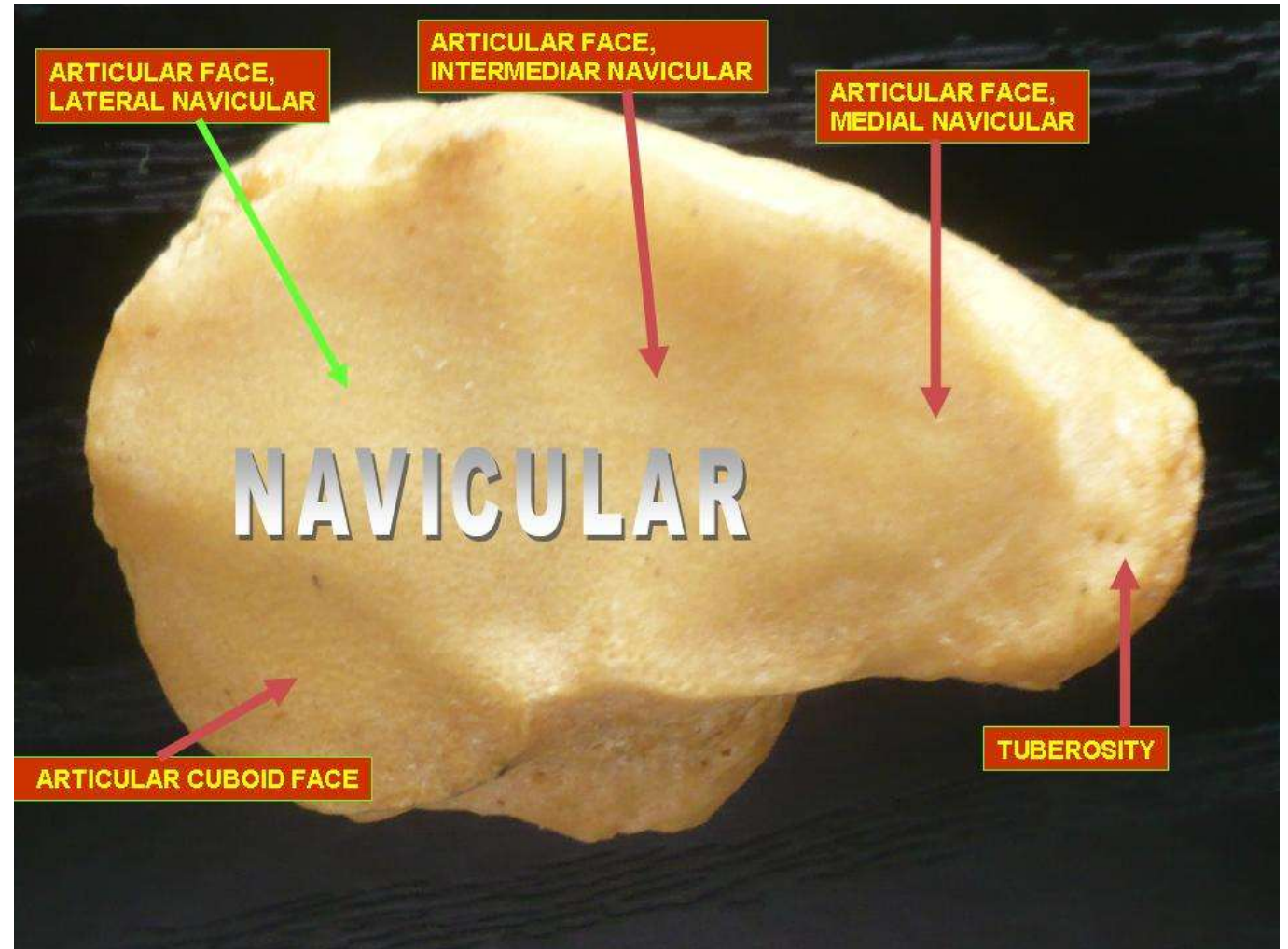
Side Determination and Anatomical Position

1. Its narrow end bearing concavo-convex facet faces anteriorly.
2. Its concave surface bearing shelf-like projection faces medially.
3. Surface bearing large convex articular facet faces dorsally.

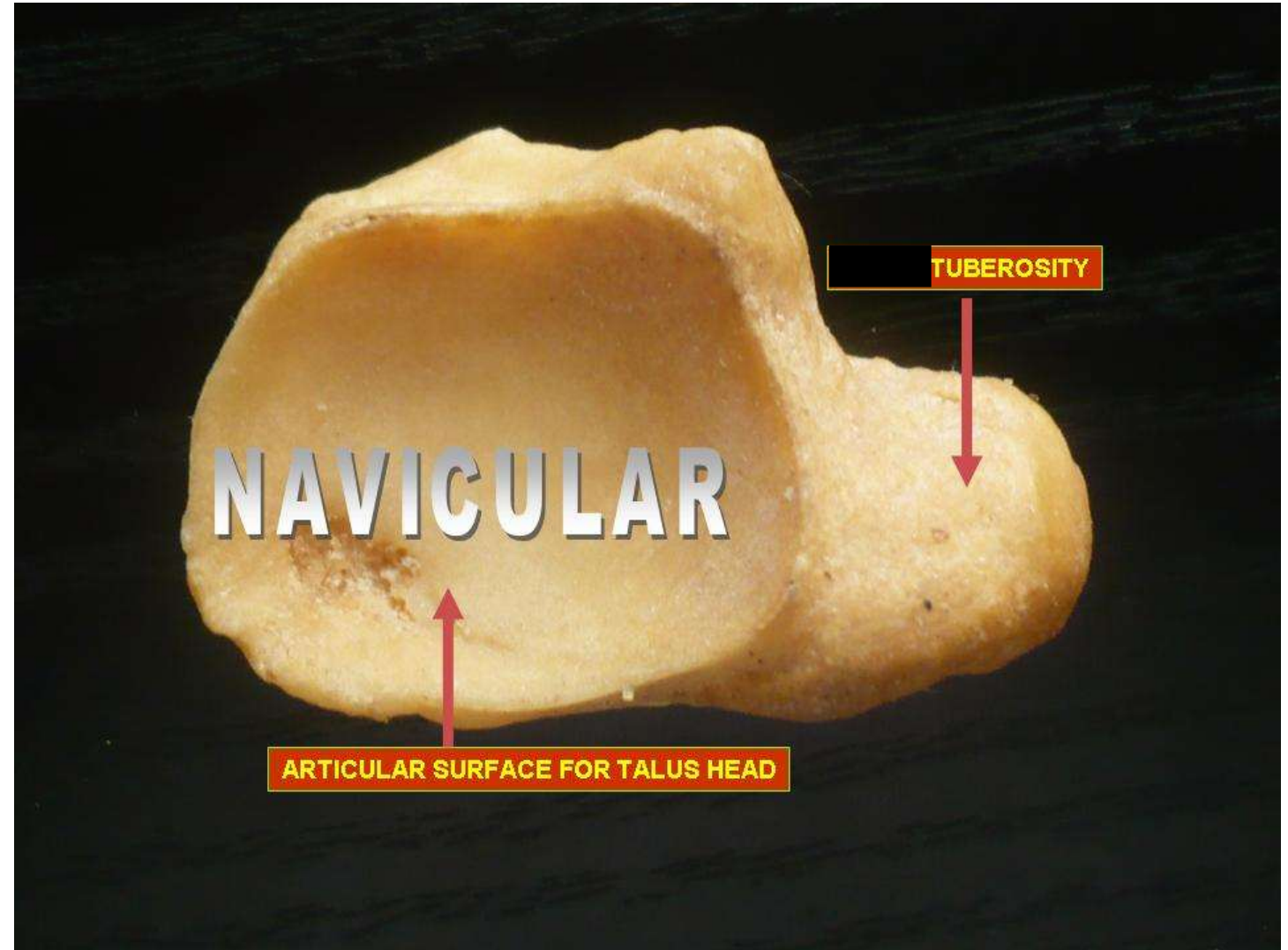
Navicular Bone

It is flattened anteroposteriorly and presents six surfaces— anterior, posterior, dorsal, plantar, medial, and lateral.

1. Anterior surface is convex and possesses three articular facets for three cuneiforms. The medial facet is the largest.
2. Posterior surface is deeply concave and articulates with the head of talus.
3. Dorsal surface is convex and rough, and provides attachment to the dorsal talonavicular ligament.



4. Plantar surface presents a groove in its medial part through which passes the tendon of tibialis posterior. Its lateral part provides attachment to the spring ligament.
5. Medial surface projects downward to form tuberosity of navicular bone, which provides insertion to the major part of the tendon of tibialis posterior.
6. Lateral surface is rough and may present a facet for cuboid.



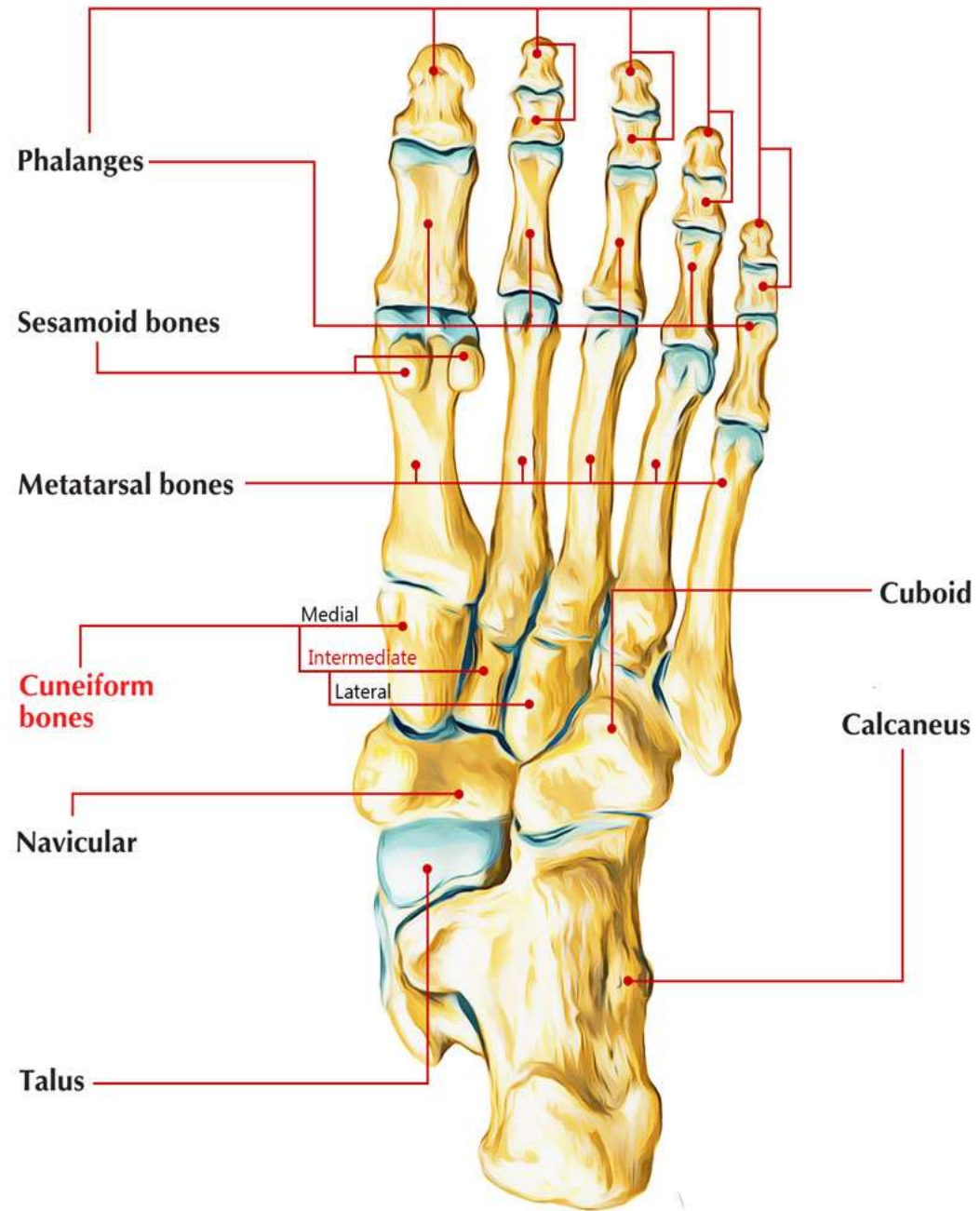
Cuneiform Bones

These bones are wedge-shaped and three in number— medial (first cuneiform), intermediate (second cuneiform), and lateral (third cuneiform).

The medial cuneiform is the largest and the intermediate cuneiform is the smallest.

Cuboid Bone -cuboid in shape.

It is situated in front of calcaneum and behind the fourth and fifth metatarsals.



METATARSAL BONES

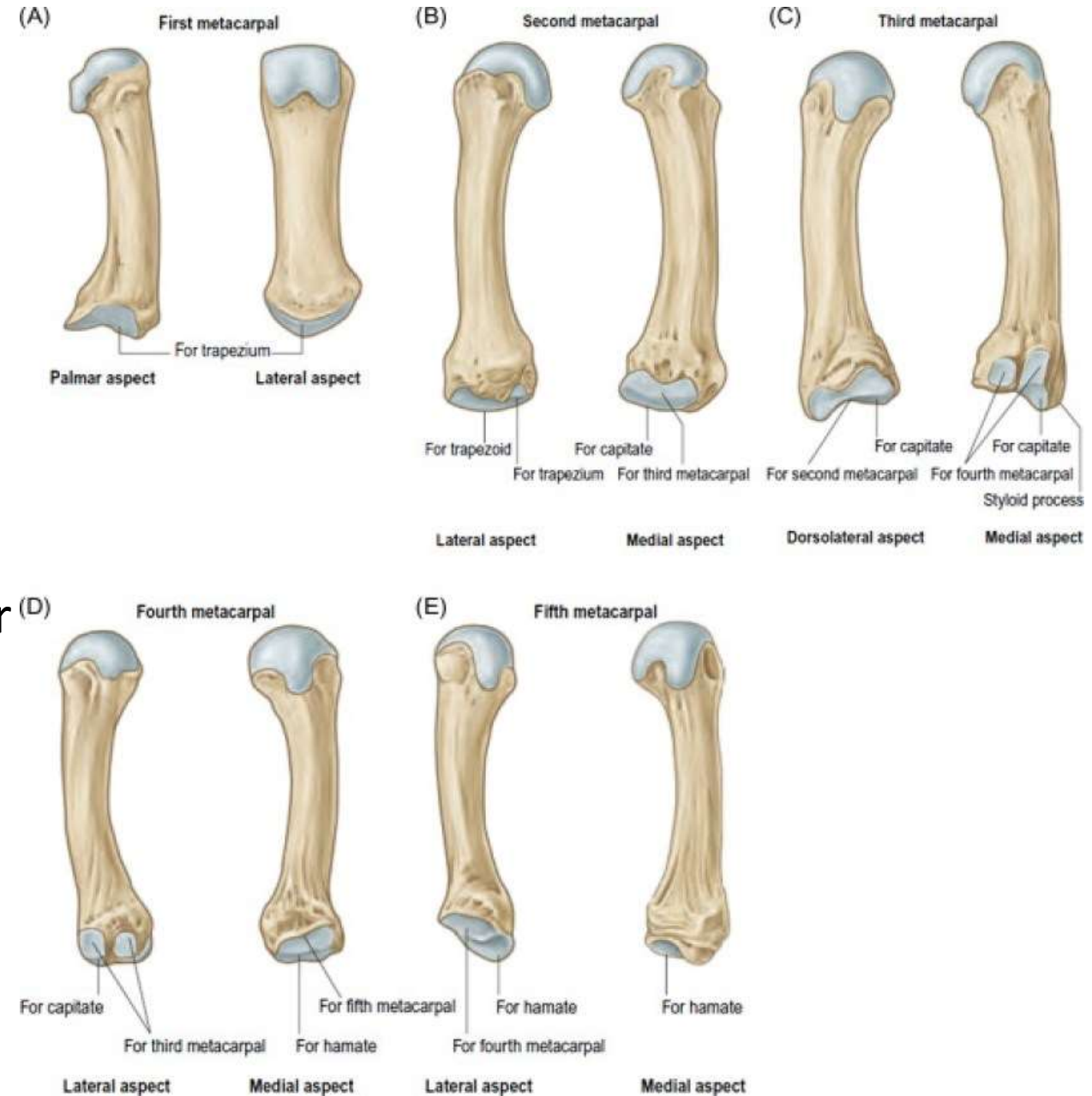
First metatarsal -It is the shortest, thickest, and strongest, and is adapted for weight transmission. Proximal surface of its base presents a kidney-shaped articular surface.

Second metatarsal

1. It is the longest metatarsal bone.
2. Proximal surface of its base has a triangular concave articular surface.

Third metatarsal

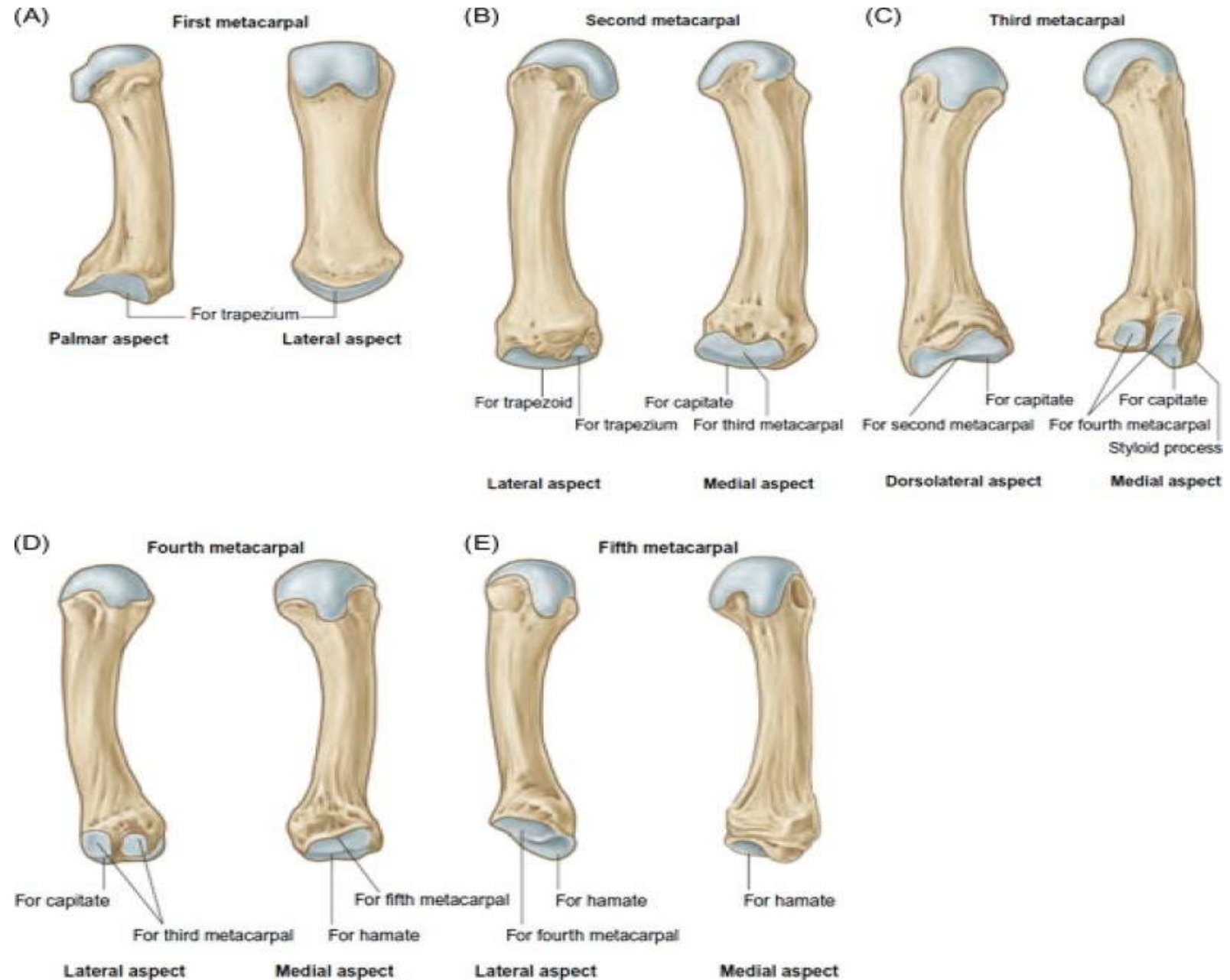
1. Proximal surface of its base has a flat triangular articular facet.
2. The lateral side of its base has two facets while the medial side has one facet.



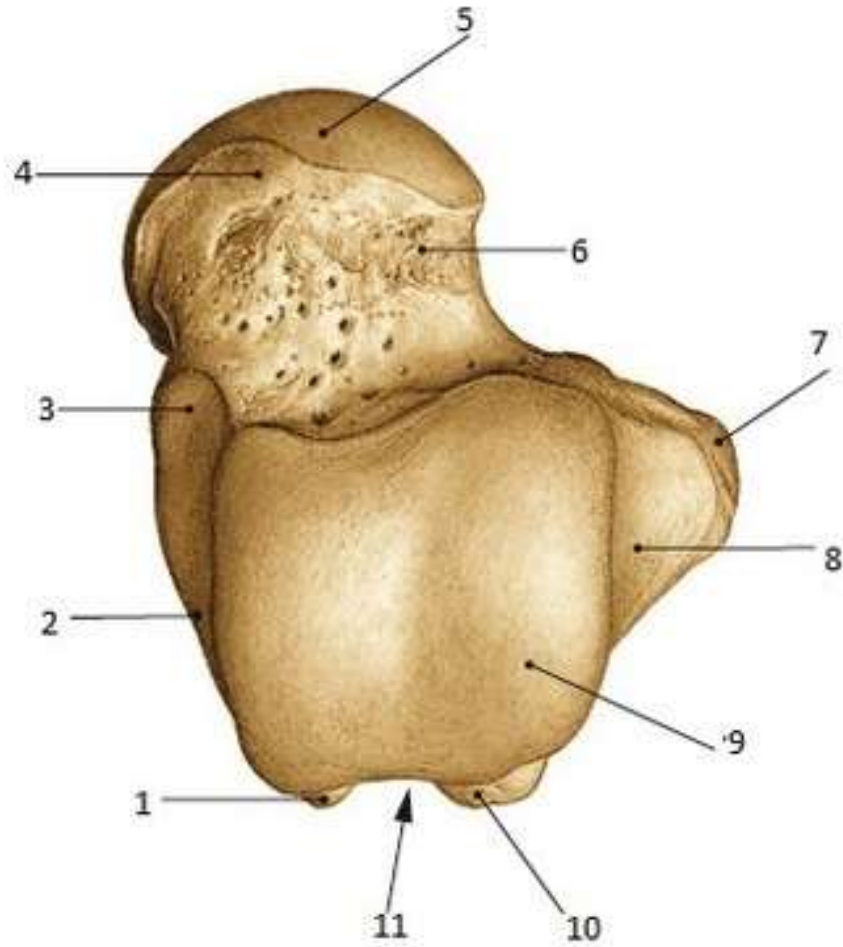
Fourth metatarsal

1. The proximal surface of its base has a quadrilateral facet, which articulates with the cuboid.
2. The lateral side of base has one facet while its medial side has one facet divided into two parts—proximal and distal.

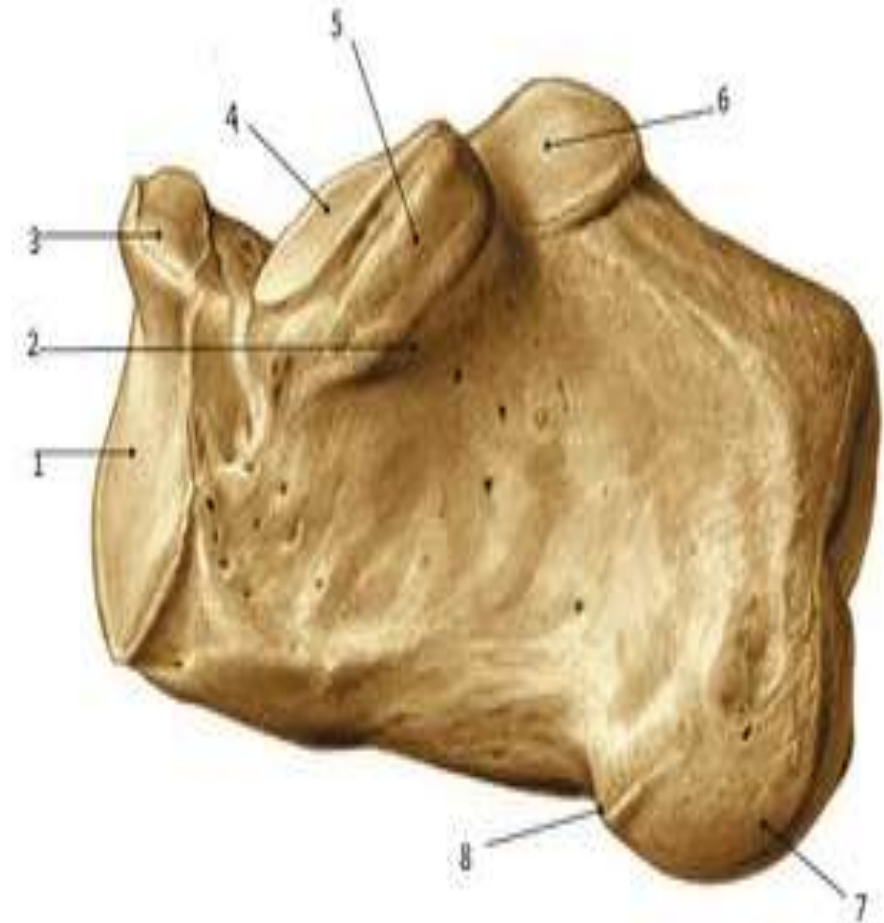
Fifth metatarsal - The lateral side of its base projects proximally and slightly laterally to form a large tuberosity (styloid process).



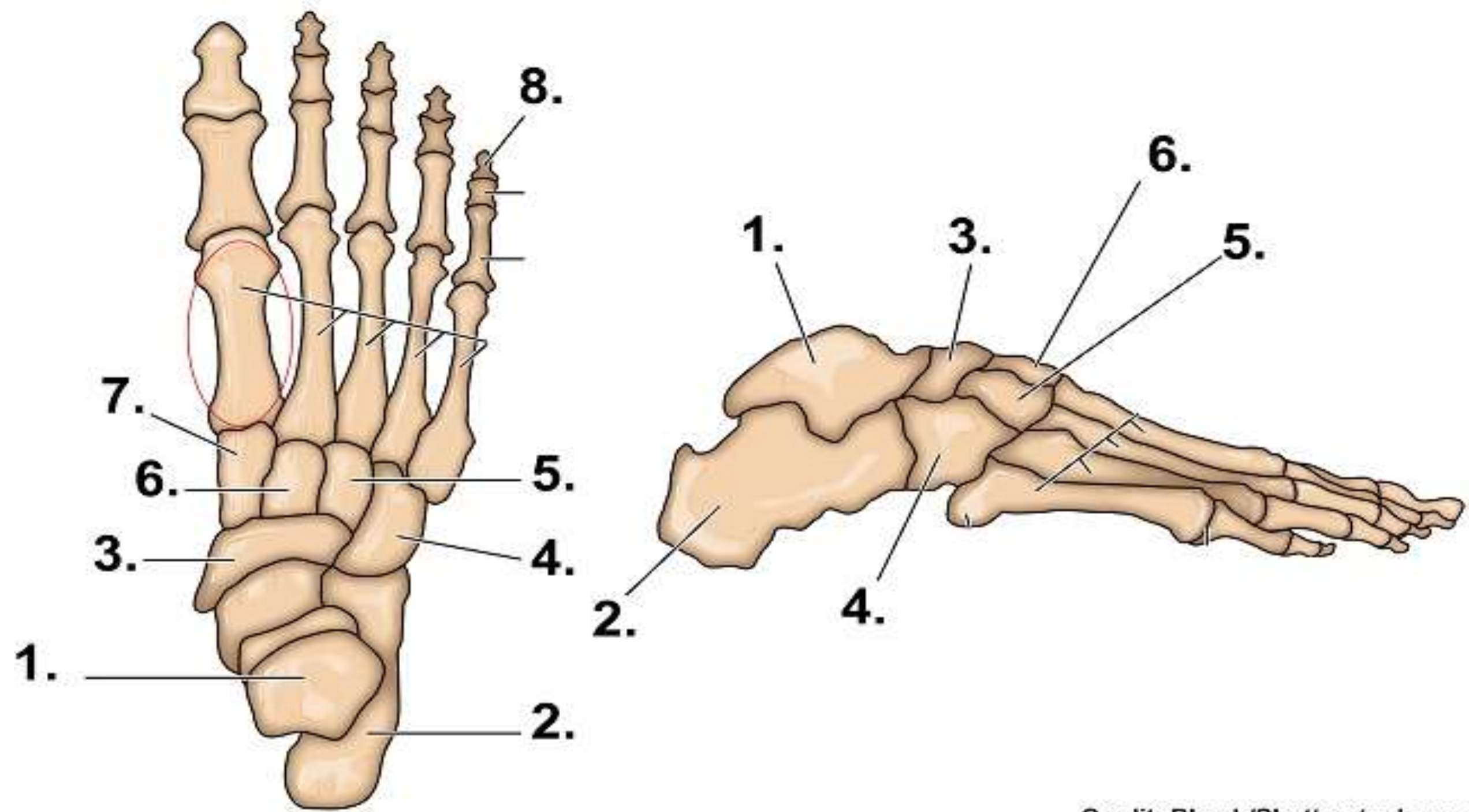
Revision



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THANK YOU

A

Anterior talar articular surface

Middle talar articular surface

Calcaneal sulcus

Sustentaculum tali

Posterior talar articular surface

Medial

Upper part of posterior surface

Middle part of posterior surface
(insertion of calcaneal tendon)

Articular surface with cuboid bone

B

Calcaneal tubercle

Groove for tendon of flexor hallucis longus

Notch

Lateral

Lateral process

Calcaneal tuberosity
(lower part of posterior surface)*Medial*

Medial process

C

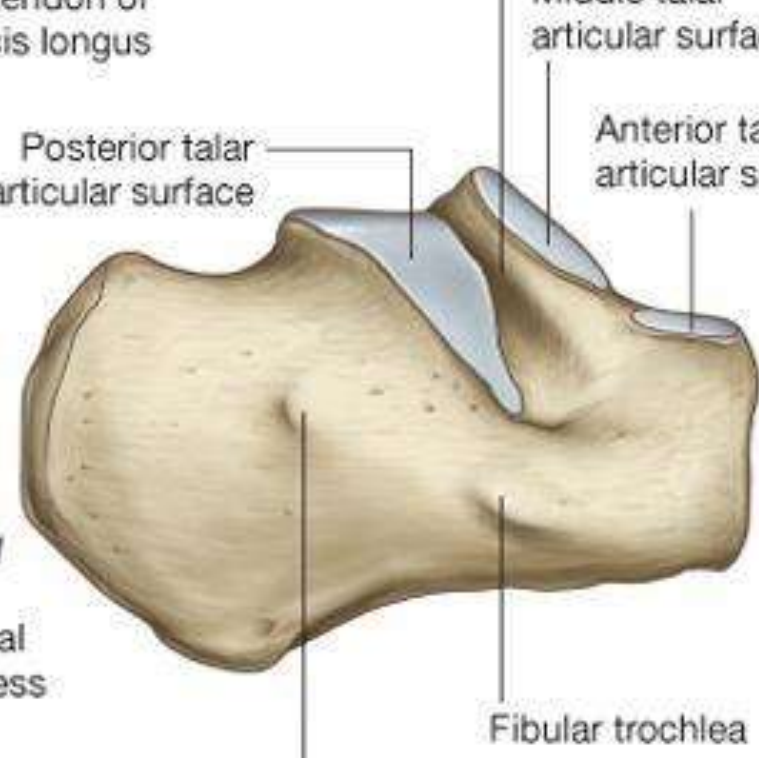
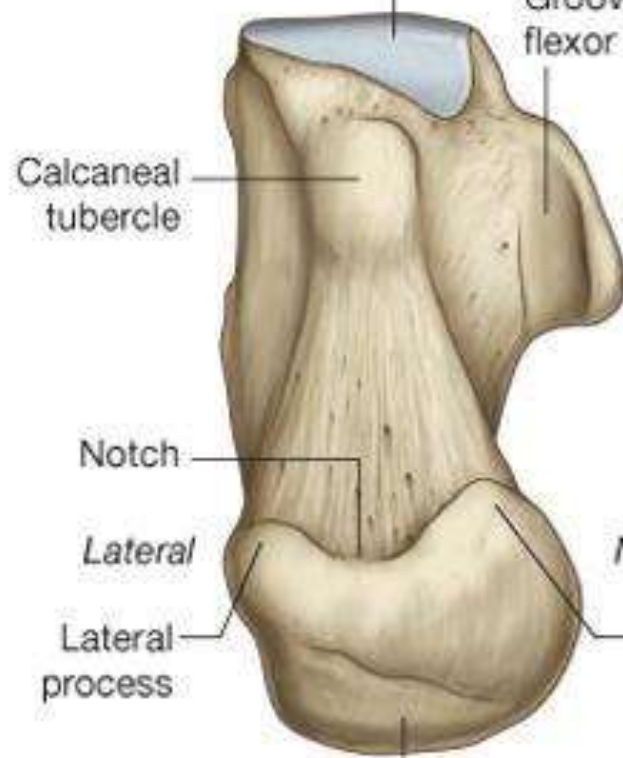
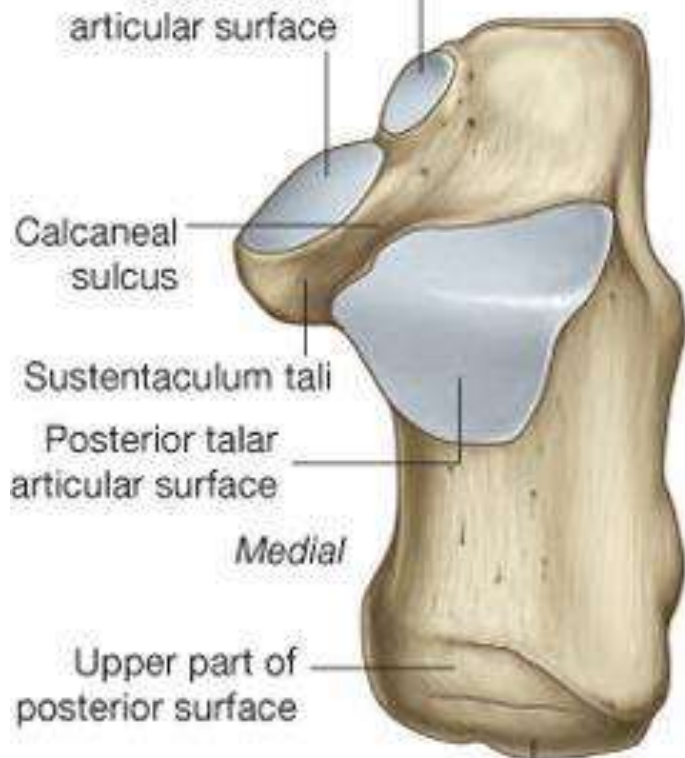
Calcaneal sulcus

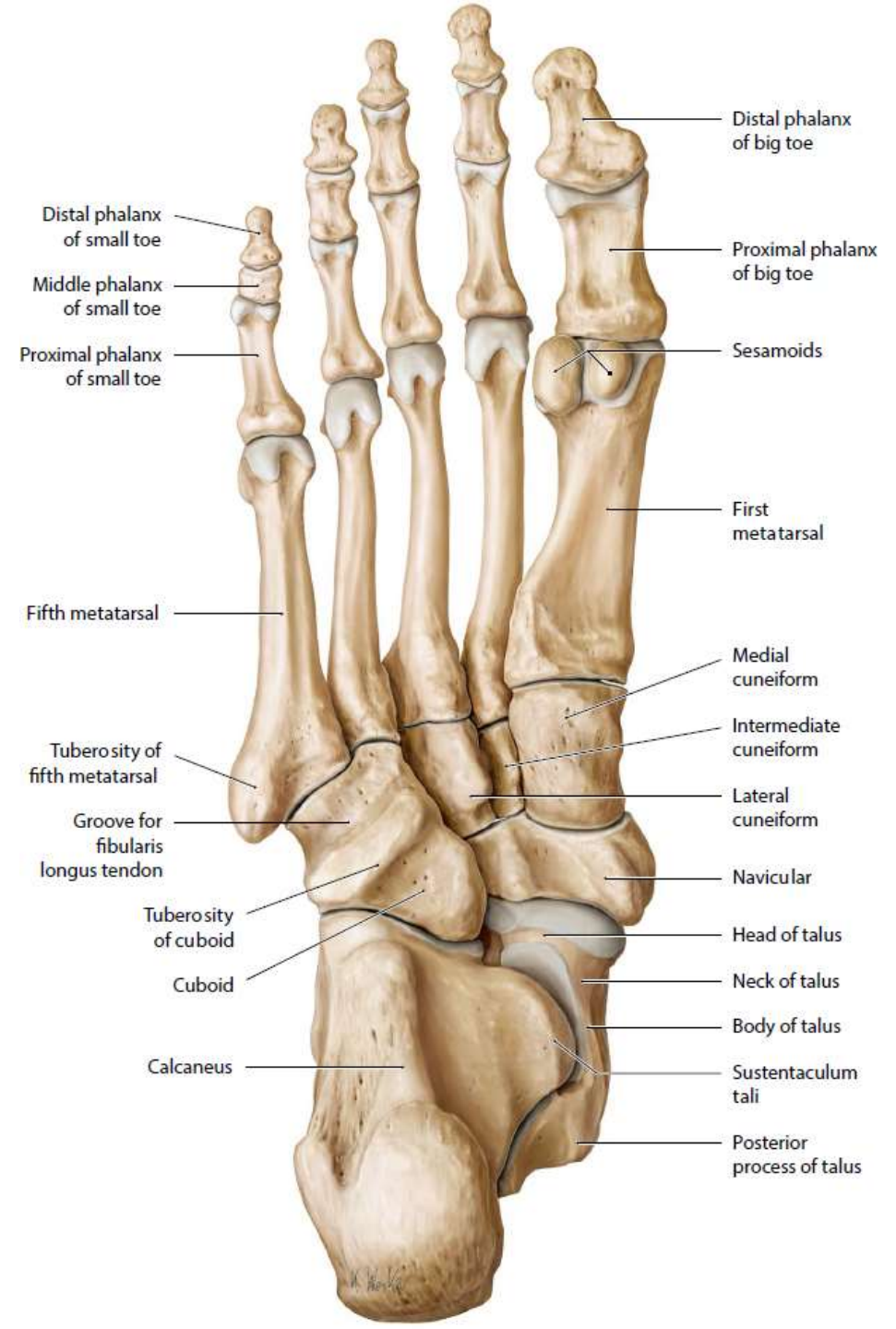
Middle talar articular surface

Anterior talar articular surface

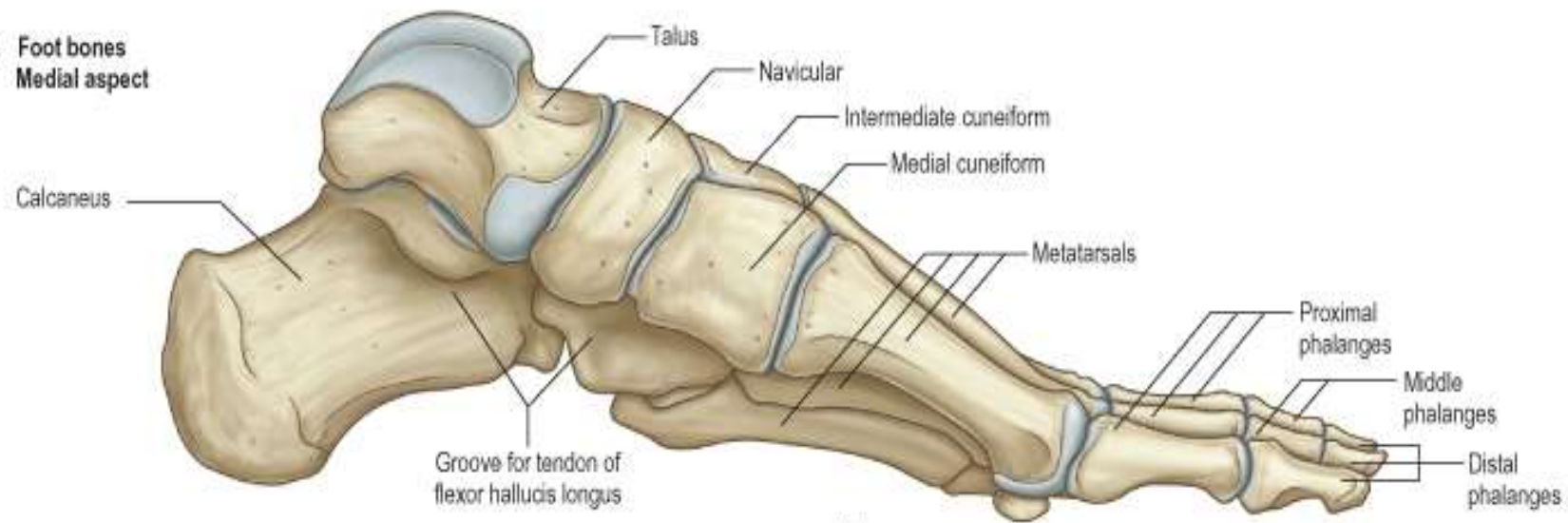
Posterior talar articular surface

Fibular trochlea

Attachment of calcaneofibular
part of lateral collateral ligament
of ankle joint



A Foot bones
Medial aspect



Lateral aspect



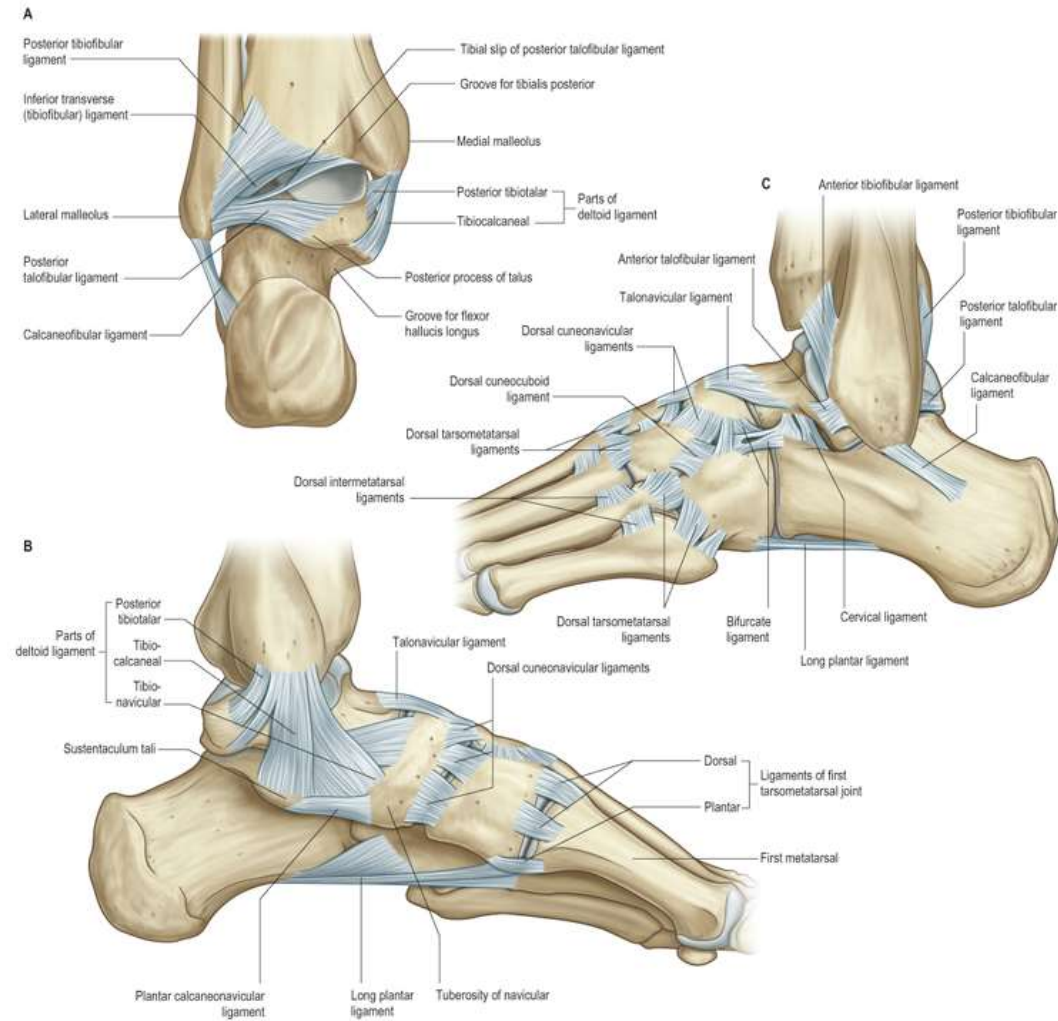


Fig. 84.13 The left ankle and tarsal joints. A, Posterior aspect. B, Medial aspect. C. Lateral aspect.

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