

The University Of Jordan  
Faculty Of Medicine  
Anatomy Department



# Tibia ,Fibula and Foot

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# Tibia

It is the **medial** bone of the leg and the only one concerned with **body weight transmission** (from femur to foot). It has:

**1. Upper end:** consists of 2 condyles & tuberosity .

➤ **2 condyles :**

□ **Medial** : **larger** than the lateral one and its upper articular surface is **oval** .

□ **Lateral** : has upper articular surface is **circular**.

□ Its **postero-lateral** aspect has an articular facet to articulate with the **head of the fibula** forming the **superior tibiofibular** joint.

➤ **The intercondylar area:**

- A **rough non-articular** area **between** the **2** articular surfaces of the **2** condyles.

-It is **divided** into anterior and posterior areas by the **intercondylar eminence**.

➤ **Tibial tuberosity** : lies anteriorly.

## 2. Shaft : It Presents

- \* **3 surfaces** : medial , lateral & posterior ( which has a soleal line)
- \* **3 borders** :anterior ( shin of tibia ) lateral ( interosseous border ) and medial .
- \* The anterior border & medial surface are subcutaneous so it more liable to compound fracture is common.

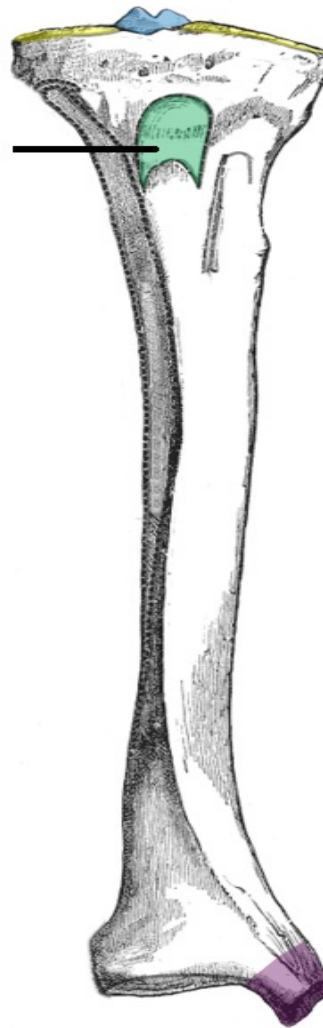
## 3. Lower end: It has

### **5 surfaces : anterior , posterior**

- ❖ **lateral** (has a *fibular notch* to articulate with the lower end of fibula to form the inferior tibiofibular joint )
- ❖ **medial** ( which projects downwards as the medial malleolus )
- ❖ **inferior** articular surface

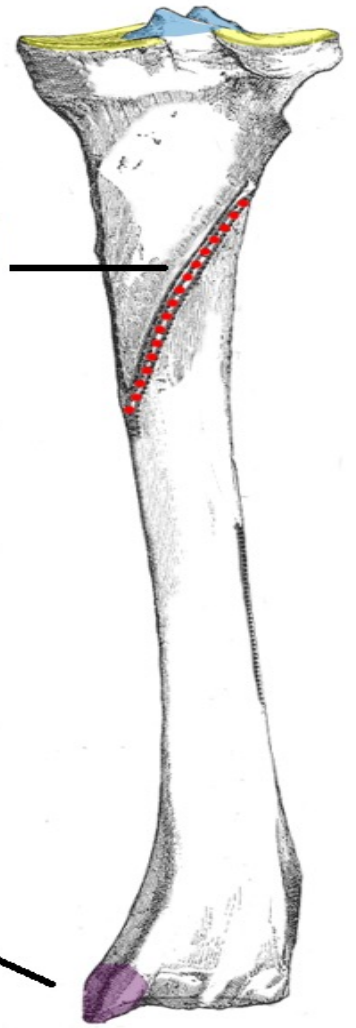


**Patella tendon**



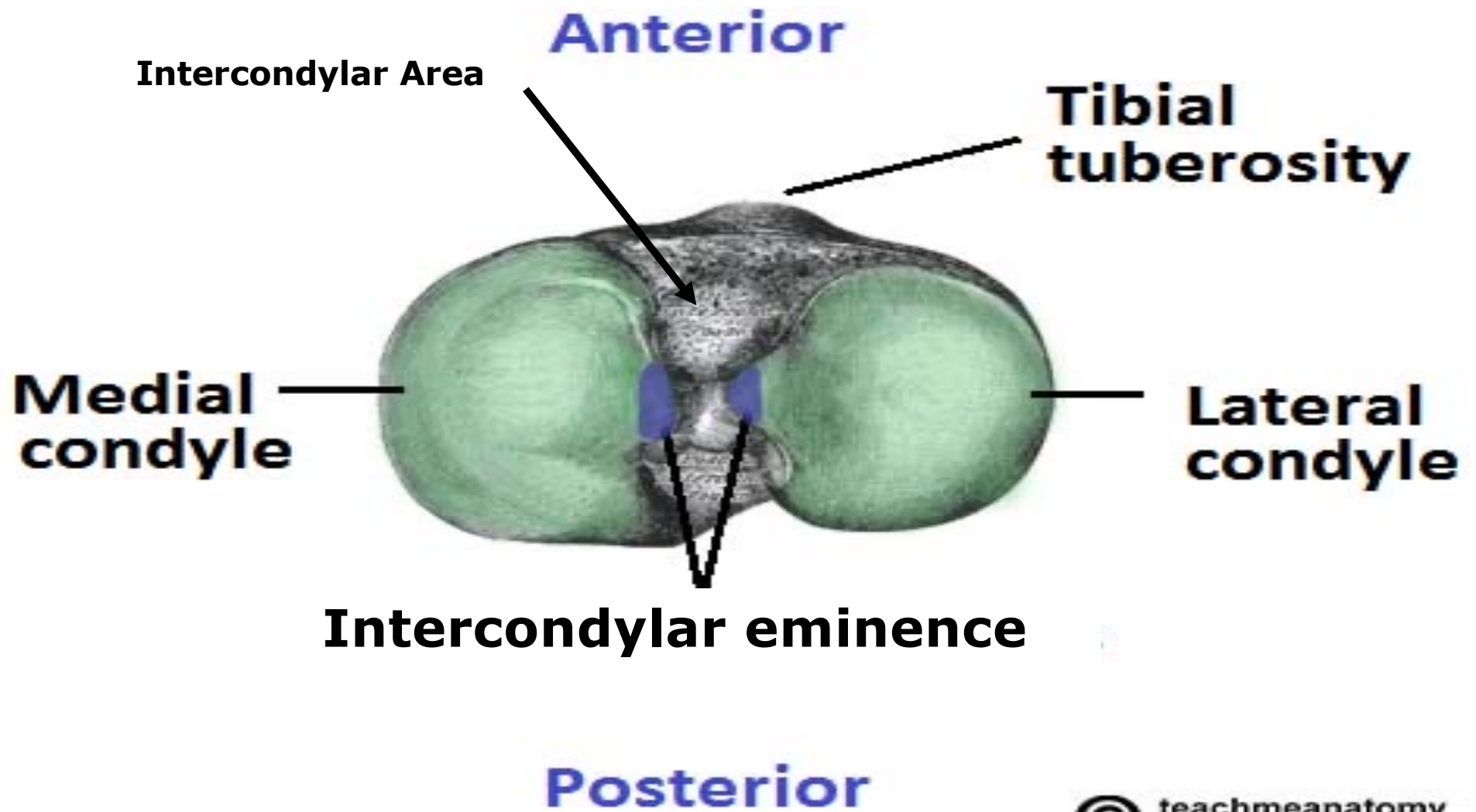
**Anterior**

**Soleal line**



**Medial malleolus**

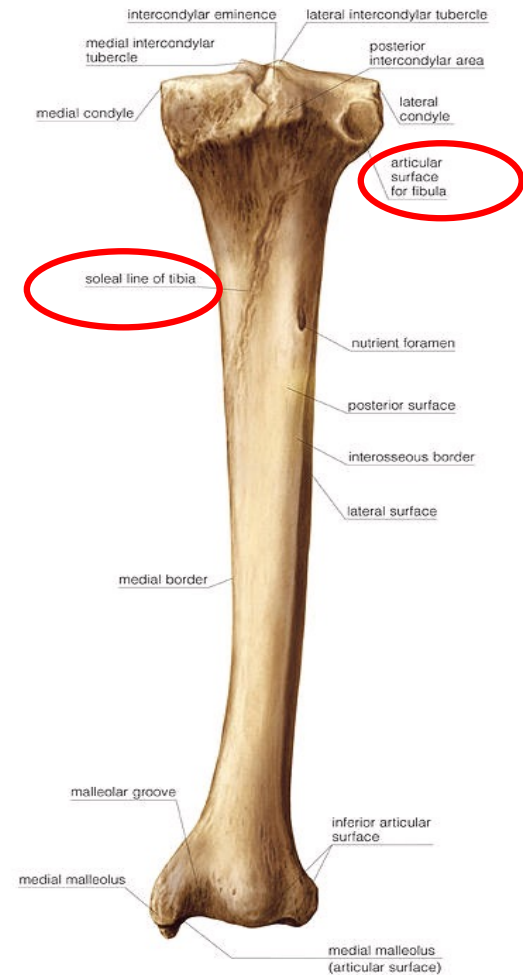
**Posterior**



## Anterior



## Posterior

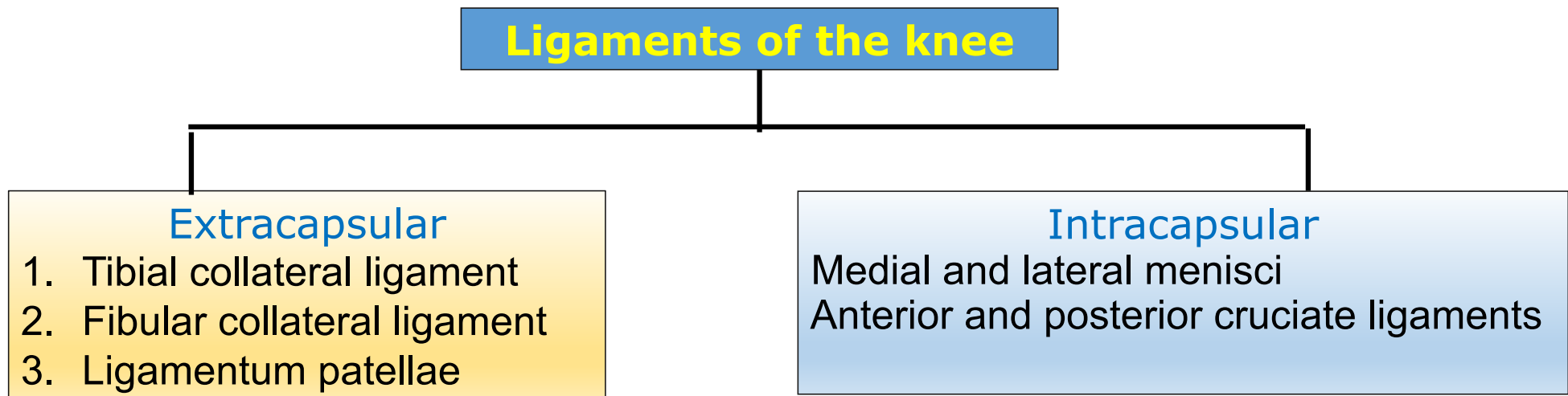


## Articulation of the tibia

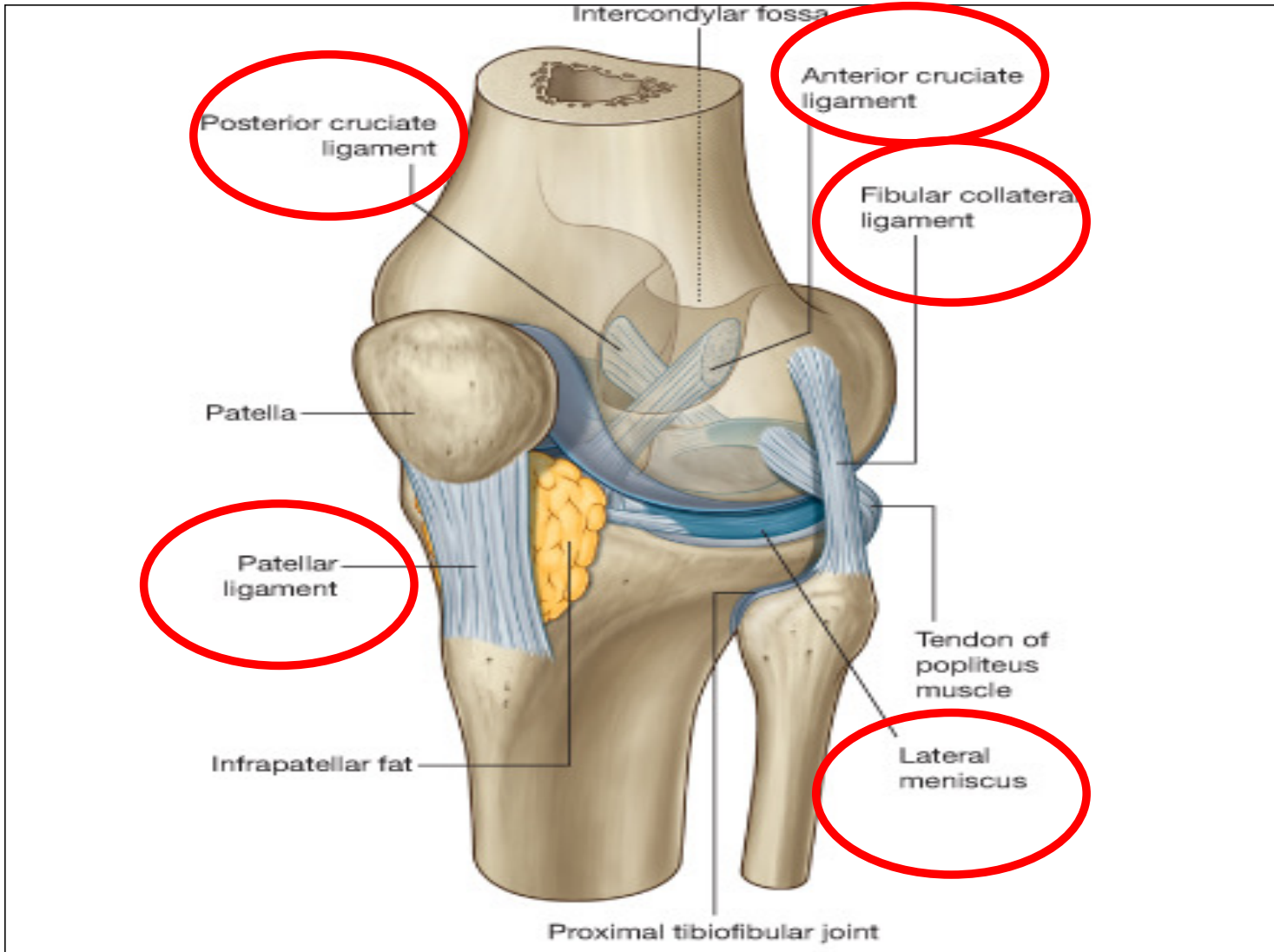
### 1- Knee

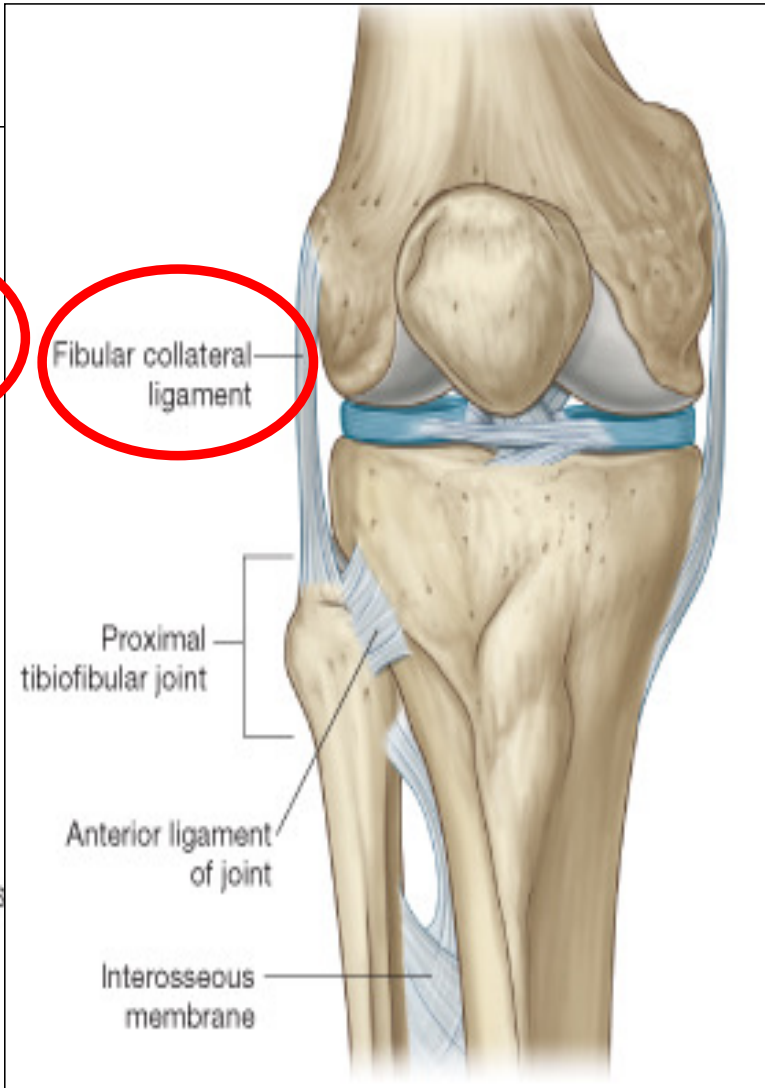
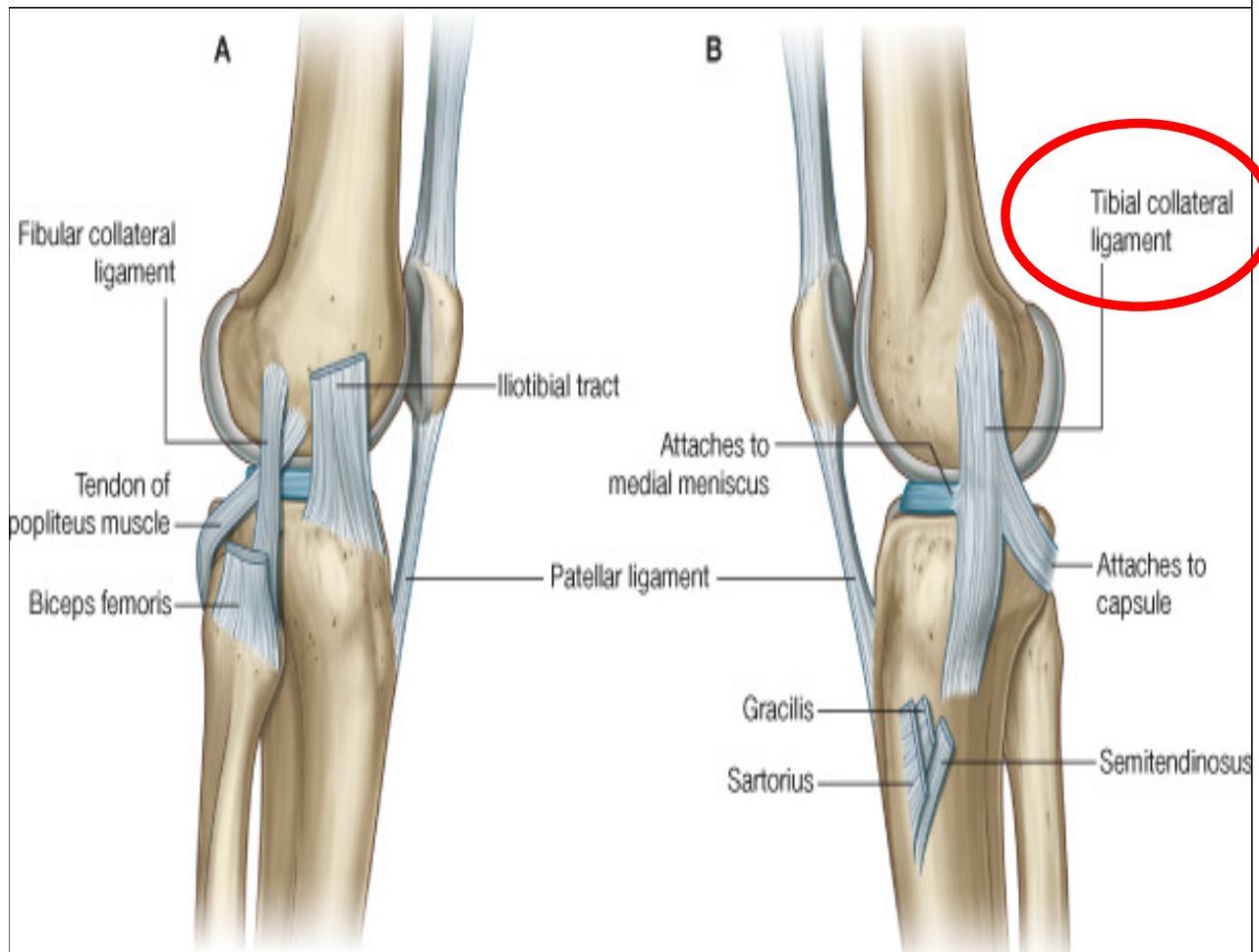
**Type :** Modified hinge synovial joint.

**Articular Surfaces :** Condyles of the femur , condyles of tibia and the Patella.









## Extracapsular

### 1. Ligamentum patellae :

- It extends from the apex of the patella to tibial tuberosity.

### 2. Tibial collateral ligament:

#### • Attachments:

**Above** to the medial femoral epicondyle

**Below** to medial condyle of the tibia.

### 3. Fibular collateral ligament:

#### • Attachments:

**Above** to the lateral femoral epicondyle

**Below** to the head of fibula

## The two menisci (medial and lateral)

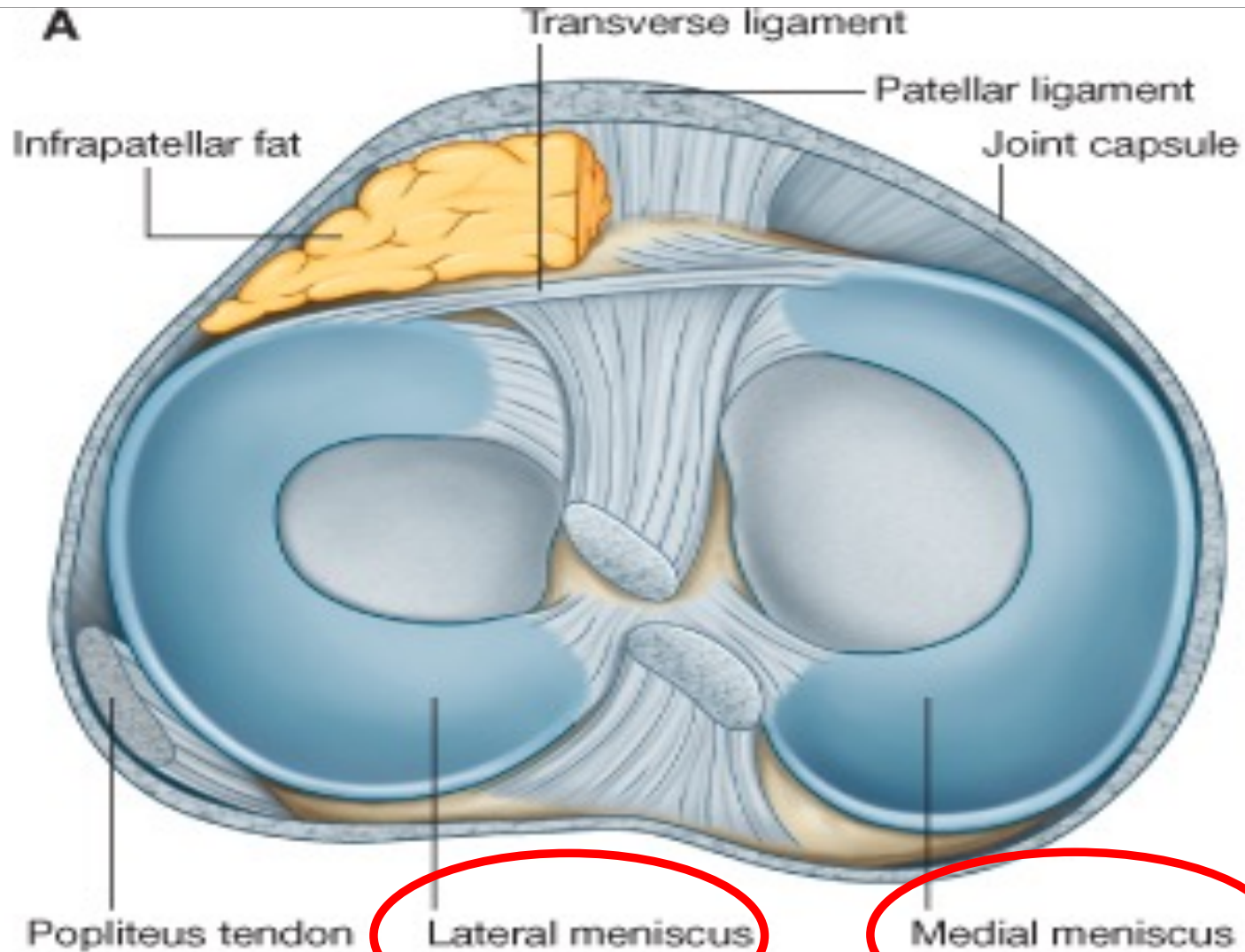
### Function :

- They facilitate rotation of the femur on the tibia
- They are shock absorption.

### Difference between the two meniscus

<b>Lateral meniscus</b>	<b>Medial meniscus</b>
O shaped	C shaped
It is separated from the fibular collateral ligament by the tendon of popliteus.	It is attached to tibial collateral ligament.
It is free to move on the tibia, so that it is less susceptible to injury.	It is relatively fixed, so that is more susceptible to injury.

**A**

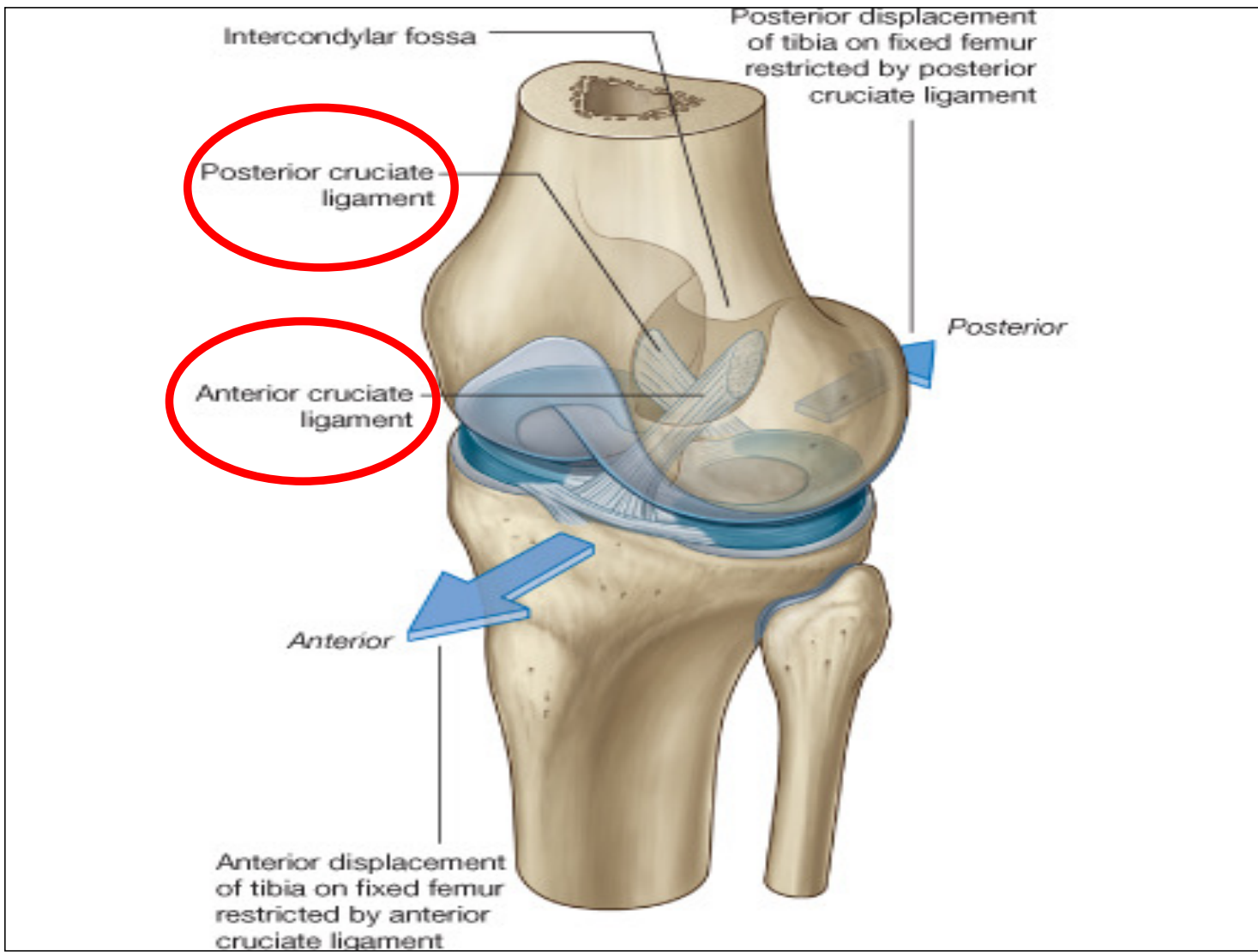


## The two cruciate ligaments (anterior and posterior)

**Function :** provide antero-posterior stability of the knee joint.

### Difference between anterior and posterior cruciate ligaments

	<b>Anterior cruciate ligament</b>	<b>Posterior cruciate ligament</b>
<b>Attachments</b>	<b>Anterior</b> part of intercondylar area to the <b>lateral</b> femoral condyle.	<b>Posterior</b> part of intercondylar area to the <b>medial</b> femoral condyle.
<b>Functions</b>	<ul style="list-style-type: none"><li>• Prevents <b>anterior</b> displacement of the tibia.</li><li>• It becomes tense near full <b>extension</b>.</li></ul>	<ul style="list-style-type: none"><li>• Prevents <b>posterior</b> displacement of the tibia.</li><li>• It becomes tense <b>in full flexion</b></li></ul>



# Unhappy Triad

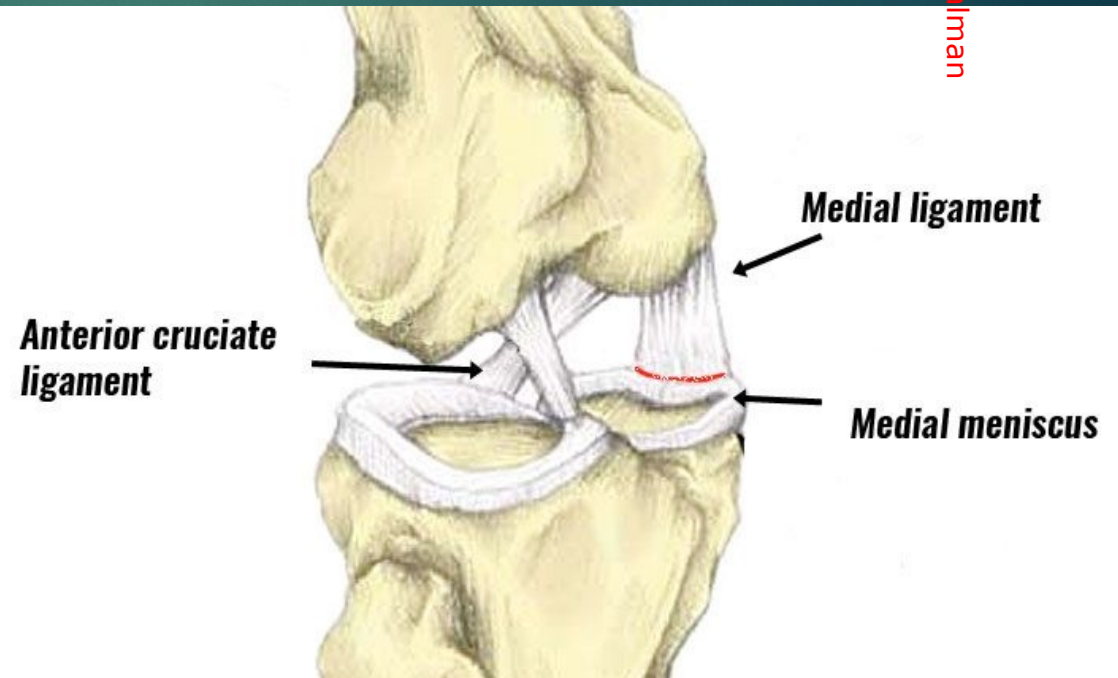
## Injury of :

1. Medial meniscus
2. Tibial (medial) collateral ligament
3. Anterior cruciate ligament



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**Tibial tuberosity**



**Soleal line**



**Anterior border (Chin of the tibia)**



**Medial (subcutaneous surface )**



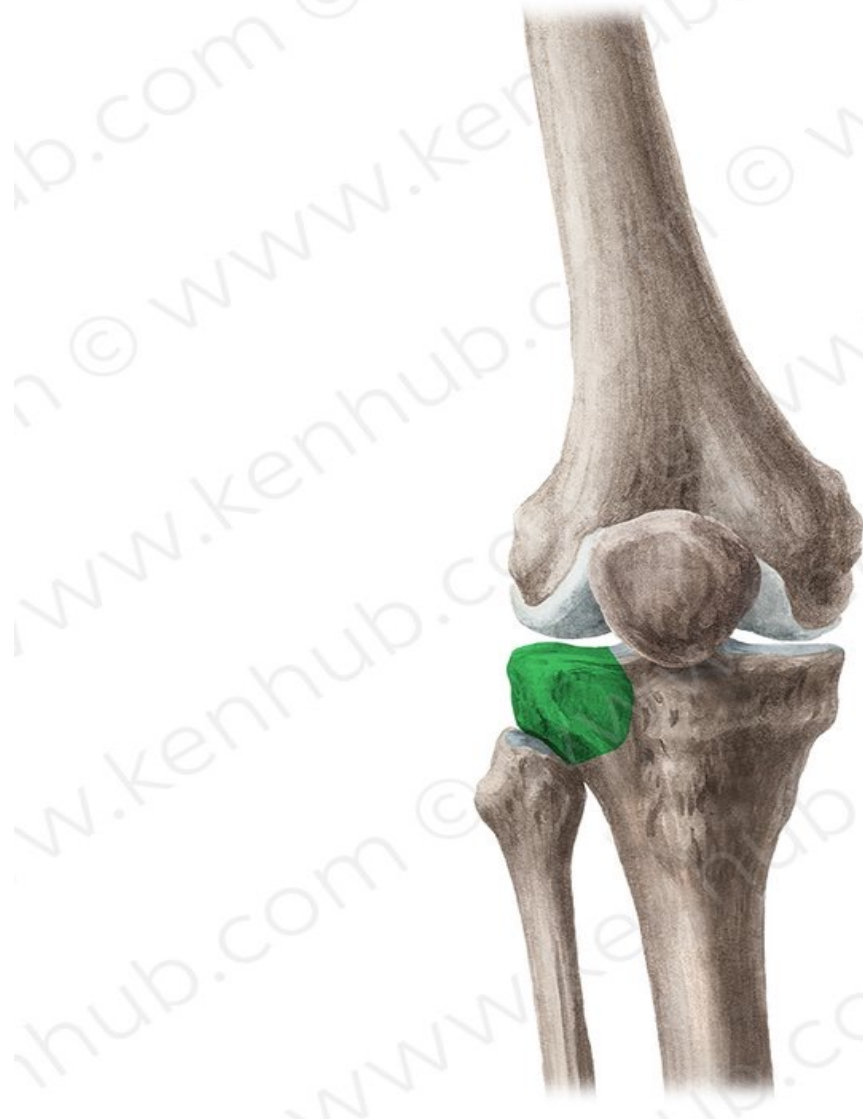
## Intercondylar eminence



## Medial condyle



**Lateral condyle**





# Fibula

\* It is **lateral** bone of the leg which does **not share** in body weight transmission . It has :

\* **Upper end :**

**1-Head :** It has

-A **circular facet** on its medial surface ( articulate with the lateral condyle of tibia to form the **superior tibiofibular** joint.

- A **styloid process** projecting upwards .

**2- Neck :** it is the **commonest** site of **fracture** fibula .

\* **Shaft:** It has 3 borders (anterior , posterior, medial orinterosseous border) & 3 surfaces ( anterior , posterior & lateral )

\* **Lower end (*lateral malleolus* ):**

□ It has **2 surfaces** , a **lateral** subcutaneous surface

□ a **medial** surface showing smooth area for articulation with talus and **malleolar fossa** .

## Functions of Fibula :

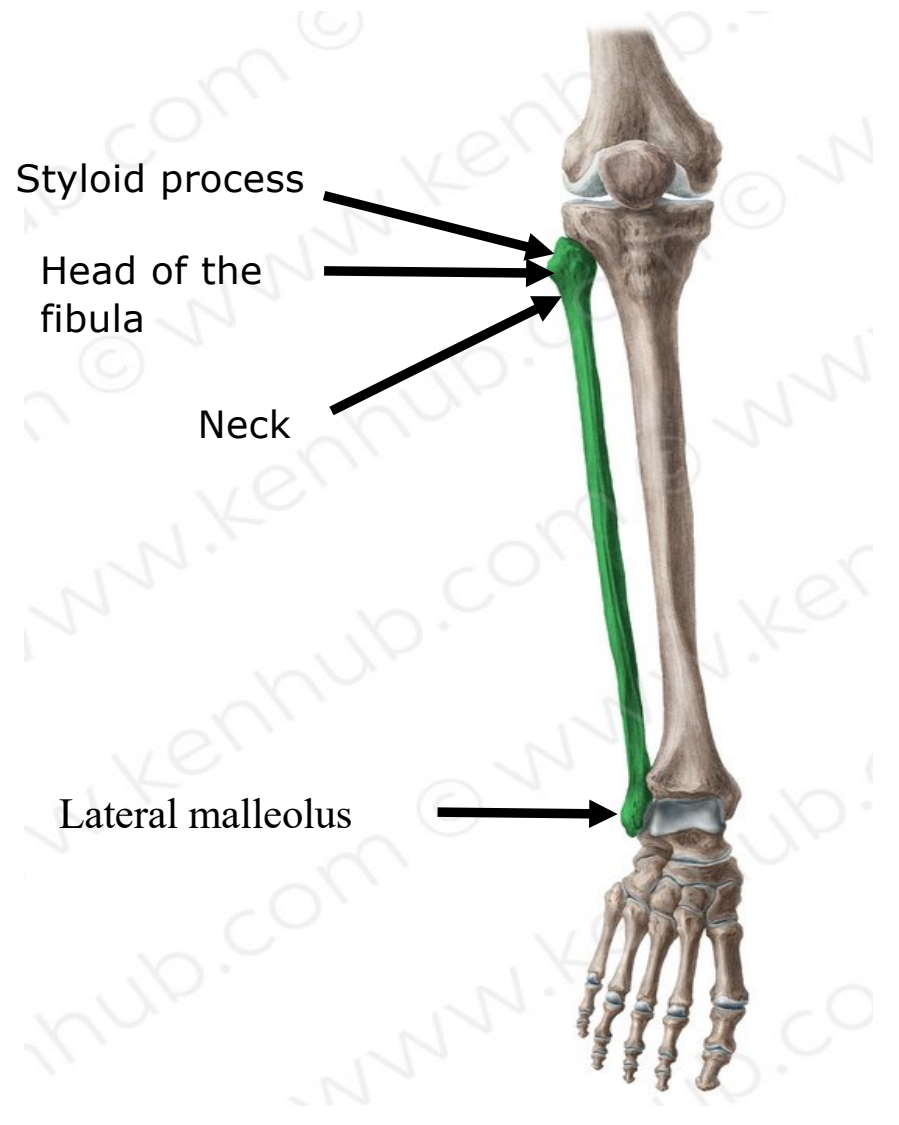
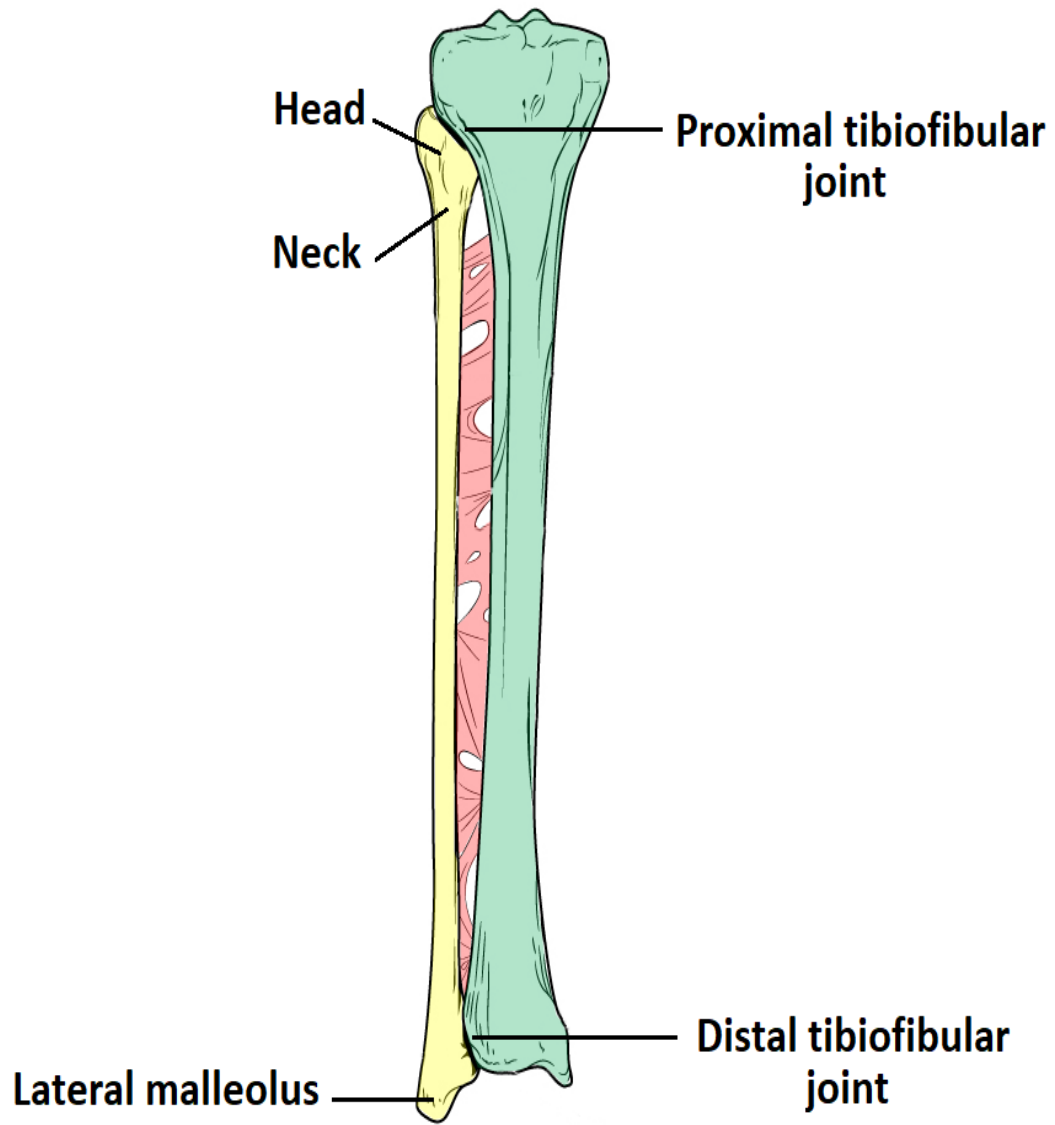
1-Gives ***muscular attachments***.

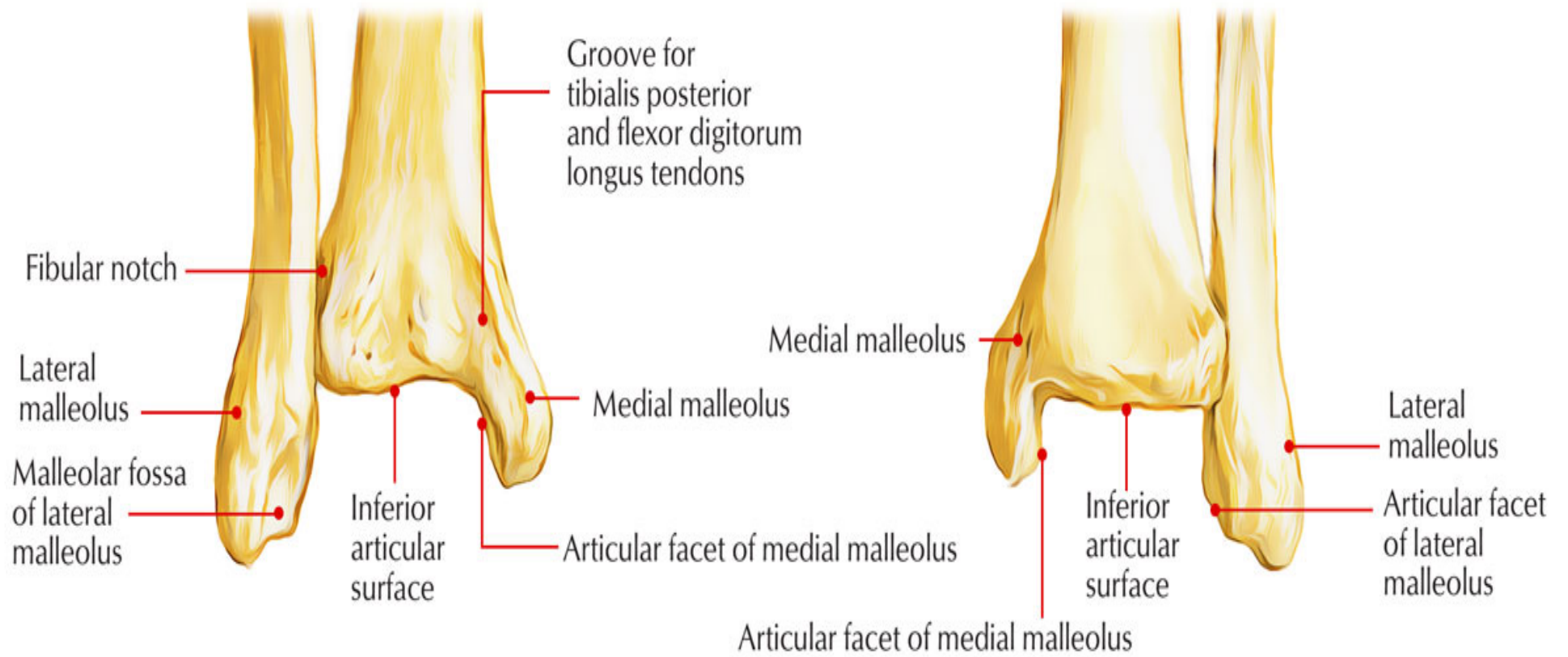
2-Enters in the ***formation of 3 joints***: ankle, *superior tibiofibular* joint and *inferior tibiofibular* joint.

**IT DOES NOT SHARE IN THE FORMATION OF THE KNEE JOINT.**

3-Used commonly as a ***bone graft*** in plastic bone surgery.

4-It ***does not transmit body weight*** because it does not articulate with the femur in the knee joint.





## Articulation of the fibula

### 1) Superior tibiofibular joint :

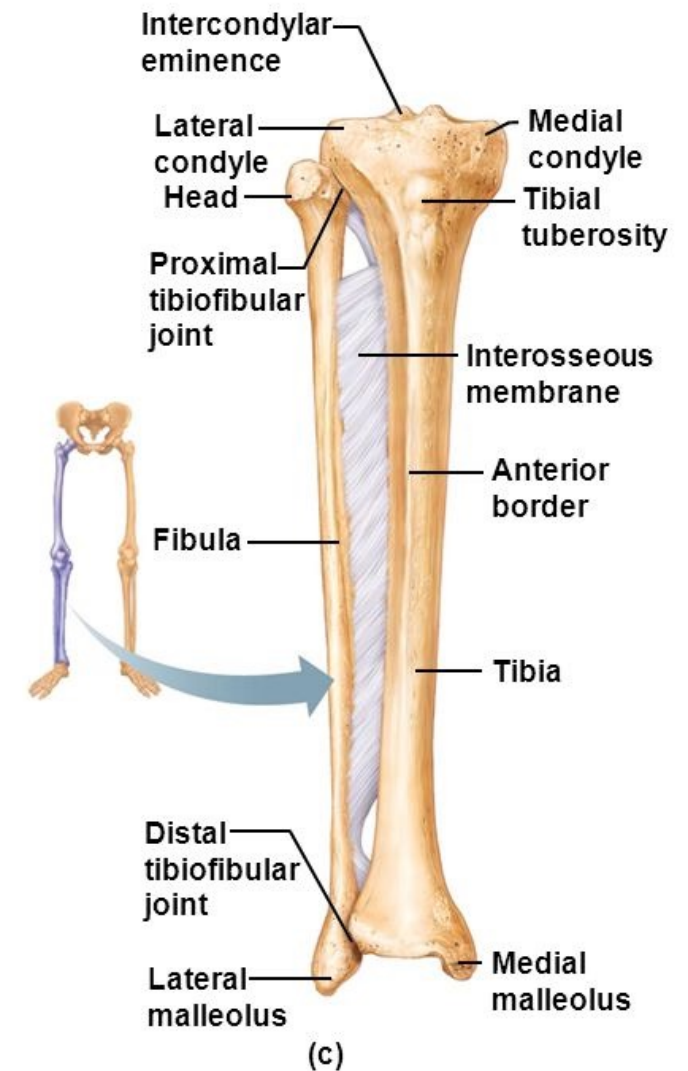
**Type:** Plane synovial joint

**Articular surfaces :** Head of fibula and the fibular facet of the lateral tibial condyle.

### 2) Inferior tibiofibular joint:

**Type:** Fibrous (syndesmoses)

**Articular surfaces :** Fibular notch of the tibia and the lower end of the fibular shaft.





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## Head of the fibula





## Neck of the fibula



## Lateral malleolus





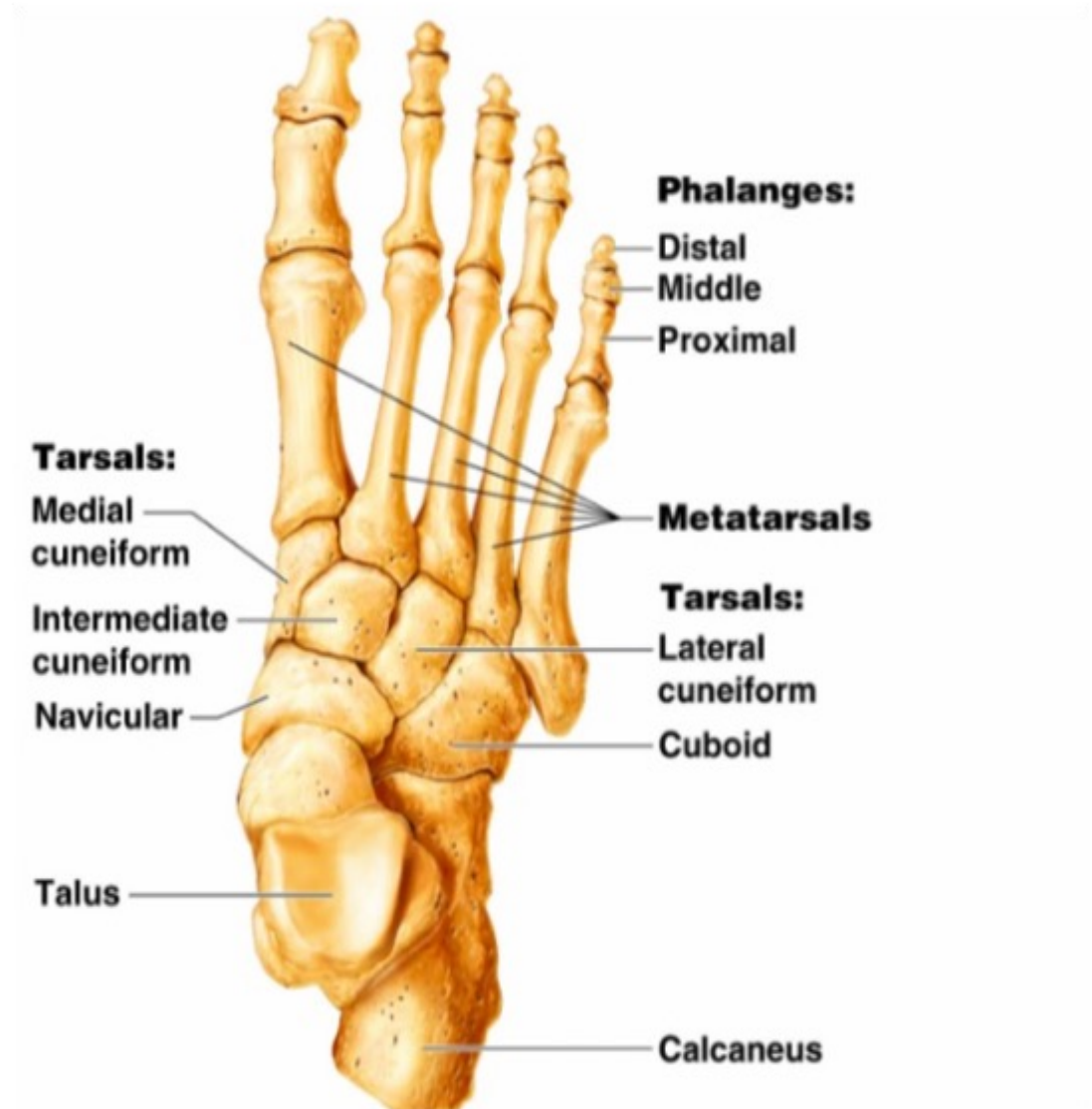
# **Bones of the FOOT**

**Bones of foot:** Include:






**Tarsal bones :** Calcaneous, talus ,  
navicular, cuboid & 3 cuneiform  
bones.

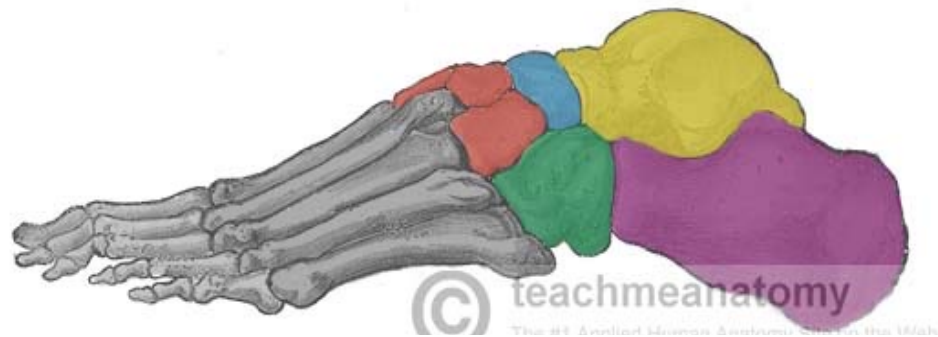
**5 Metatarsal bones:** The 5th  
metatarsal bone has a tuberosity

**Phalanges:** Each toe has 3  
phalanges except big one ( has 2  
phalanges).





- |   |                   |
|---|-------------------|
|  | <b>Calcaneus</b>  |
|  | <b>Talus</b>      |
|  | <b>Navicular</b>  |
|  | <b>Cuboid</b>     |
|  | <b>Cuneiforms</b> |



## Ankle Joint

**Type:** Hinge synovial joint.

### **Articular surfaces :**

- Above: lower end of tibia and the medial malleolus, lateral malleolus of fibula .
- Below: the trochlear surface of the body of the talus.

### **Supporting ligaments:**

#### **(1) Medial (deltoid) ligament**

#### **(2) Lateral ligament: has 3 bands :**

- Anterior talofibular ligament
- Posterior talofibular ligament
- Calcaneofibular ligament:

### **Movement :**

1. Dorsiflexion
2. Plantar flexion

Tibia

Fibula

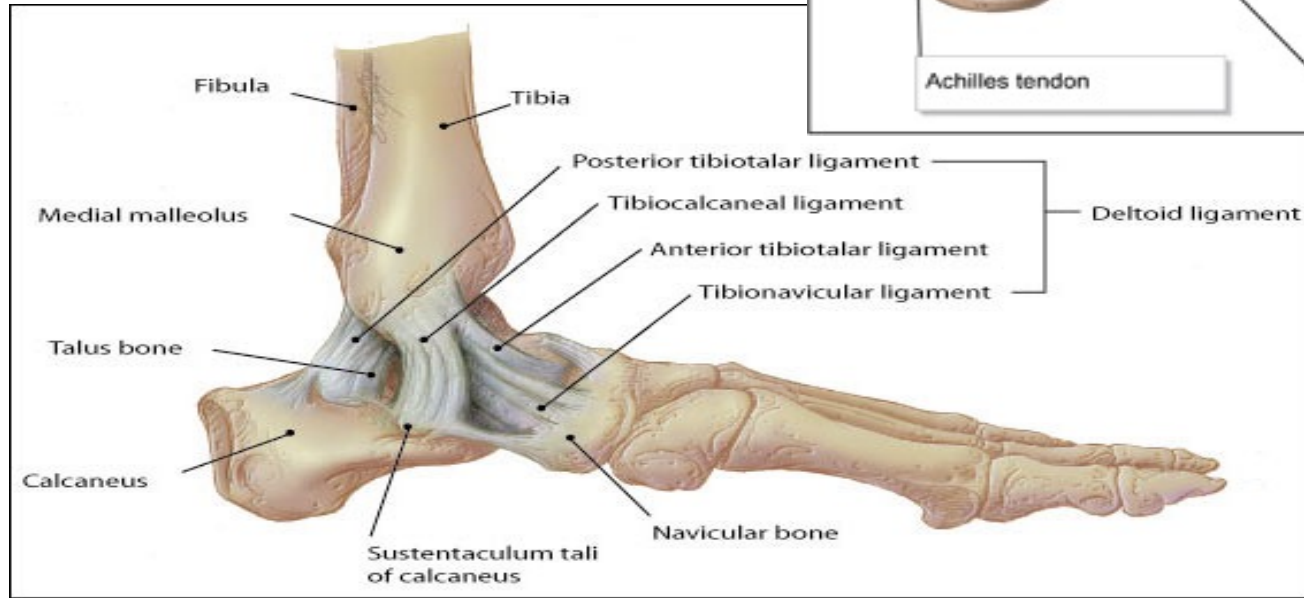
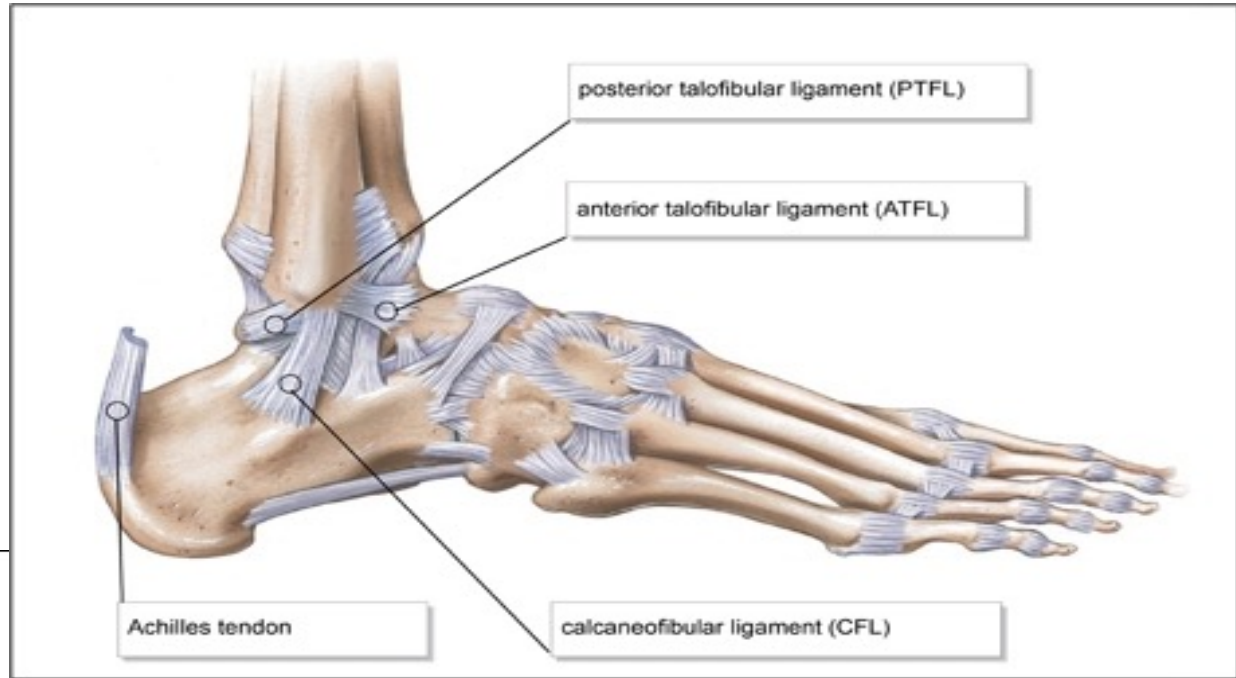
Medial malleolus

Lateral malleolus

Talus



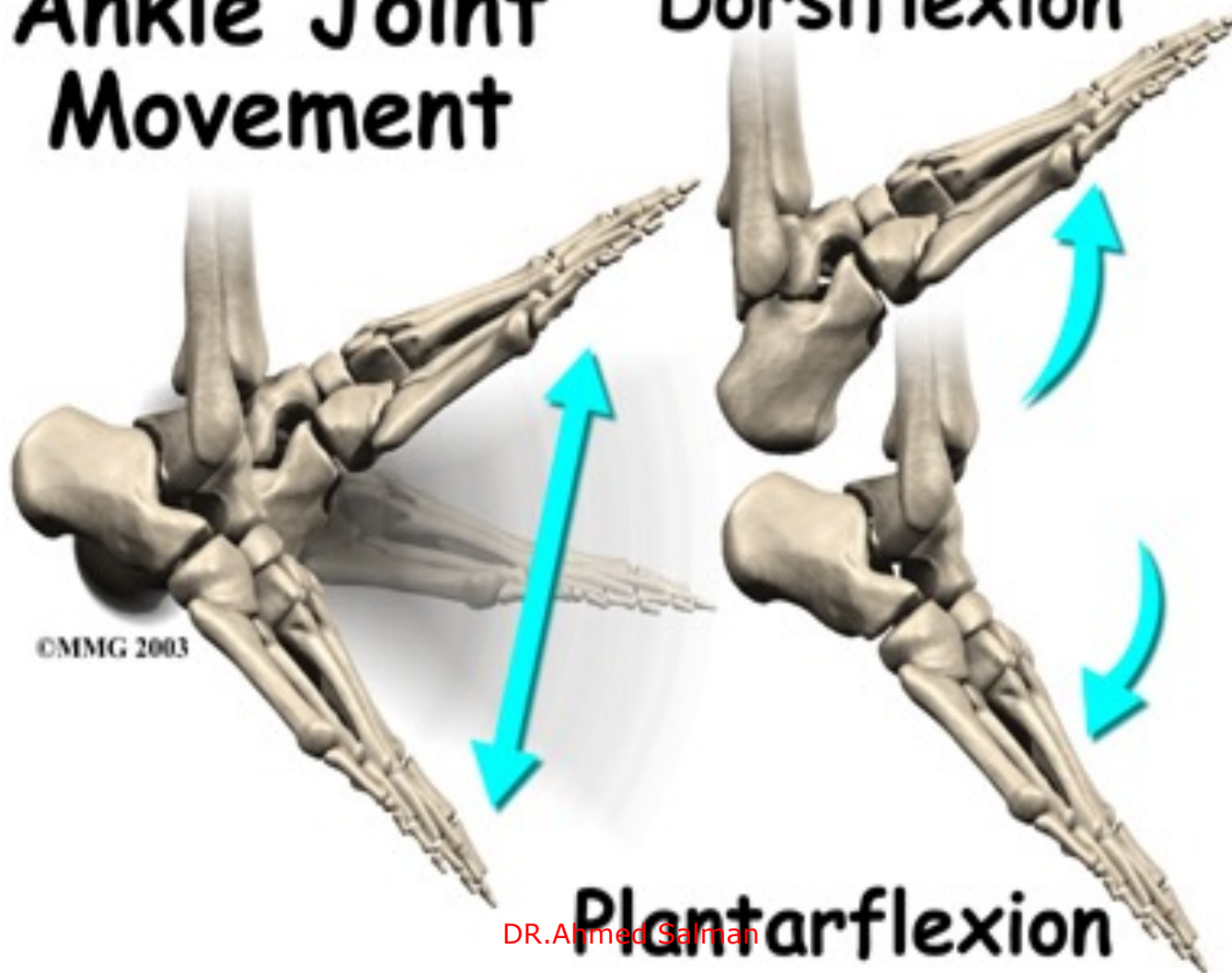
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# Ankle Joint Movement

# Dorsiflexion



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## **Joints of the Foot**

**Subtalar** (between the talus and the calcaneum) **and Mid tarsal joints**

(talocalcaneonavicular and the calcaneocuboid)

**Type** : Plane Synovial

**Movements** :

**Inversion and eversion**

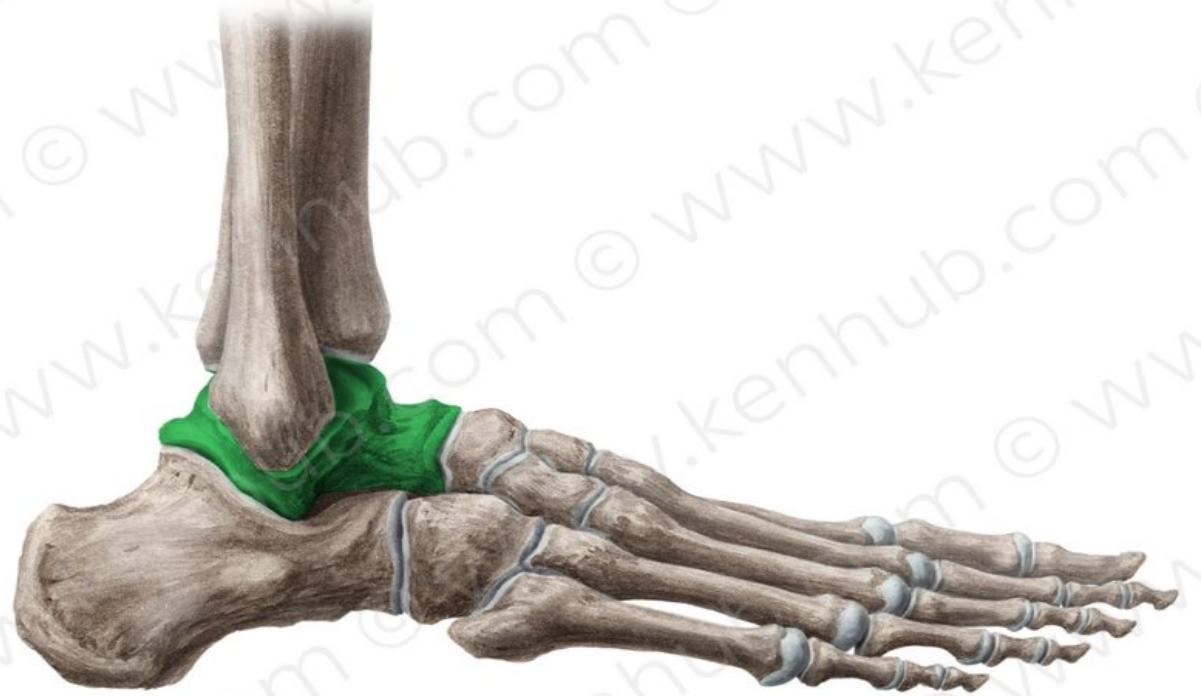
Inversion is much more free than eversion why ?

(L. malleolus is lower than the M. malleolus).

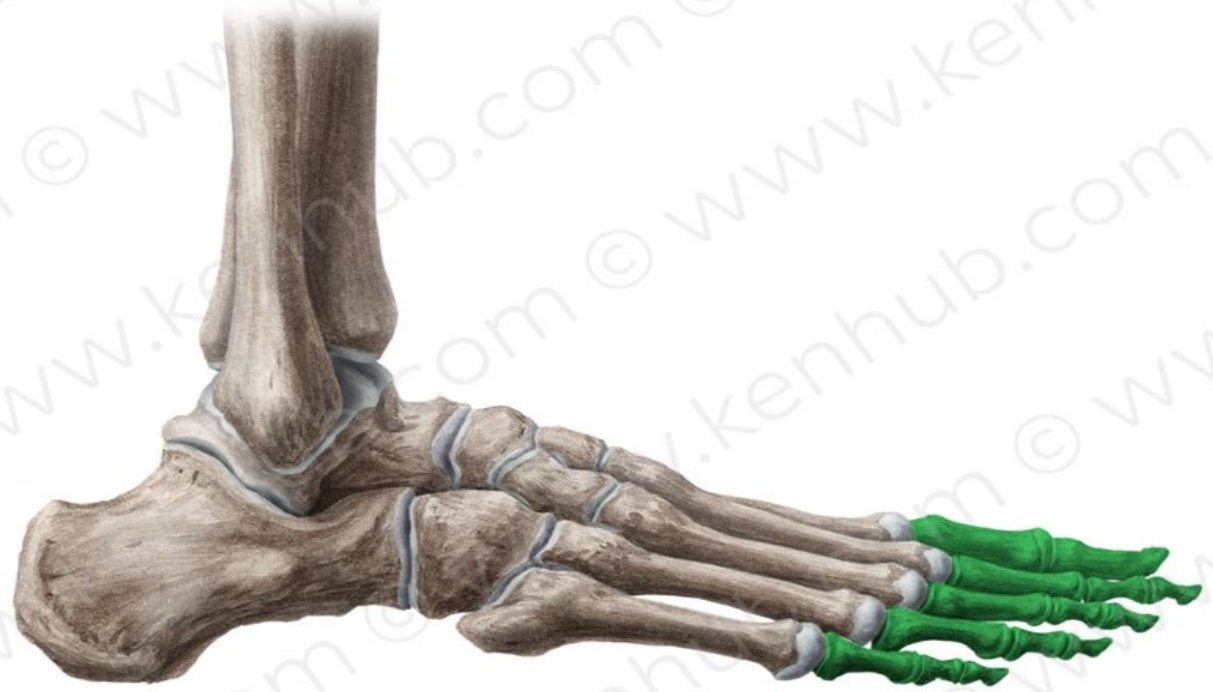


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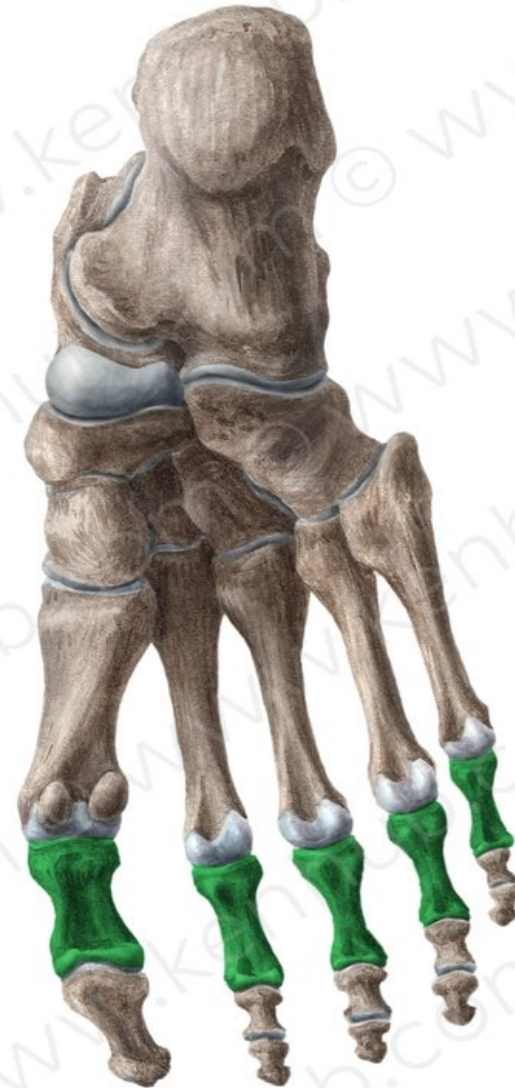
# Talus



# Phalanges



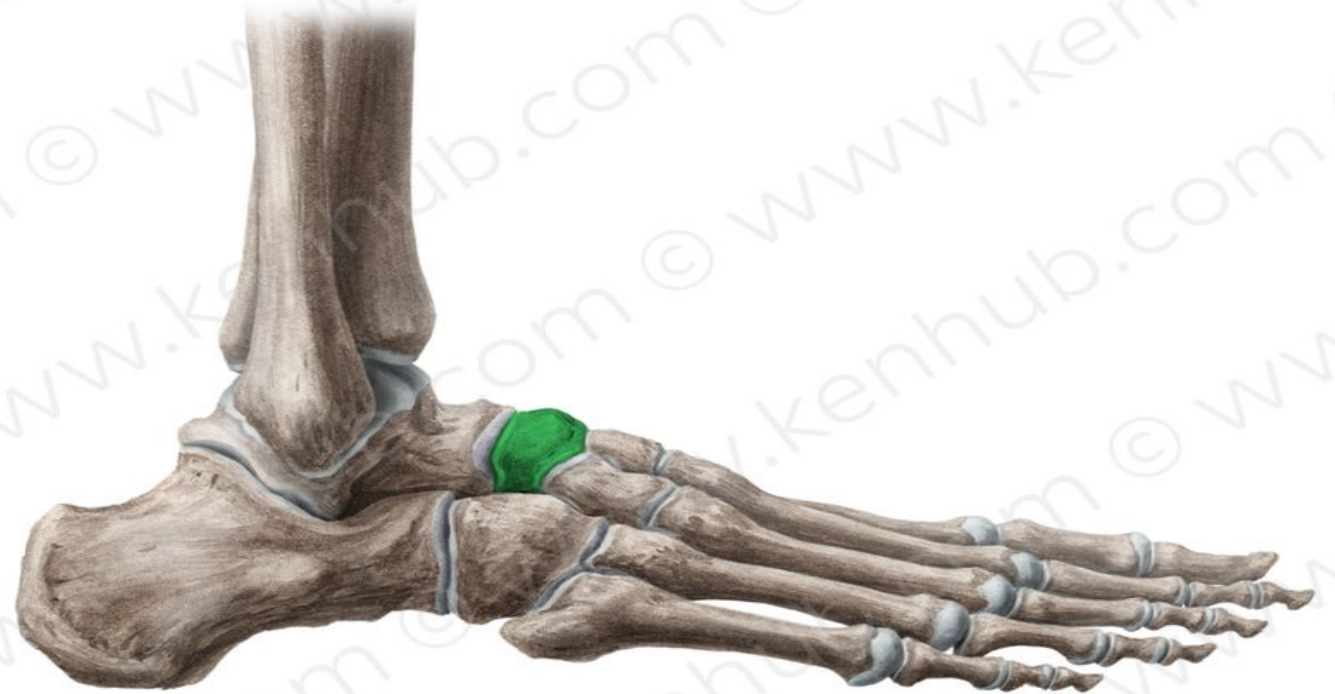
## Proximal Phalanges



## **Metatarsal bone**

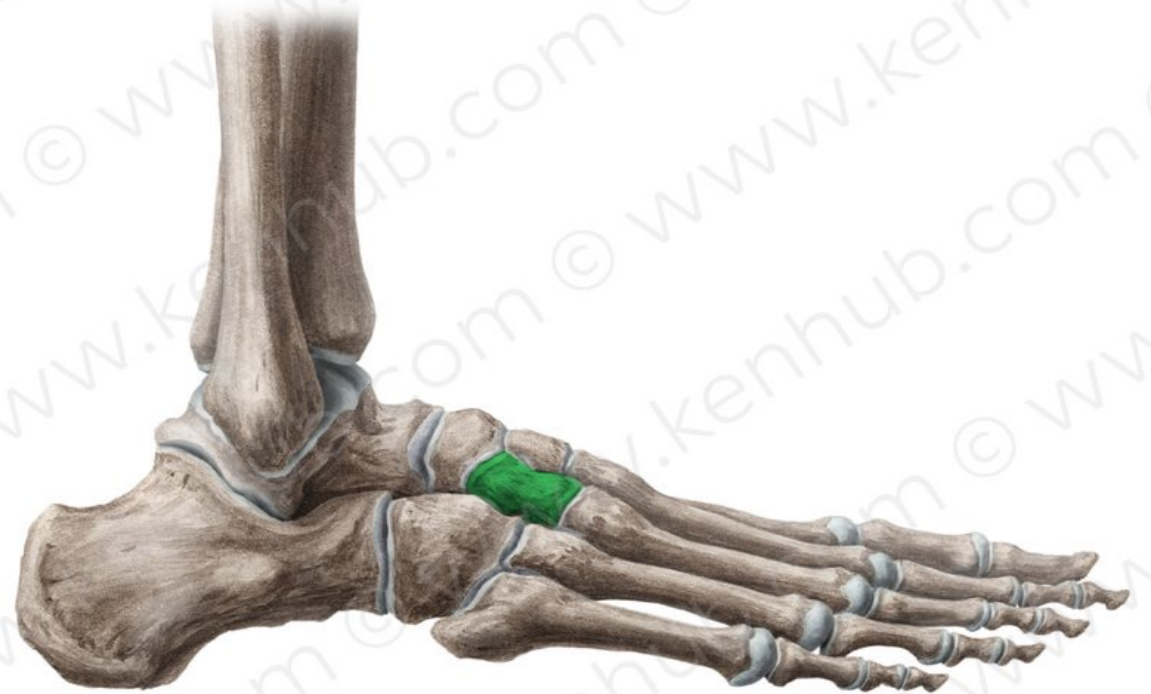


## Navicular

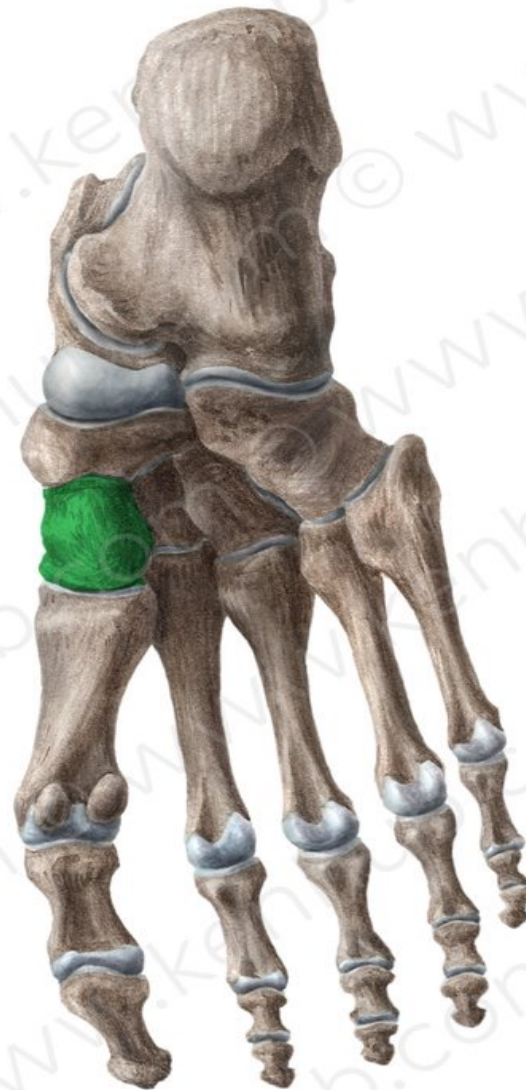




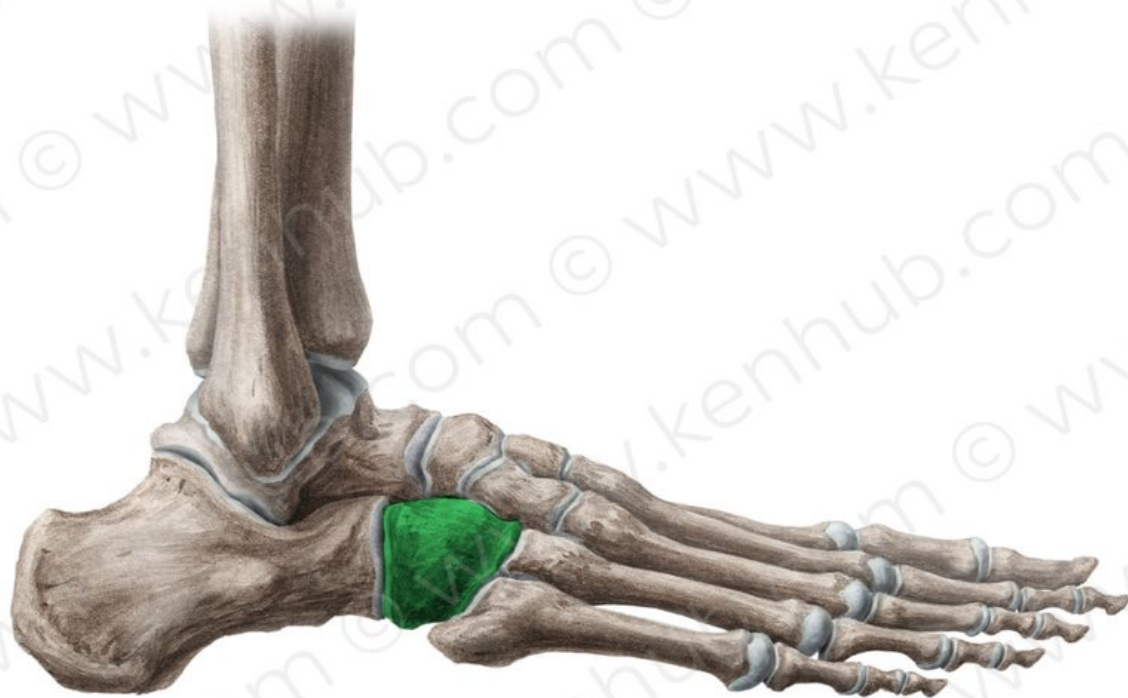
## Lateral Cuneiform



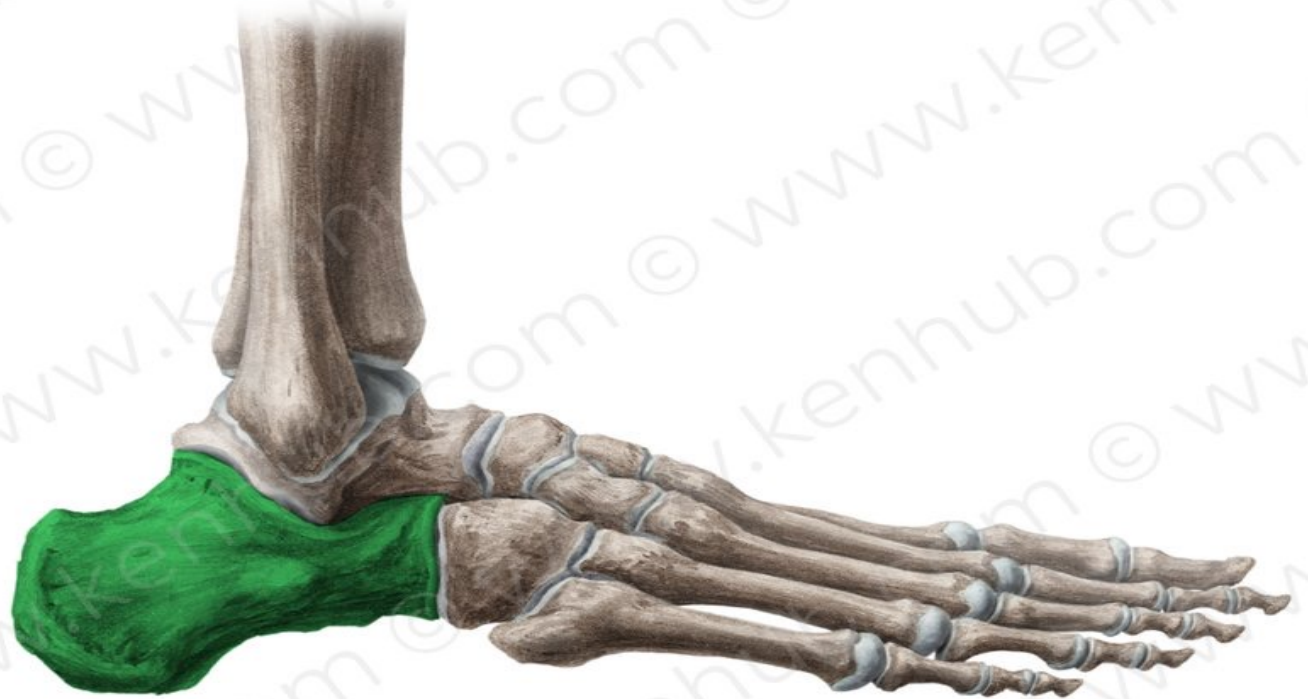
## Medial Cuneiform



## Cuboid



## Calcaneus



**THANK YOU**