Appendicular Skeleton

Introduction to Anatomy and Embryology

Lab 5

Bones of the leg and foot

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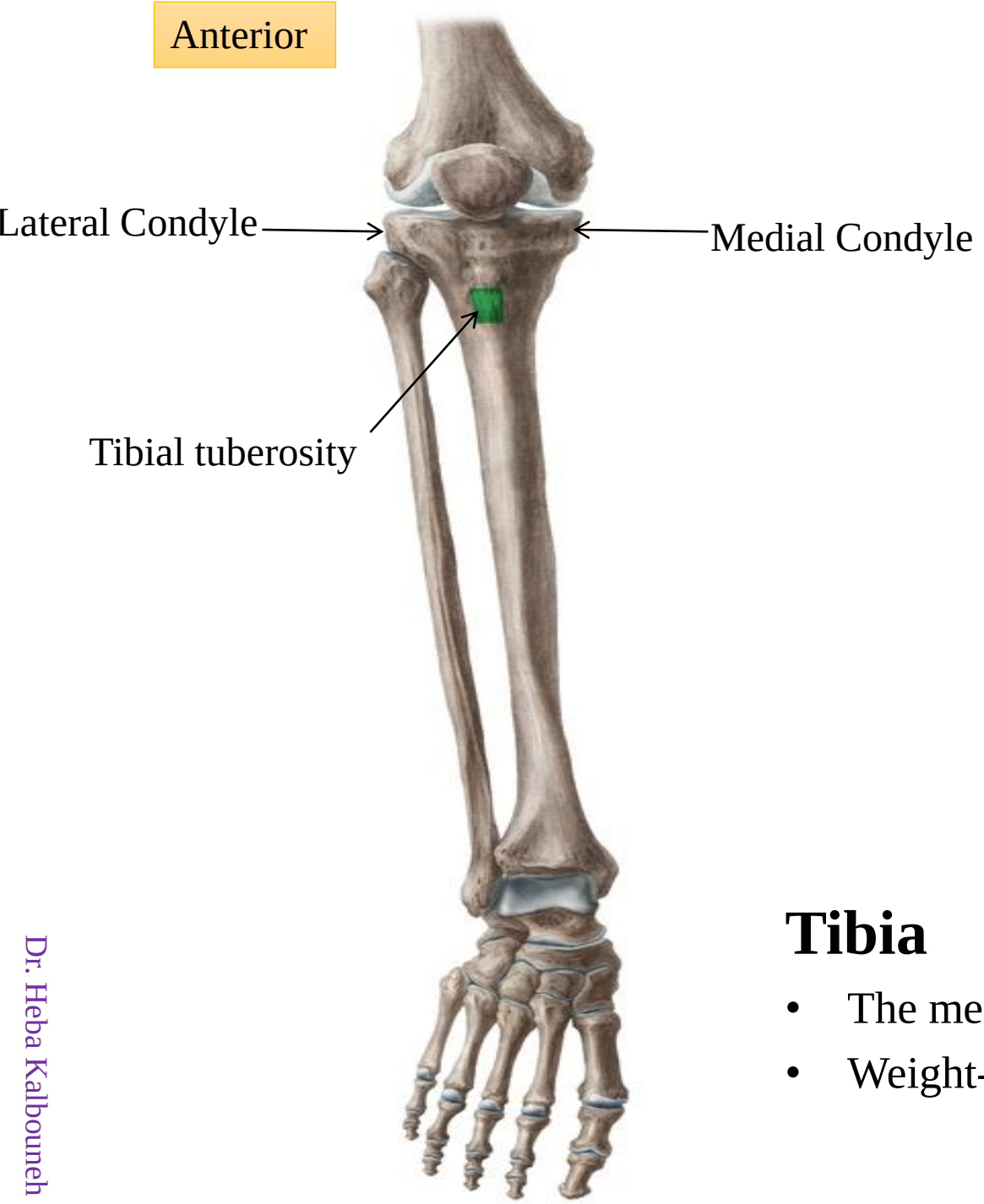
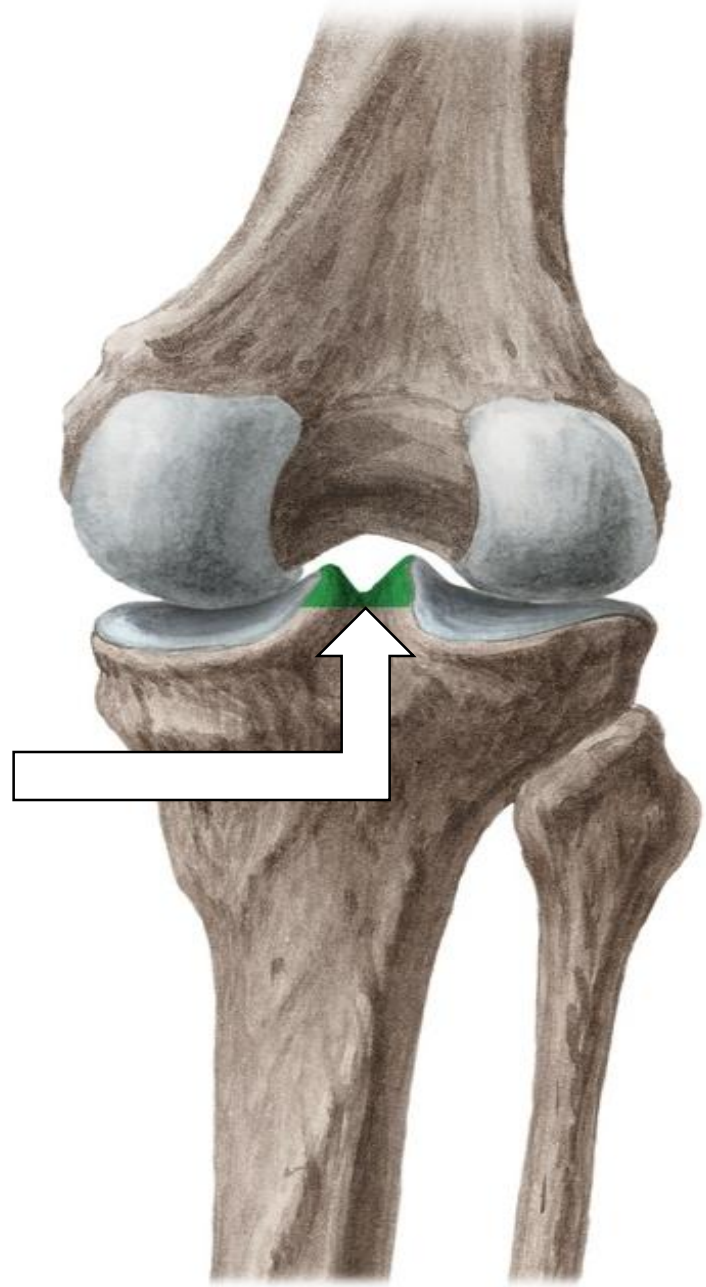
Tibia

Anterior





Tibia

- The medial bone of the leg.
- Weight-bearing bone of the leg.

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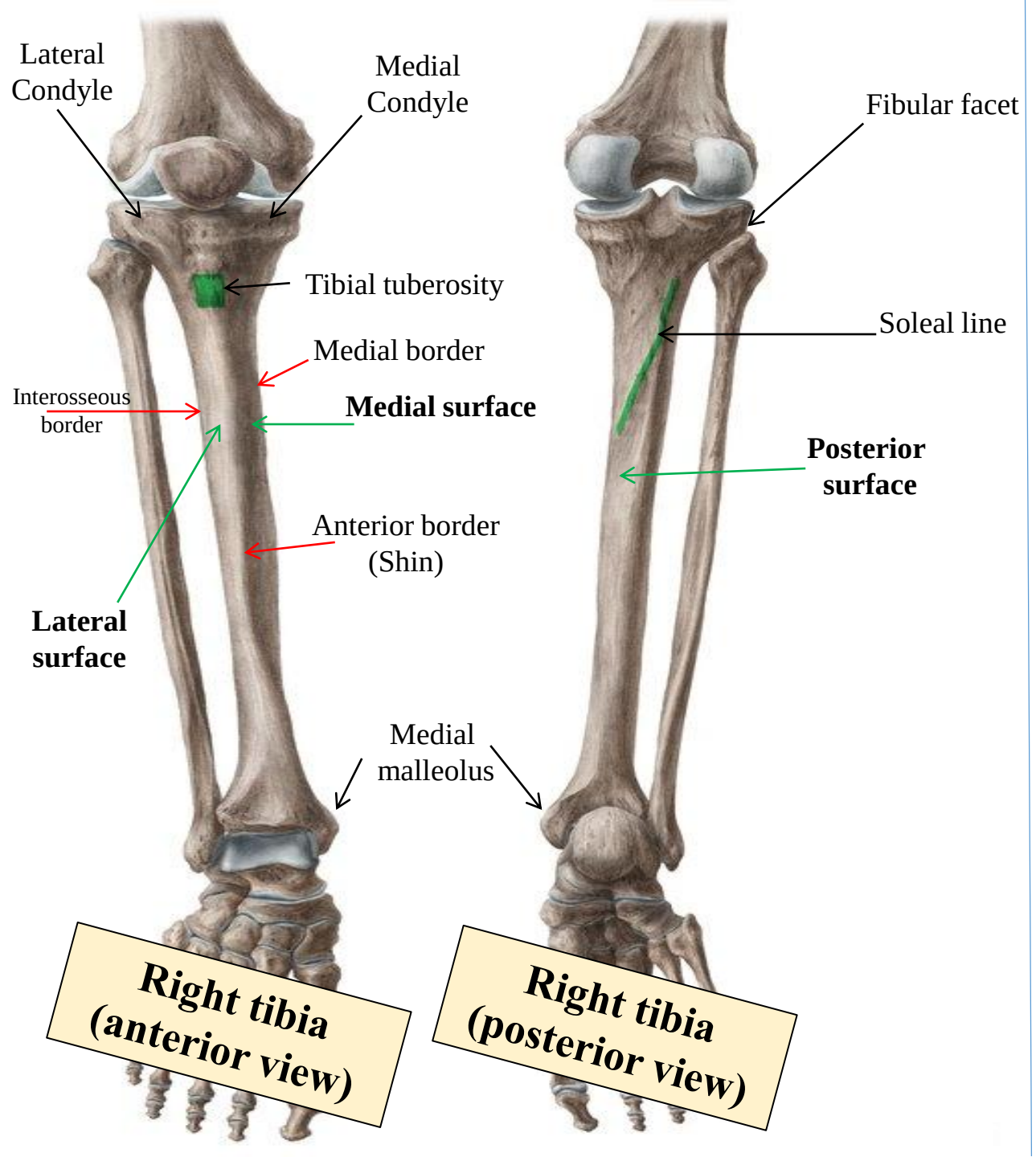
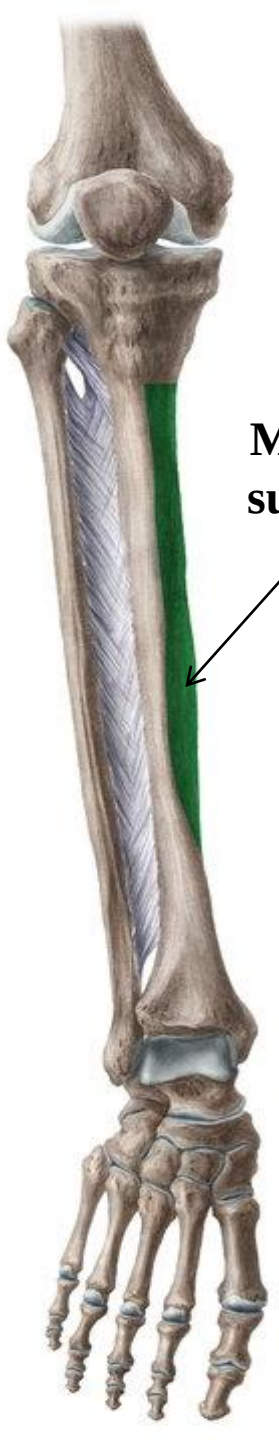
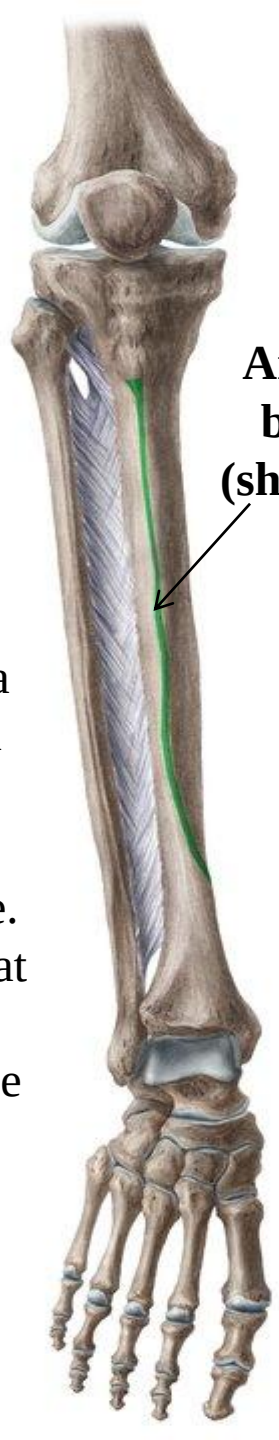




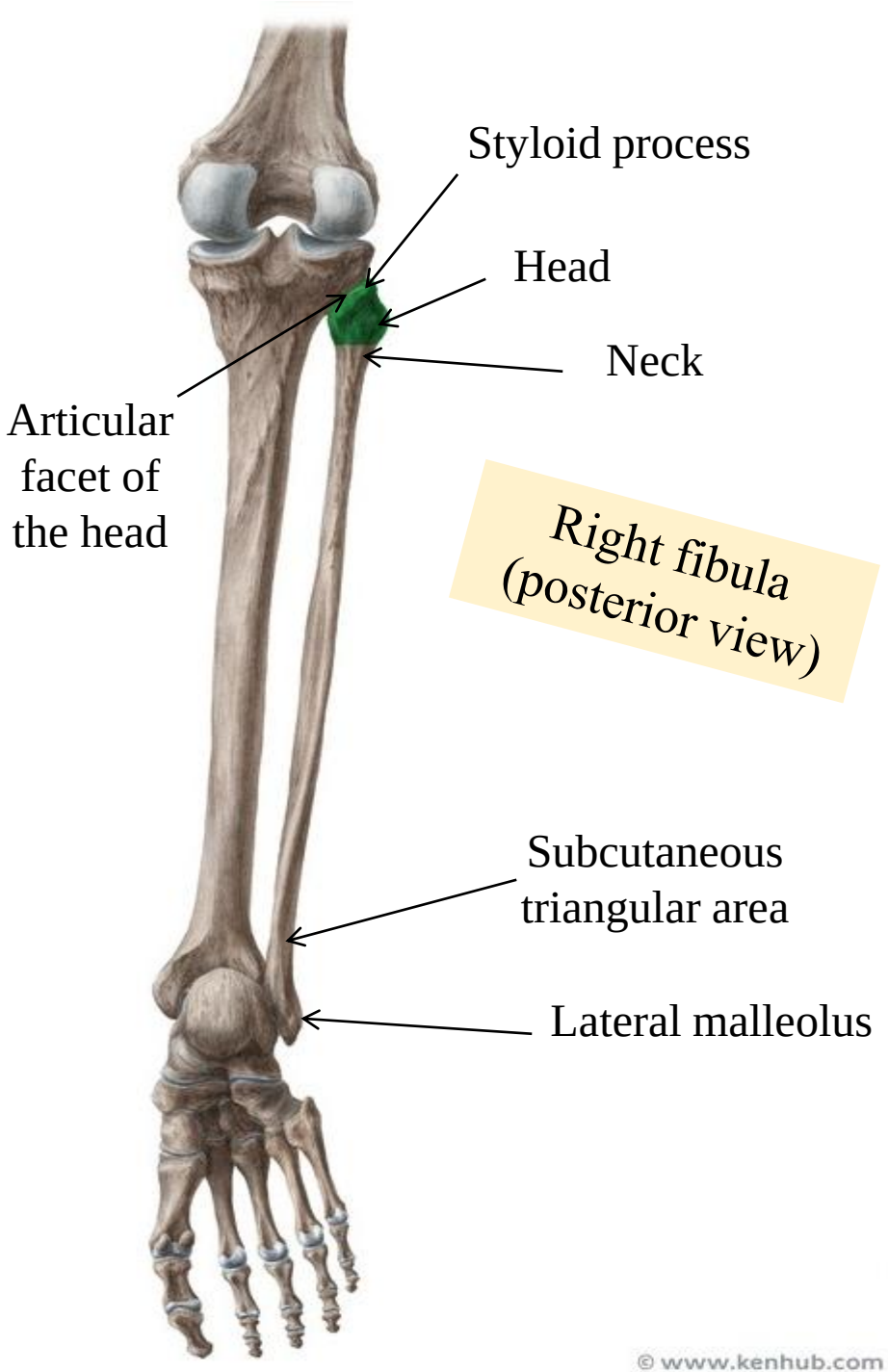
The shaft of the tibia is subcutaneous and unprotected anteromedially throughout its course. It is not surprising that the tibia is the commonest long bone to be fractured.



Fibula

Fibula

- The lateral bone of the leg.
- Slender bone, smaller than tibia (No articulation with femur).



Right fibula (posterior view)

Patella

Patella

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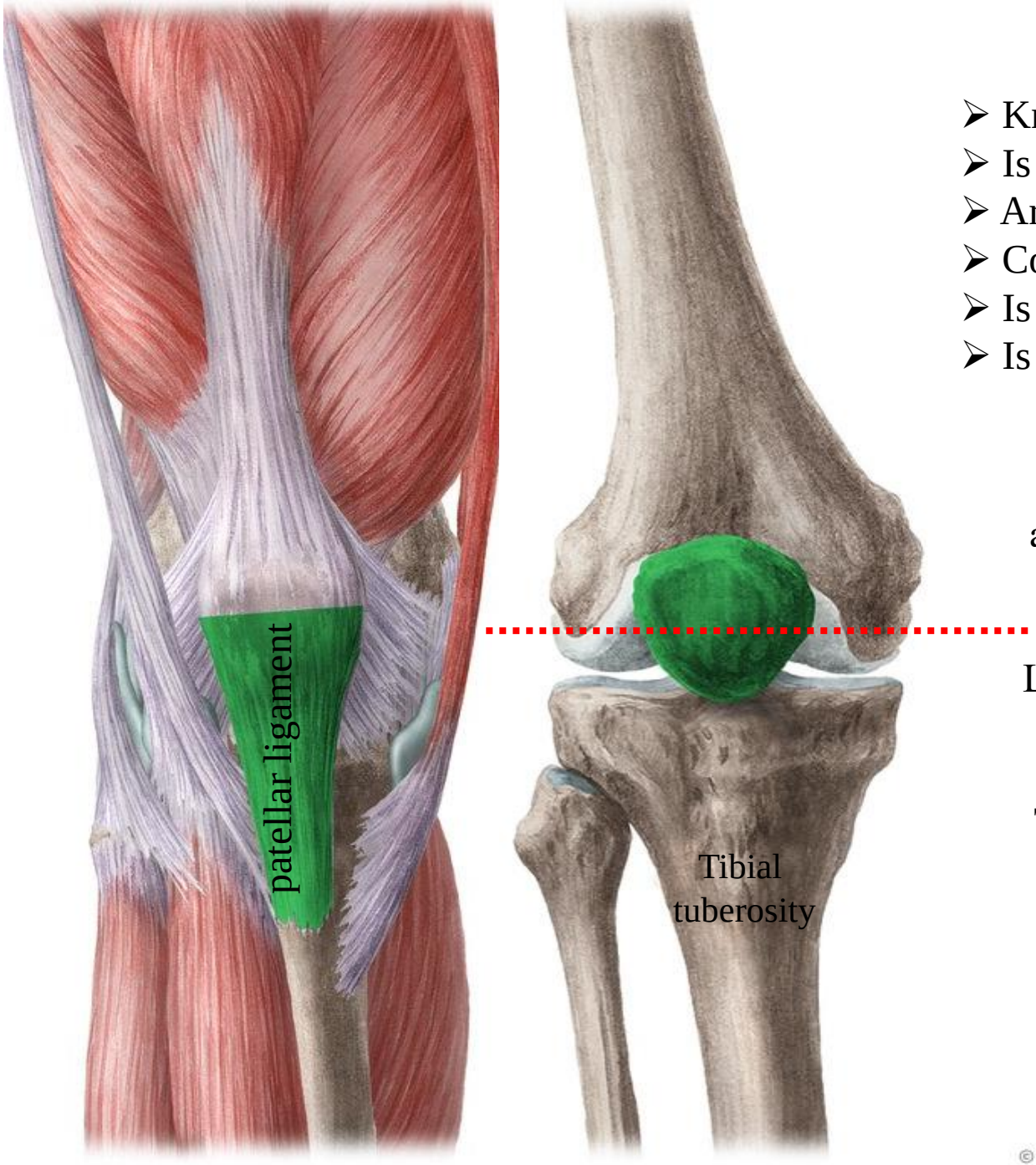
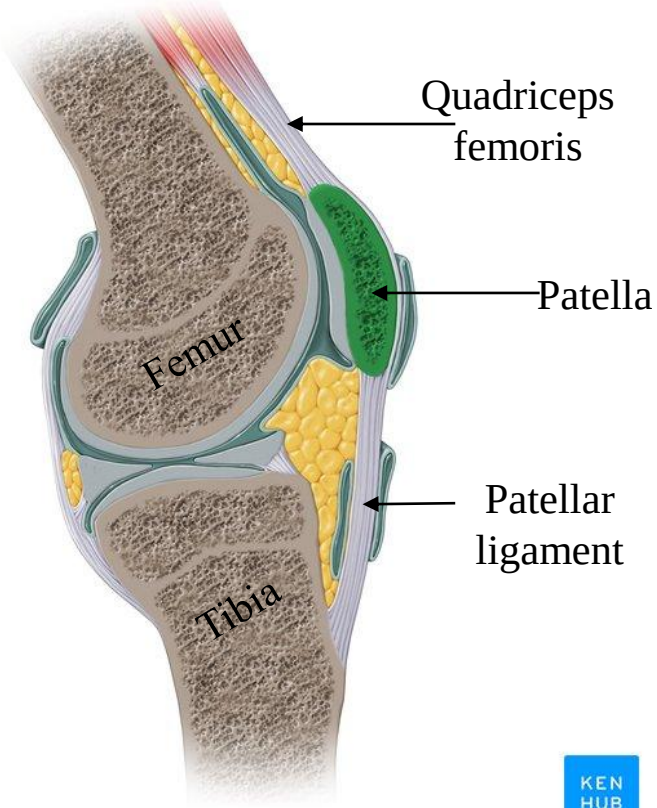
- Known as the **kneecap**
- Is triangular
- Articulates with the femur
- Covers and protects the anterior articular surface of the knee joint
- Is the largest sesamoid bone in the body
- Is embedded in the quadriceps femoris tendon



Upper part: Serves for the attachment of the tendon of the quadriceps muscle

Lower part: Serves as the origin of the patellar ligament

The patellar ligament inserts into tibial tuberosity

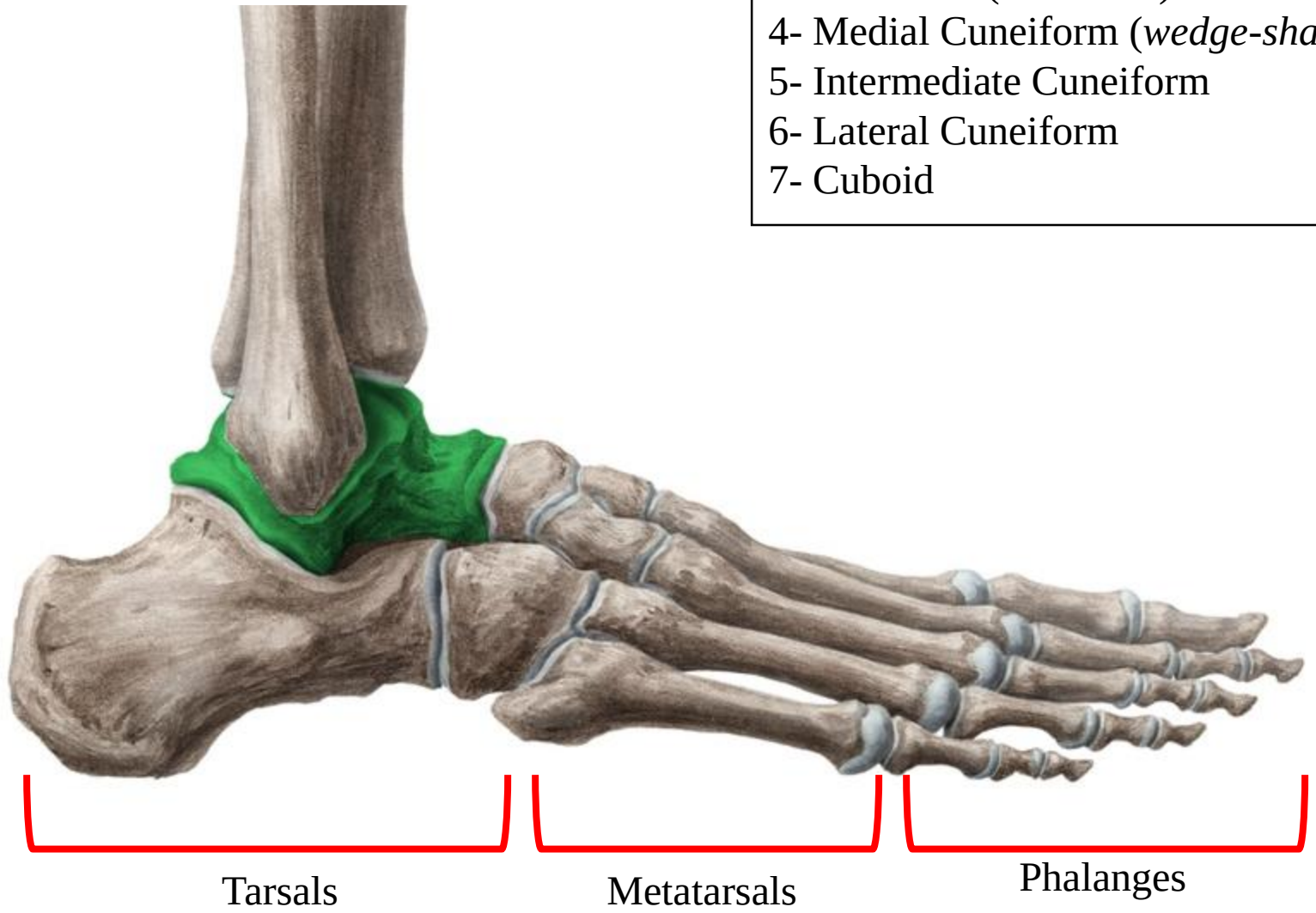


Bones of the Foot

Bones of the foot

Tarsals (7)
Metatarsals (5)
Phalanges (14)

Tarsal bones
1- Talus (ankle= كاحل)
2- Calcaneus (heel= كعب)
3- Navicular (*little boat*)
4- Medial Cuneiform (*wedge-shape*)
5- Intermediate Cuneiform
6- Lateral Cuneiform
7- Cuboid

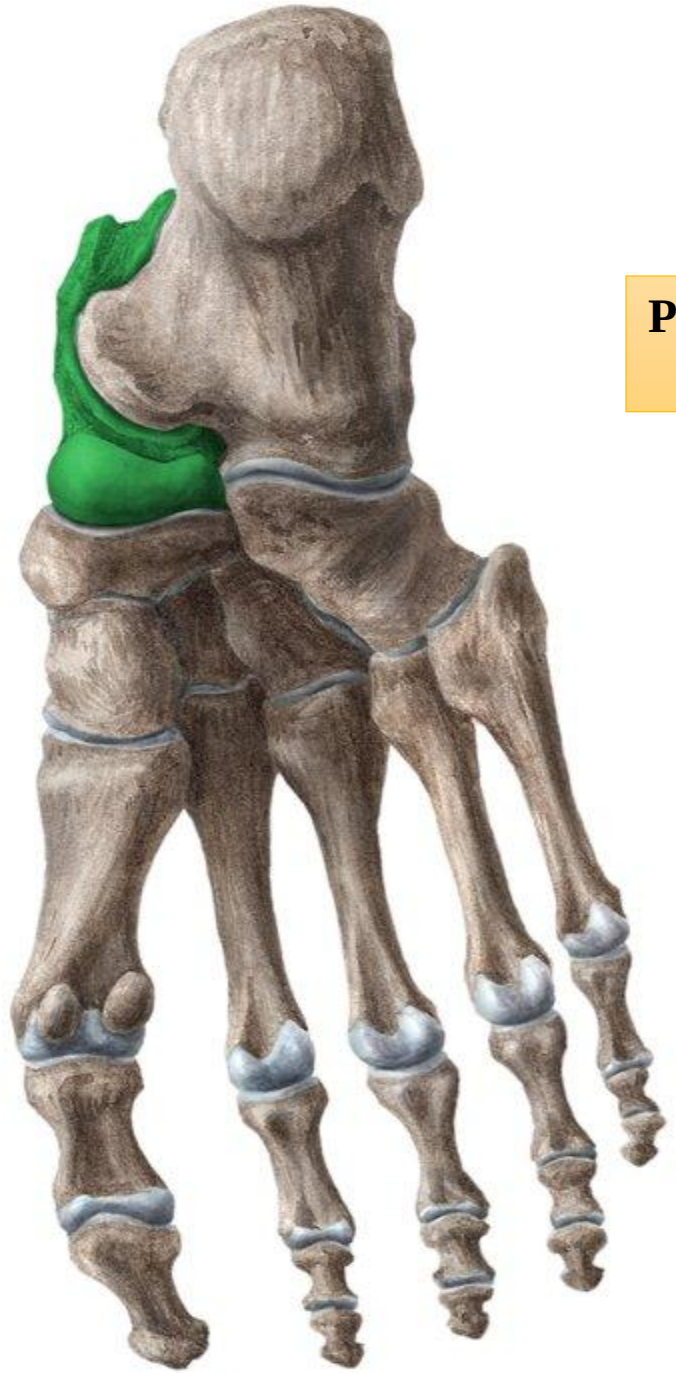


Note: Metatarsals and phalanges are considered Long bones

Calcaneus

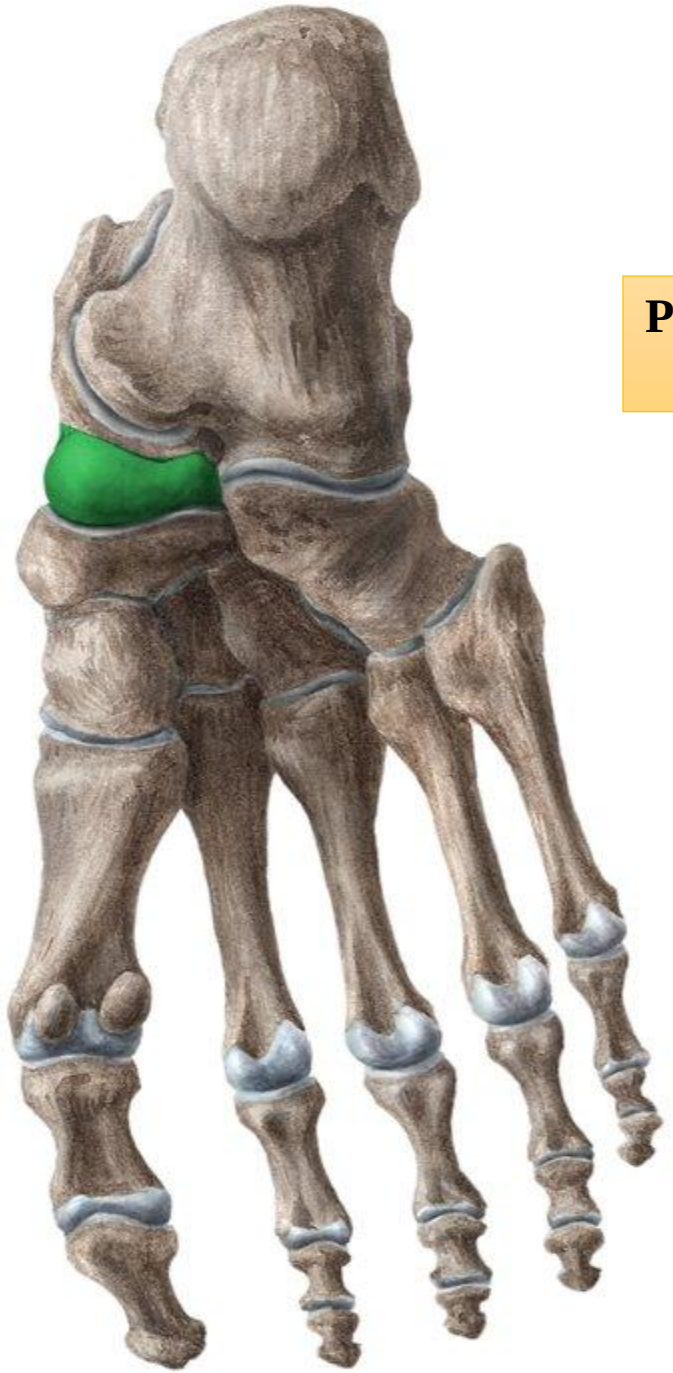
Planter surface of the foot (inferior)

Talus



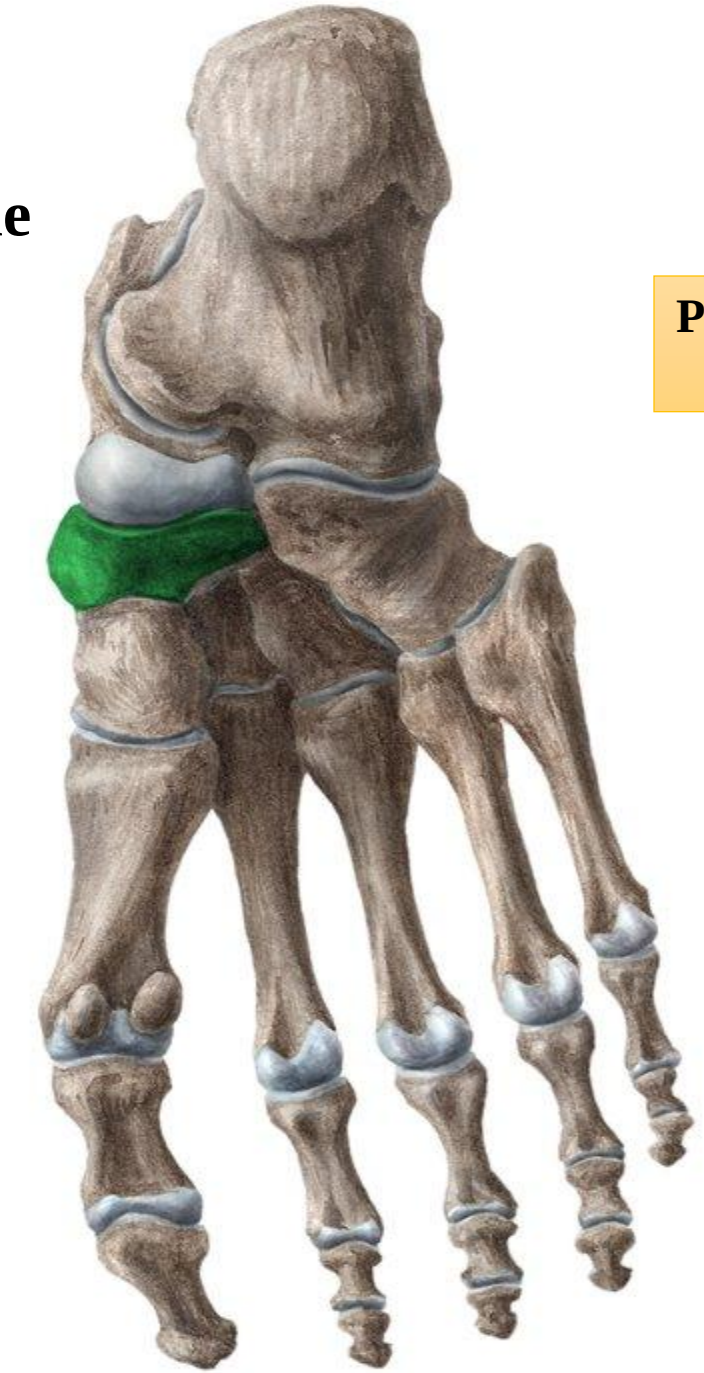
Planter surface of the foot (inferior)

Head of Talus



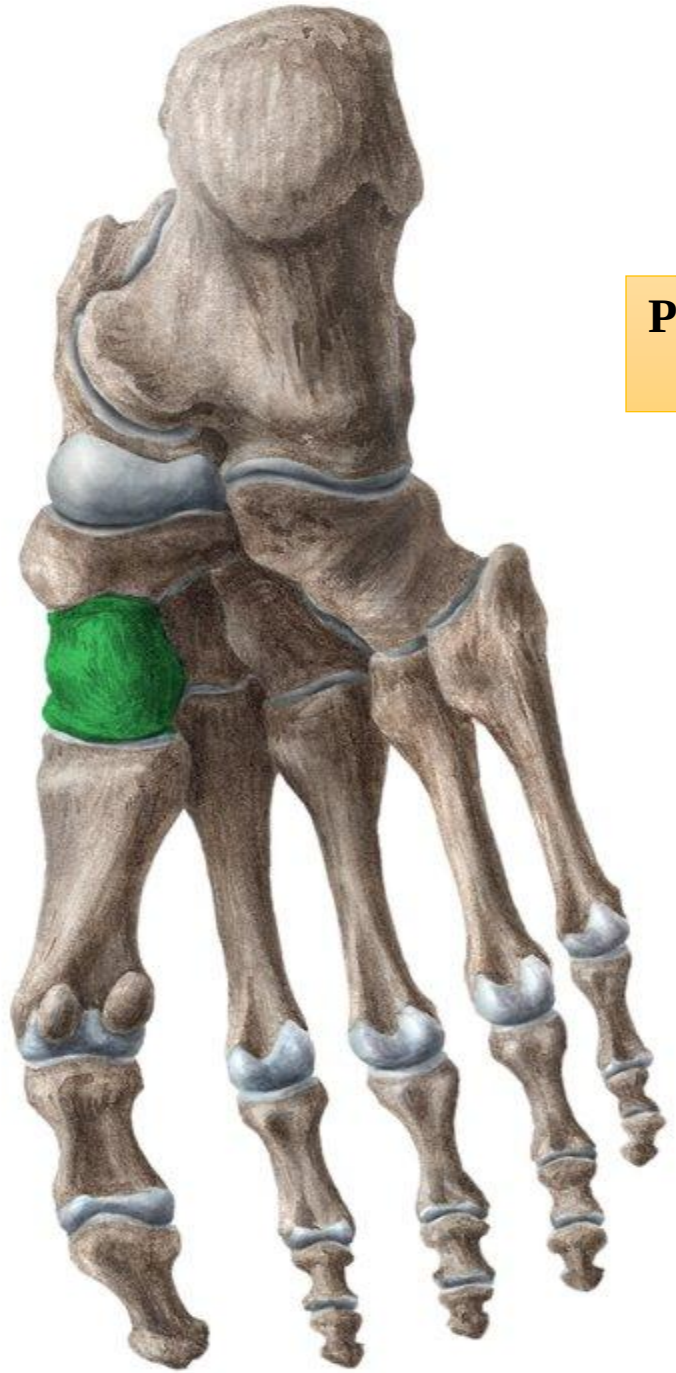
Planter surface of the foot (inferior)

Navicular bone



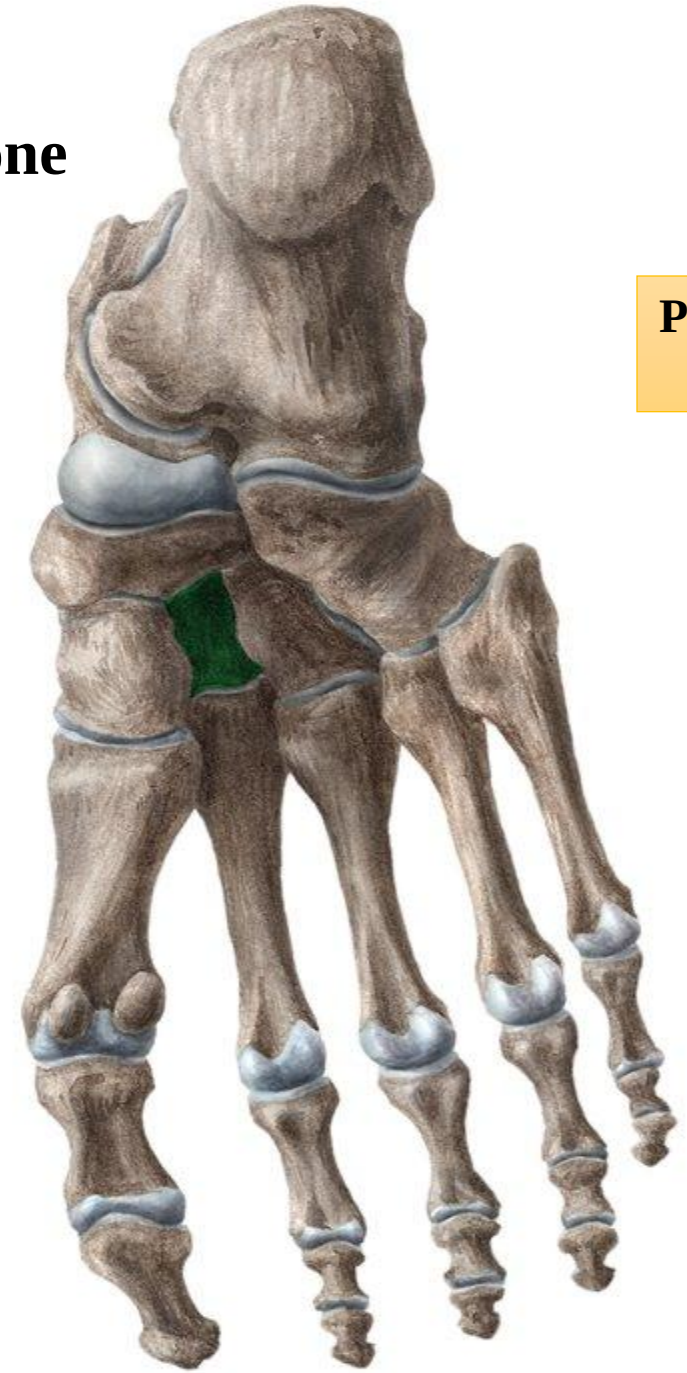
Planter surface of the foot (inferior)

Medial cuneiform bone



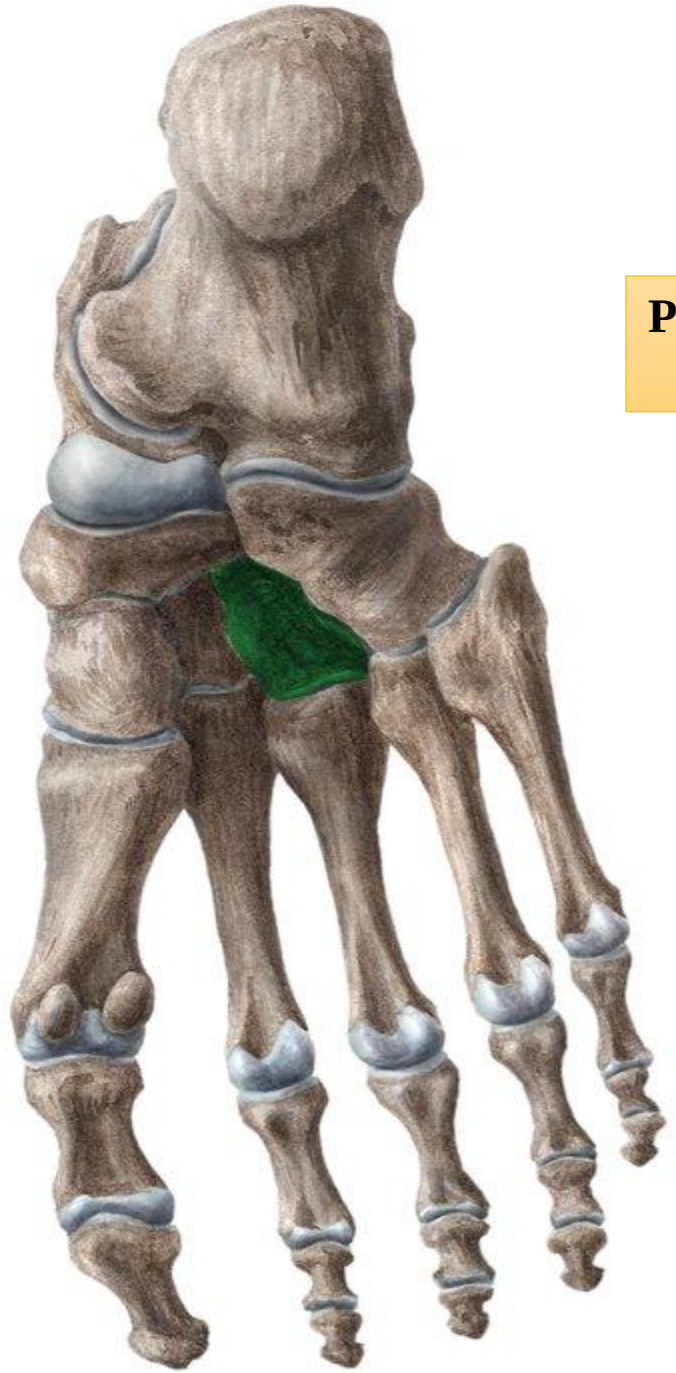
Planter surface of the foot (inferior)

Intermediate cuneiform bone



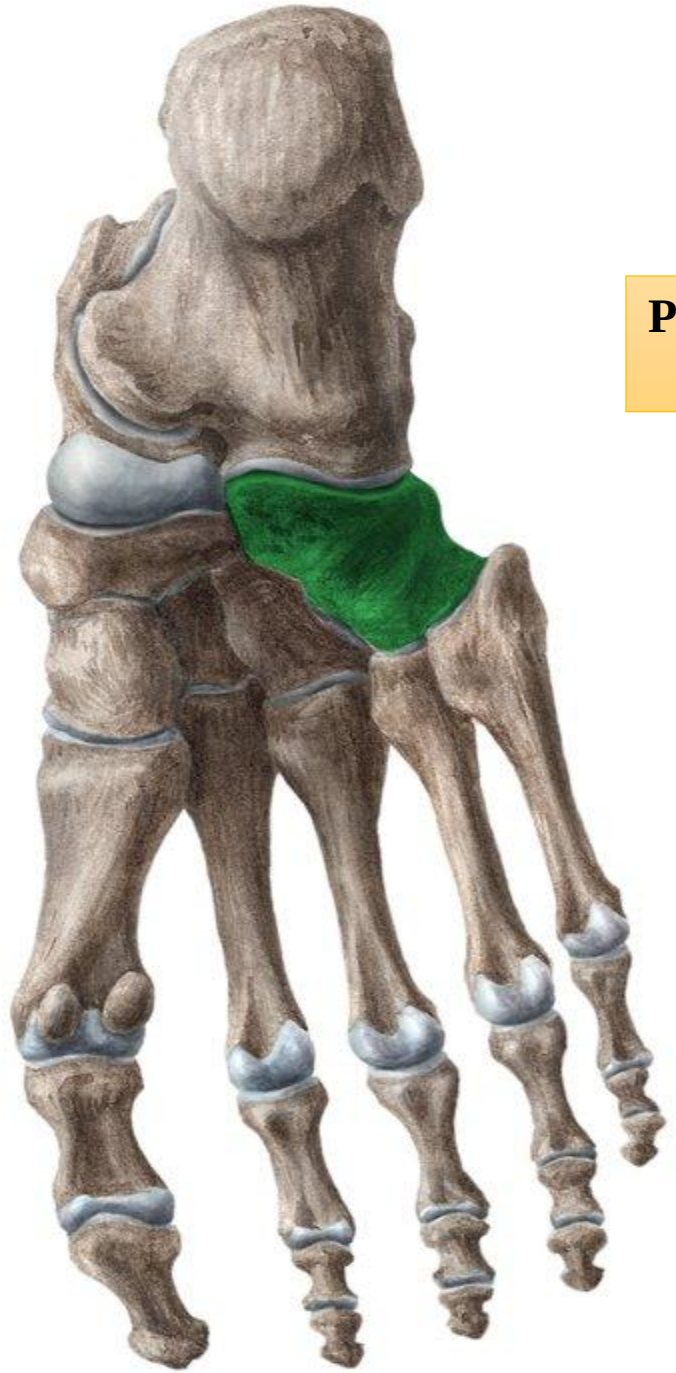
Planter surface of the foot (inferior)

Lateral cuneiform bone



Planter surface of the foot (inferior)

Cuboid



Planter surface of the foot (inferior)

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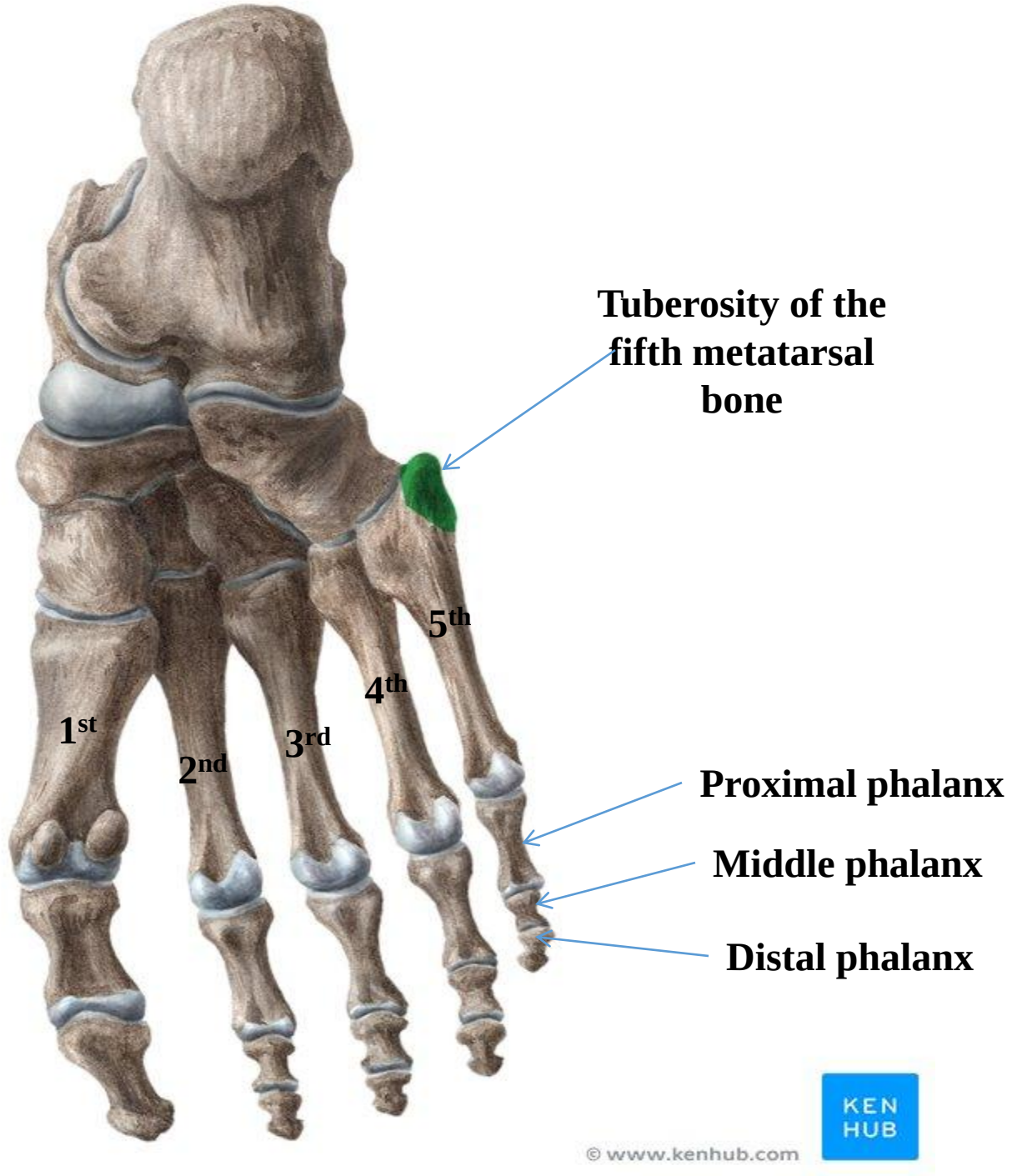

The **knee joint** is a complex synovial joint that connects three bones (the femur, tibia and patella) which together form a pair of articulations:

Tibiofemoral joint, formed between the tibia and the femur.

Patellofemoral joint, formed between the patella and the femur.

Type:

Tibiofemoral joint: Synovial hinge joint

Patellofemoral joint: Synovial plane joint

Articular surfaces:

Tibiofemoral joint: Lateral and medial condyles of femur, tibial plateau

Patellofemoral joint: Patellar surface of femur articular surface of patella

Movements:

Extension, flexion, internal/medial rotation, external/lateral rotation

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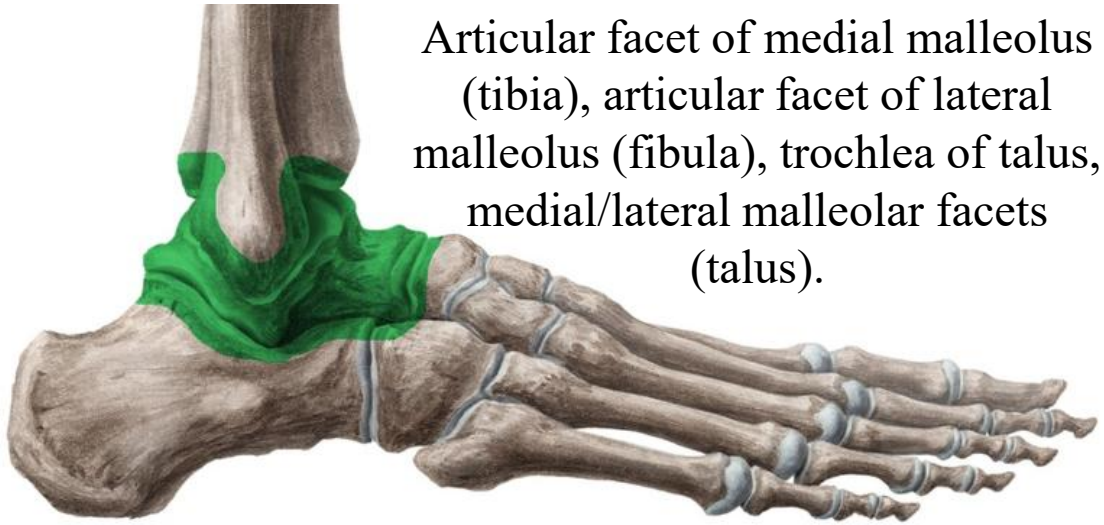
The **ankle joint** is the joint between the talus and the distal ends of tibia and fibula.

Type: Synovial hinge joint.

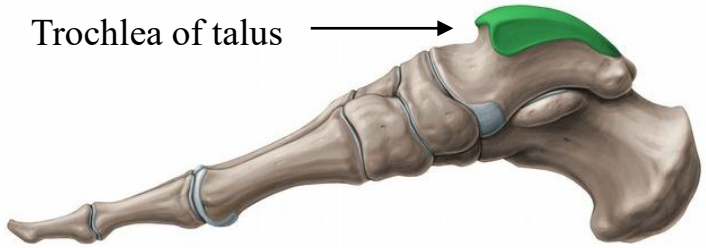


Articular surfaces:

Articular facet of medial malleolus (tibia), articular facet of lateral malleolus (fibula), trochlea of talus, medial/lateral malleolar facets (talus).

Movements:

Dorsiflexion, plantar flexion



The tibiofibular joints

- ✓ Are a set of articulations that unite the tibia and fibula.

These two bones of the leg are connected via three junctions:

1- The **superior (proximal) tibiofibular joint:** between the superior ends of tibia and fibula

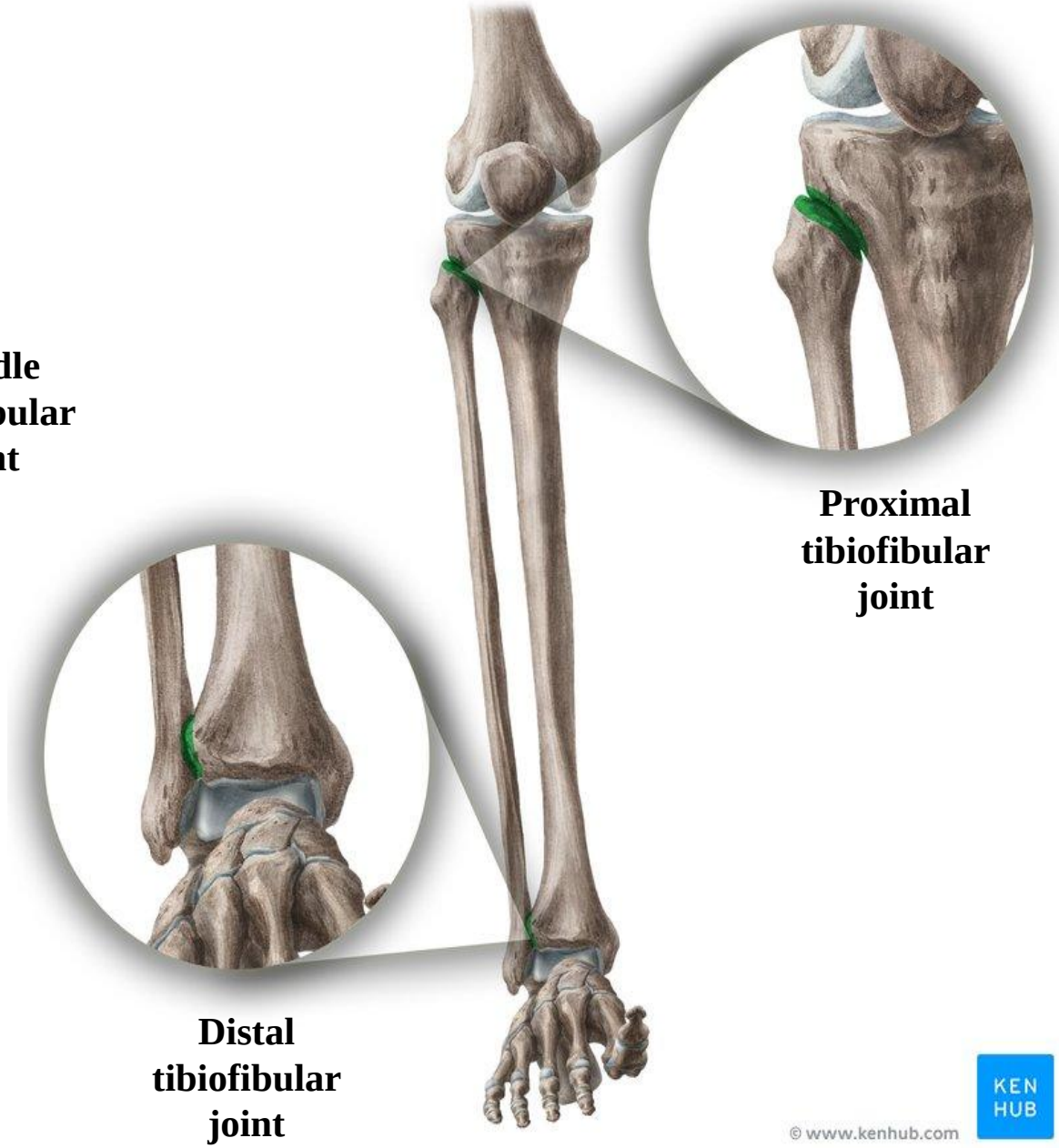
2- The **inferior (distal) tibiofibular joint:** between their inferior ends

3- The **middle tibiofibular joint** (interosseous membrane of leg): connects their shafts

The superior tibiofibular joint is a plane synovial joint, while the inferior one is a syndesmosis (fibrous joint).

These joints allow no active movements. They do, however, permit a small range of gliding movements that accommodate the movements of the ankle joint.

Middle tibiofibular joint



Proximal tibiofibular joint

Distal tibiofibular joint