Introduction to Anatomy

Practical Lab

1st year Medical Students

2025-2026
Second Semester

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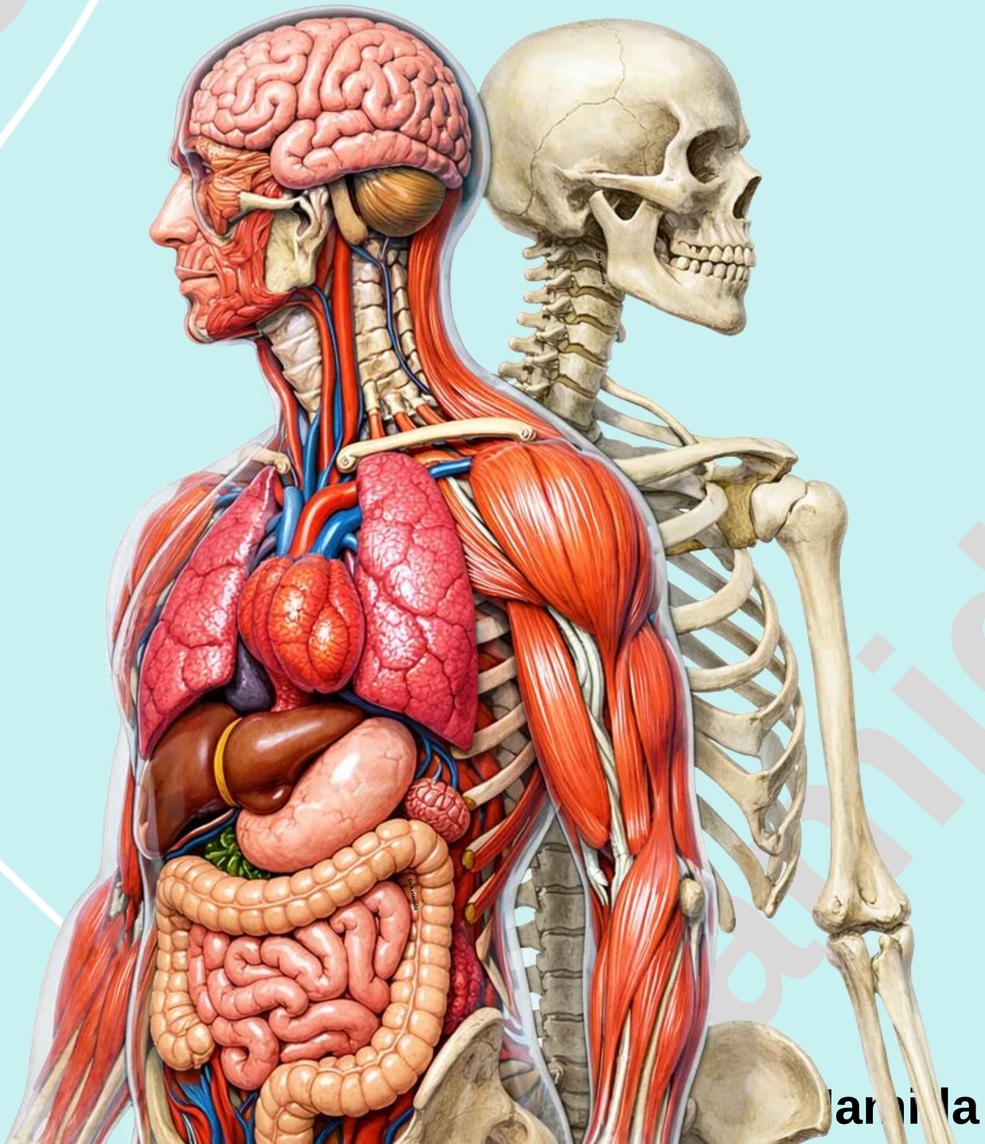


Practical Lab-7

Lower Limb Bones

1. Tibia
2. Fibula
3. Foot bones

Check List: Lower Limb Bones

1. Tibia

✓ Identify the type and anatomical location of the tibia.

✓ Outline the major parts of the tibia:

- Proximal (upper) end:
  - Medial and Lateral condyles.
  - Intercondylar area.
  - Intercondylar eminence.
  - Tibial tuberosity.
  - Fibular facet.
- Shaft.
  - Anterior border (shin of the tibia).
  - Lateral (interosseous) border.
  - Medial (subcutaneous) surface.
  - Soleal line.
- Distal (lower) end.
  - Medial malleolus.
  - Fibular notch.
  - Inferior articular surface.

Check List: Lower Limb Bones

2. Fibula

✓ Identify the type and anatomical location of the fibula.

✓ Outline the major parts of the fibula:

- Proximal (upper) end:
  - Head.
  - Neck.
  - Styloid process .
- Shaft.
  - Interosseous (medial) border
- Distal (lower) end.
  - Lateral malleolus.
  - Malleolar facet.

Check List: Lower Limb Bones

3. Foot bones

1. Tarsal Bones

- Talus.
- Calcaneus.
- Navicular.
- Cuboid.
- Three Cuneiform (Medial, intermediate and lateral)

2. Five Metatarsals bones

3. Fourteen Phalanges

Check List:

1. Tibia

- ✓ Identify the type and anatomical location of the tibia.
- ✓ Outline the major parts of the tibia :

1. **Proximal end:** consists of: Medial and Lateral condyles, intercondylar area, Intercondylar eminence, Fibular facet, Tibial tuberosity.
2. **Shaft:** consists of: Anterior border (shin of the tibia), Medial (subcutaneous) surface, Soleal line.
3. **Distal end:** consists of: Medial malleolus, Fibular notch, Inferior articular surface.

Check List:

1. Tibia

1. **Proximal end:** consists of:

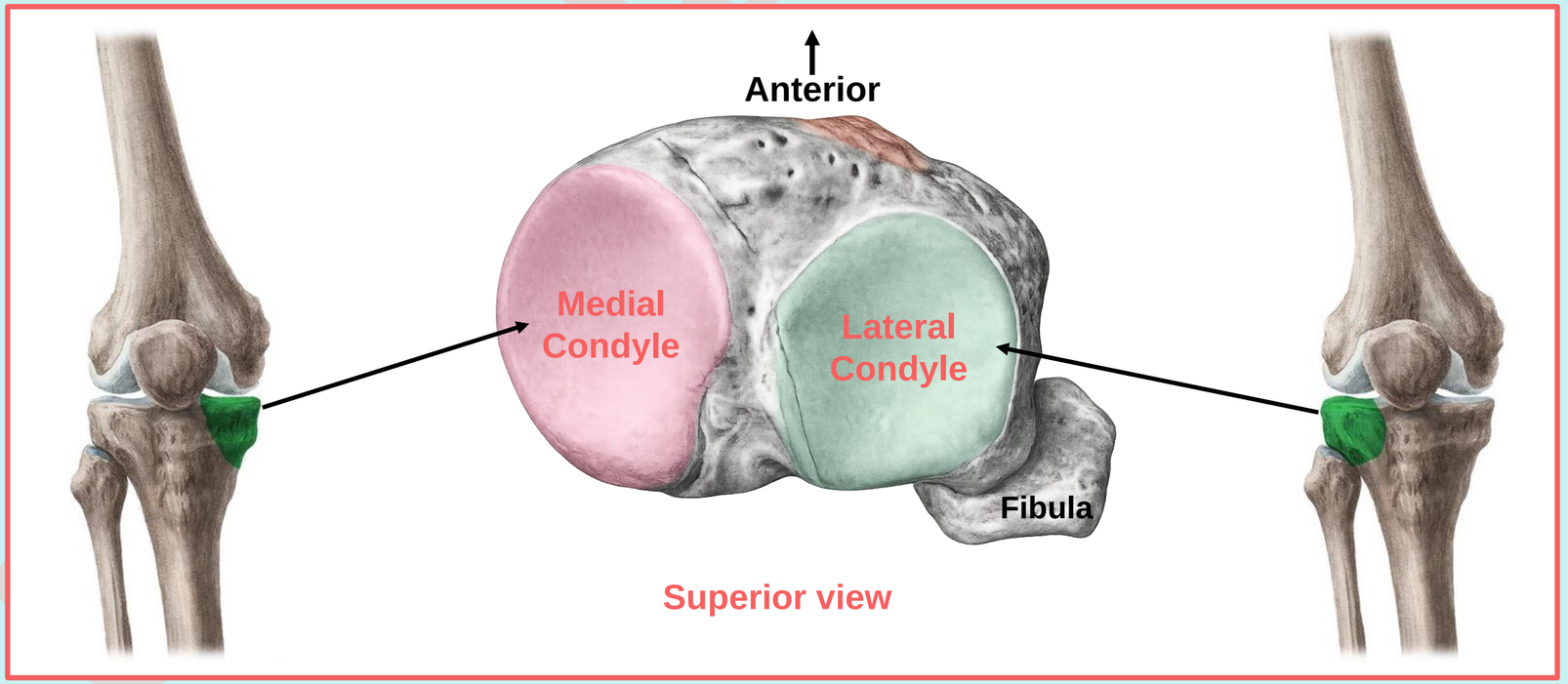
   i. **Condyles:** two condyles articulate with the condyles of the femur

   1. Medial Condyle

   - Larger than the lateral condyle.
   - Superior surface has a smooth, oval articular surface for articulation with the medial femoral condyle.

   2. Lateral Condyle

   - Superior surface presents a circular articular surface for articulation with the lateral femoral condyle.



Superior view

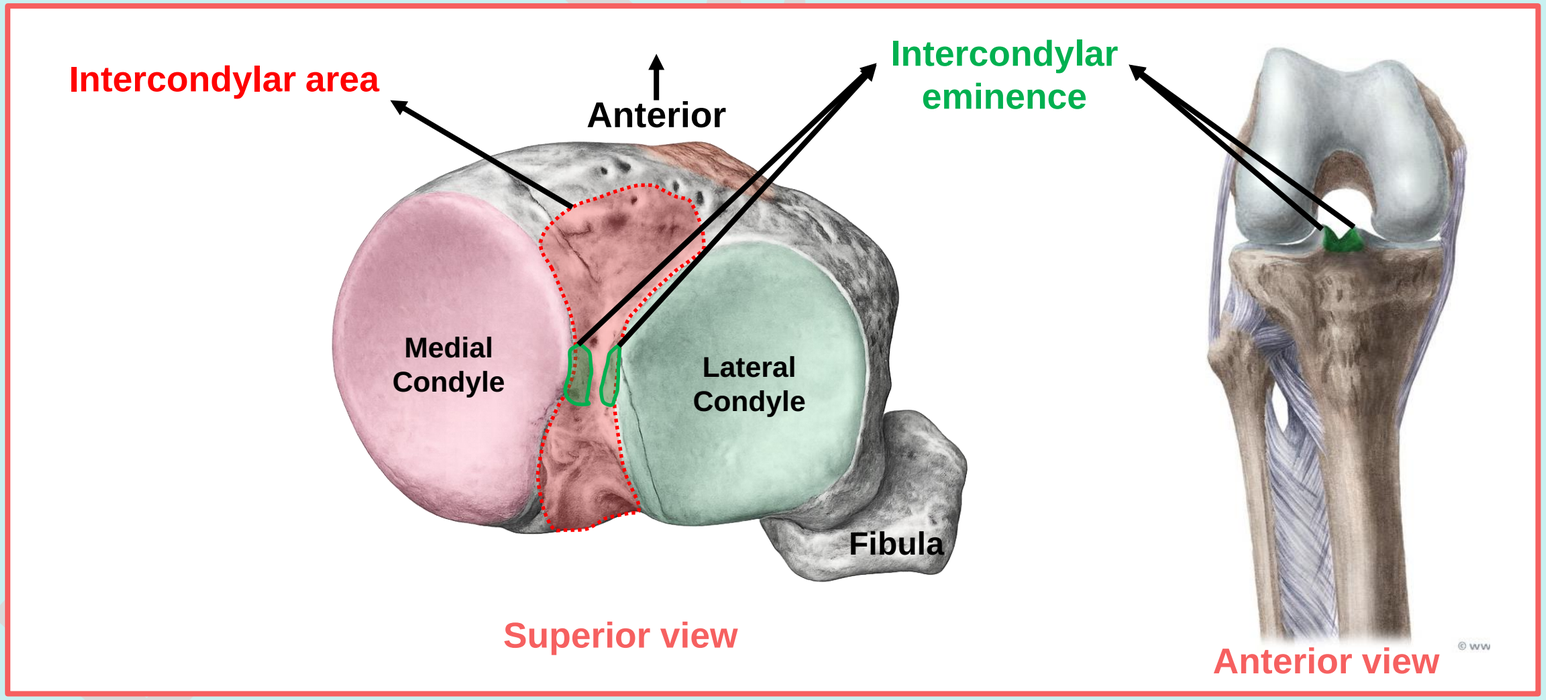
Check List:

1. Tibia

1. **Proximal end:** consists of:

   ii. **Intercondylar Area:**

   - A rough area on the superior surface between the articular surfaces of the two condyles.
   - The middle of intercondylar area is narrow and marked by an elevation called **intercondylar eminence**.



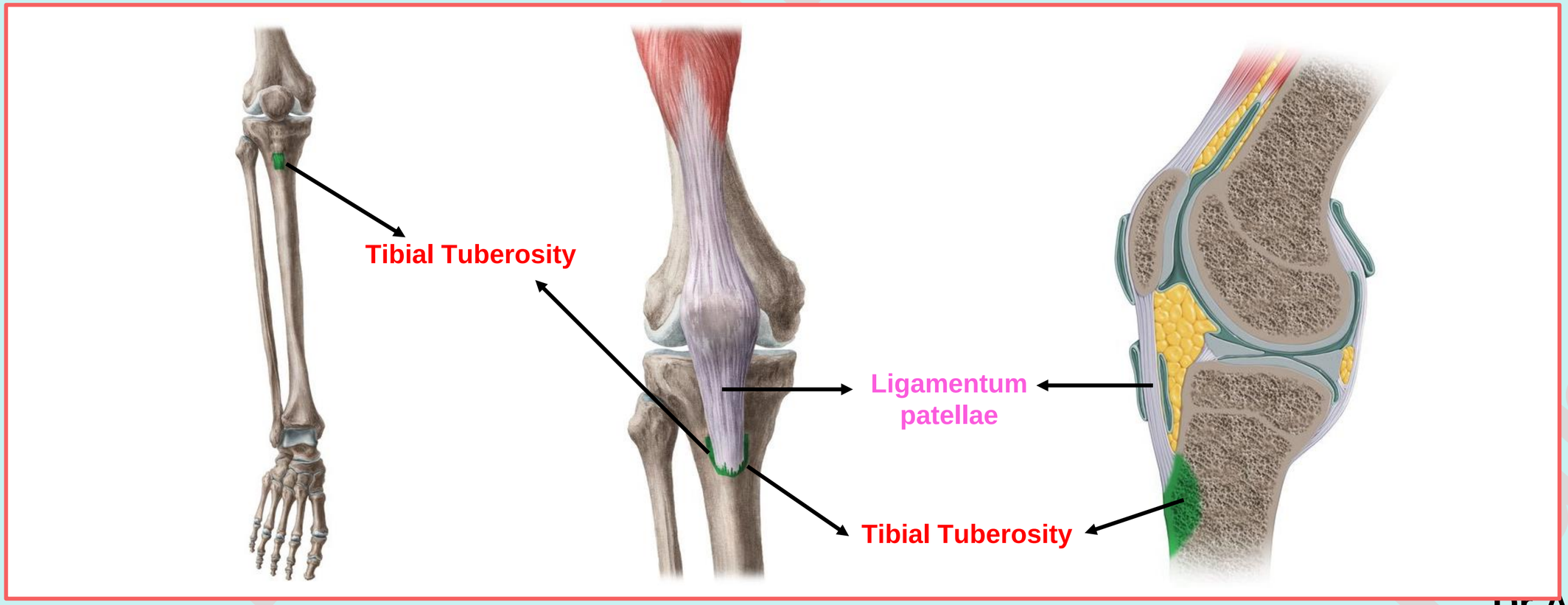
Check List:

1. Tibia

1. **Proximal end:** consists of:

iii. **Tibial Tuberosity:**

- A prominent projection on the anterior aspect of the upper end of the tibia.
- Provides attachment to the ligamentum patellae (patellar ligament).



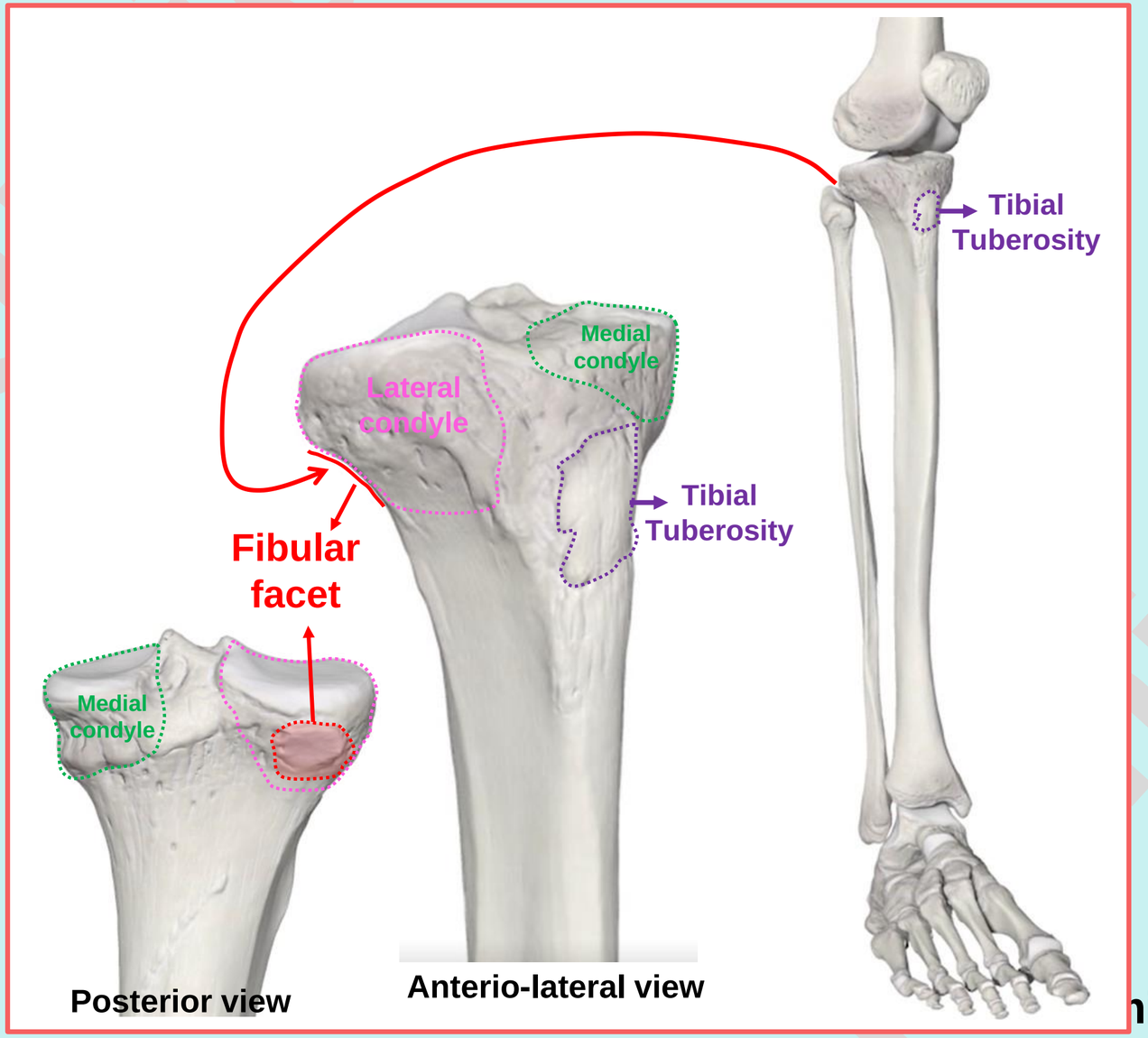
Check List:

1. Tibia

1. **Proximal end:** consists of:

   iv. **Fibular facet:**

   - It is a circular, smooth articular facet for the head of the fibula, forming the proximal tibiofibular joint, located on the posterolateral aspect of the lateral condyle.



Check List:

1. Tibia

2. Shaft:

- It has three borders: anterior, medial, and lateral (interosseous).
- It has three surfaces: medial, lateral, and posterior.

Check List:

1. Tibia

2. Shaft: Borders

i. Anterior border (shin of the tibia)

- Sharp and subcutaneous.
- Extends from the tibial tuberosity to the medial malleolus.

ii. Medial border

- Extends from the medial condyle to the medial malleolus.

iii. Lateral (interosseous) border

- Sharp and extends from the lateral condyle to the fibular notch.
- Provides attachment to the interosseous membrane connecting the tibia and fibula.

Check List:

1. Tibia

2. Shaft: Surfaces

i. Medial surface

- Faces anteromedially.
- Lies between anterior and medial borders.
- Almost entirely subcutaneous.

ii. Lateral surface

- Directed anterolaterally.
- Lies between anterior and interosseous borders.

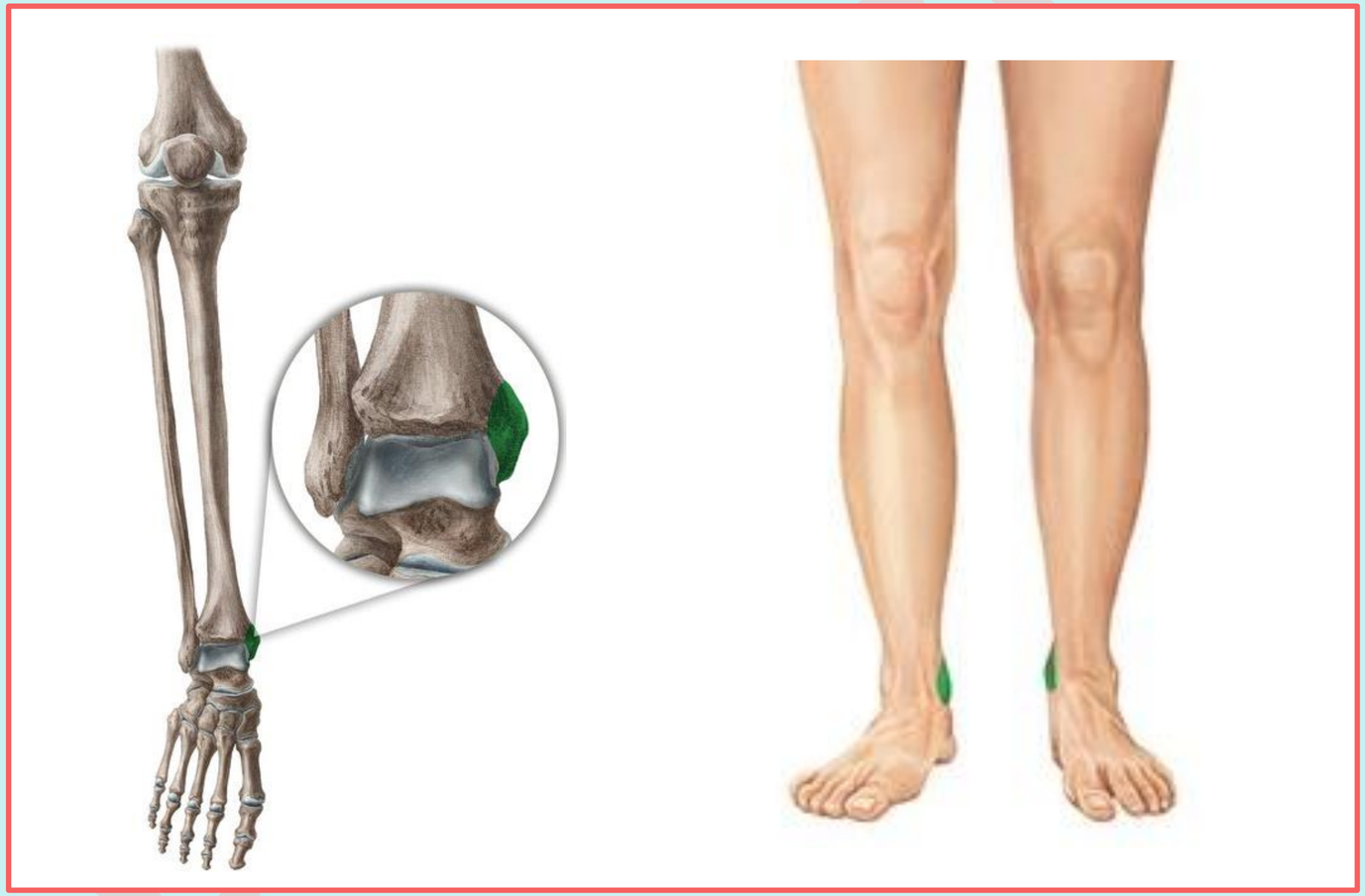
iii. Posterior surface

- Lies between medial and lateral borders.
- Soleal line: a rough bony ridge extends obliquely from lateral condyle to the medial border.

Check List:

1. Tibia

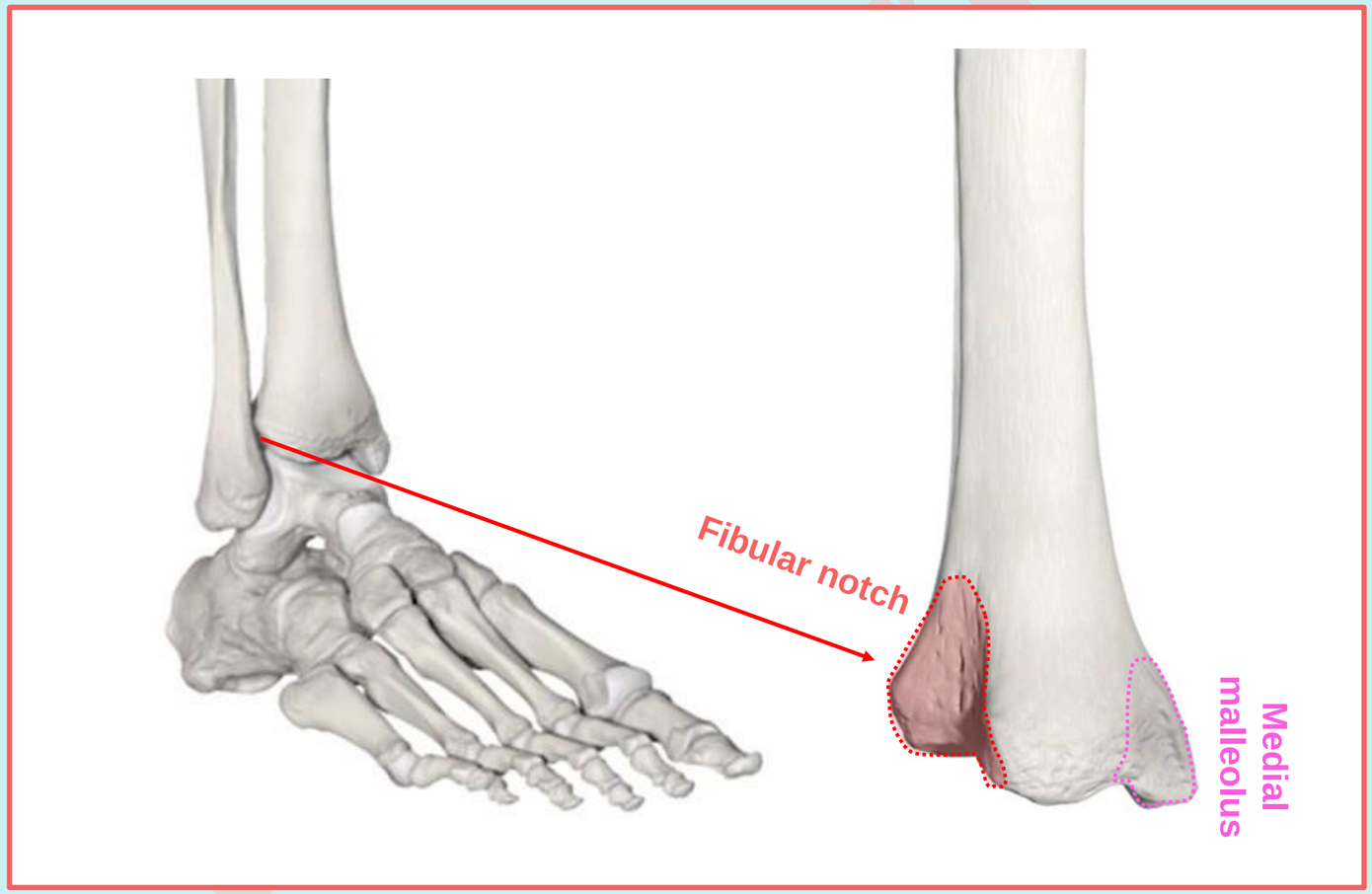
3. **Distal end:** consists of:
   i. **Medial malleolus:** the lower end projects medially and inferiorly as the medial malleolus.



Check List:

1. Tibia

3. **Distal end:** consists of:
   ii. **Fibular notch:** present on the lateral surface, which articulates with the distal fibula to form distal tibiofibular joint.

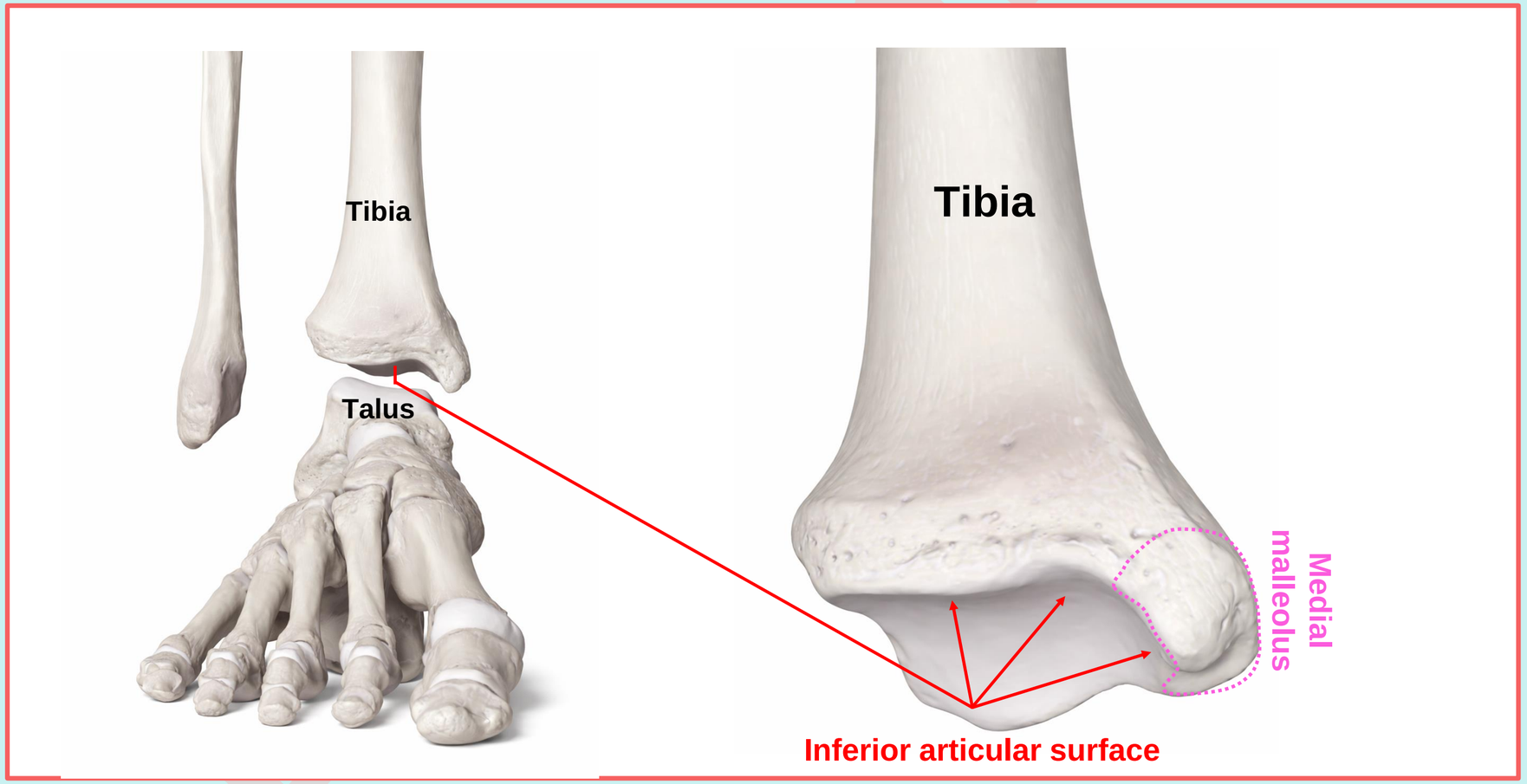


Check List:

1. Tibia

3. **Distal end:** consists of:

   iii. **The inferior surface:** is smooth and articulates with the body of the talus.



Check List:

1. Tibia

✓ Determine the side and anatomical position by holding it in such a way that:

1. The expanded upper end with condyles faces upward.
2. The tibial tuberosity faces anteriorly.
3. The medial malleolus projects downward and medially.

Check List:

Knee Joint

Type:

- A synovial modified hinge joint.

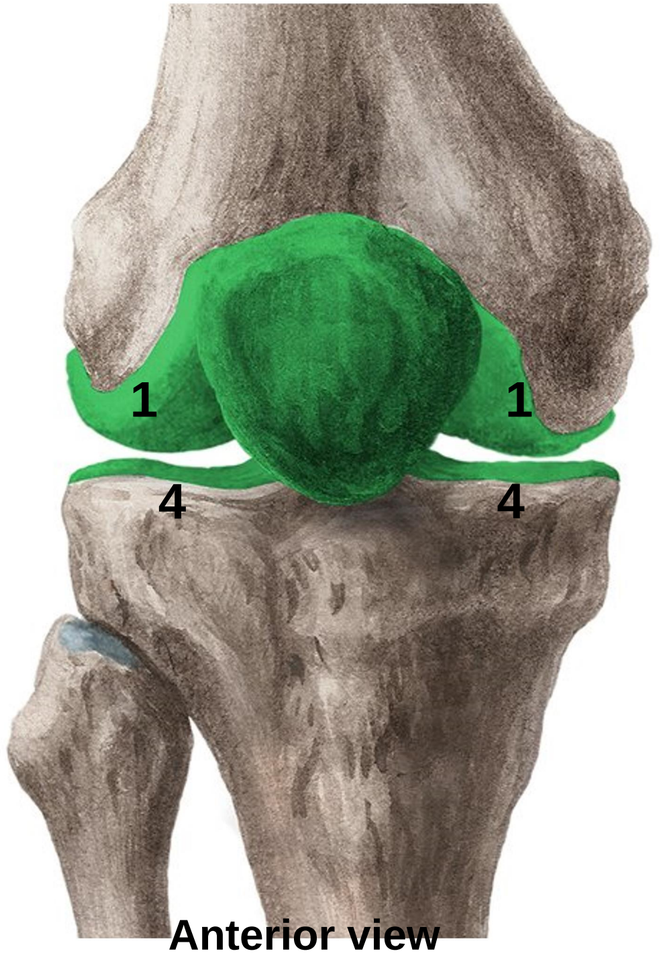
Articular Surfaces:

1. Medial and lateral condyles of the femur (inferior surfaces) articulating with the tibial condyles.

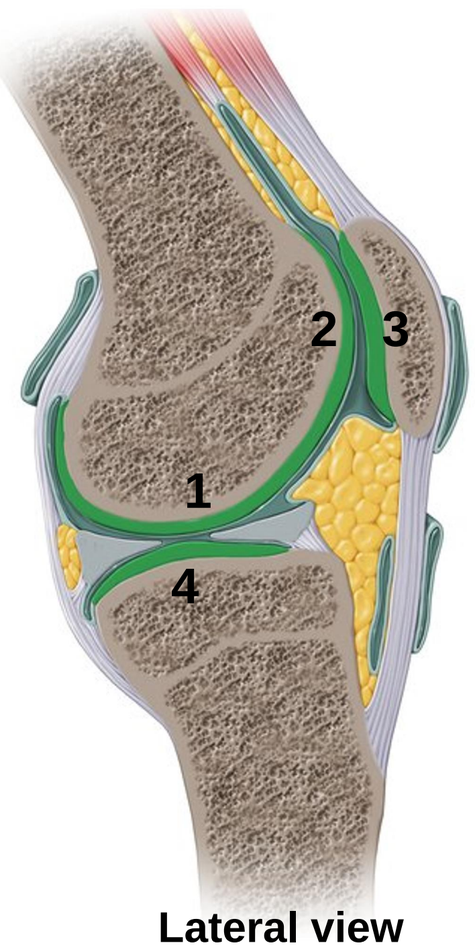
2. Trochlear (patellar) surface of the femur (anterior distal surface) articulating with the patella.

3. Articular surface of the patella (posterior surface) articulating with the femur.

4. Medial and lateral condyles of the tibia (superior surfaces) articulating with the femoral condyles.



Anterior view



Lateral view

Check List:

2. Fibula

- ✓ Identify the type and anatomical location of the fibula.
- ✓ Outline the major parts of the fibula:

1. **Proximal end:** consists of: Head, Styloid process, Neck.
2. **Shaft:** Interosseous (medial) border.
3. **Distal end:** Lateral malleolus, Malleolar fossa, Malleolar facet.

Check List:

2. Fibula

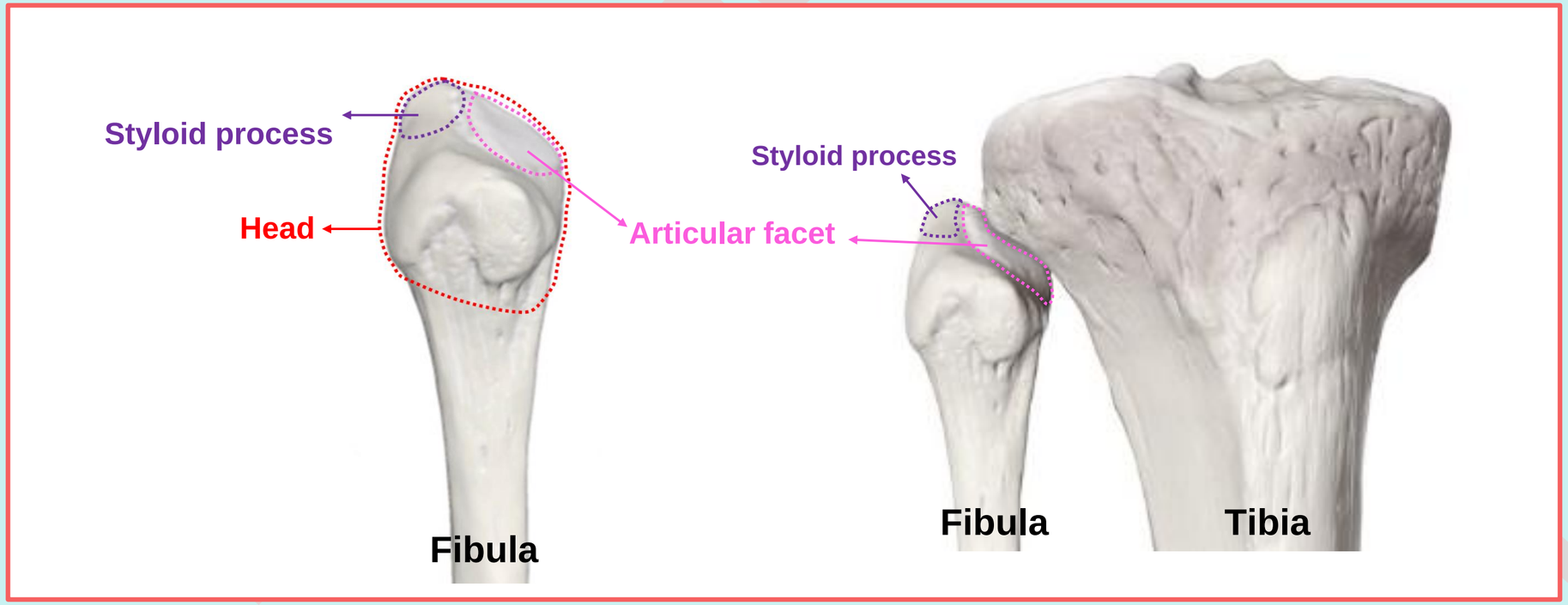
1. Proximal end: consists of:

   i. Head:

   - Rounded in shape.
   - Presents:

   - Articular facet: oval or circular, on the superior aspect, for articulation with the lateral condyle of the tibia.

   - Styloid process (apex): upward projection located posterolaterally to the facet.



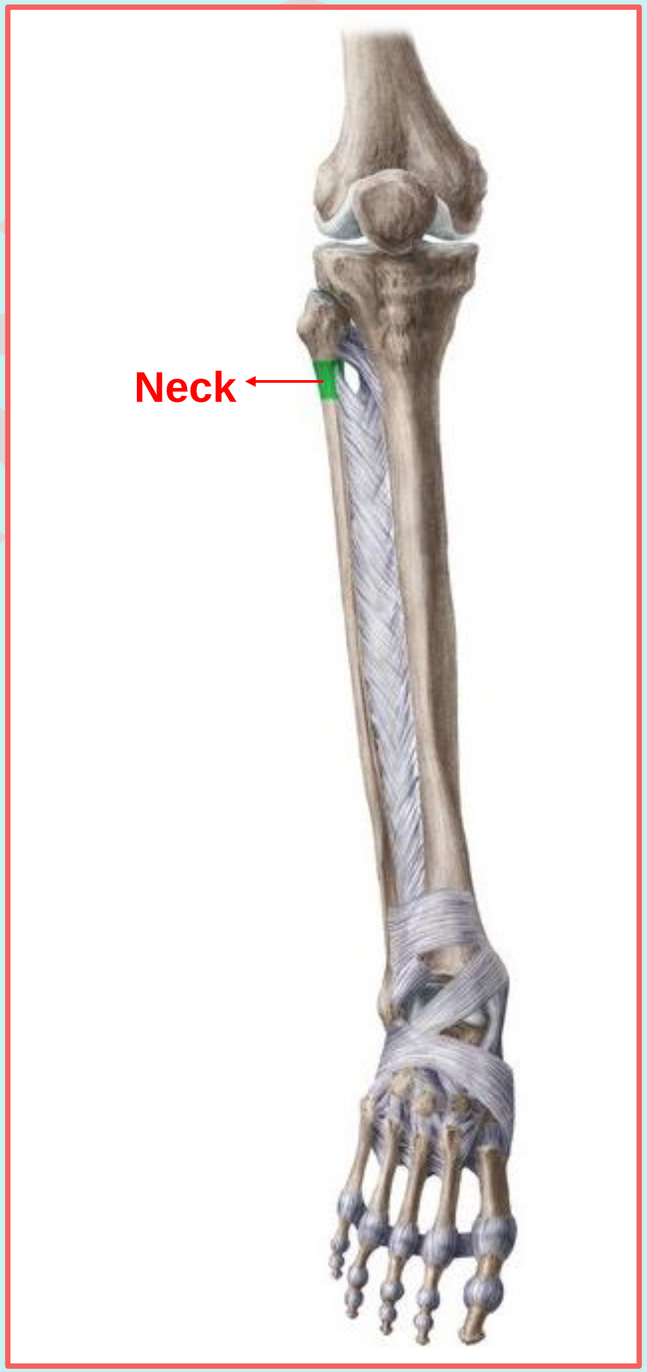
Check List:

2. Fibula

1. **Proximal end:** consists of:

   ii. Neck

   - A constricted region below the head.



Check List:

2. Fibula

2. Shaft:

- The shaft is slender and has: Interosseous (medial) border for attachment of the interosseous membrane.

- Other borders and surfaces are less distinct and difficult to identify.

Check List:

2. Fibula

3. **Distal end:** consists of:

   i. **Lateral Malleolus:**

   - Projects downward and laterally.
   - Forms the lateral prominence of the ankle.

Check List:

2. Fibula

3. **Distal end:** consists of:

ii. **Malleolar Facet:**

- A triangular articular surface on the medial aspect of the lateral malleolus.
- Articulates with the talus.

Check List:

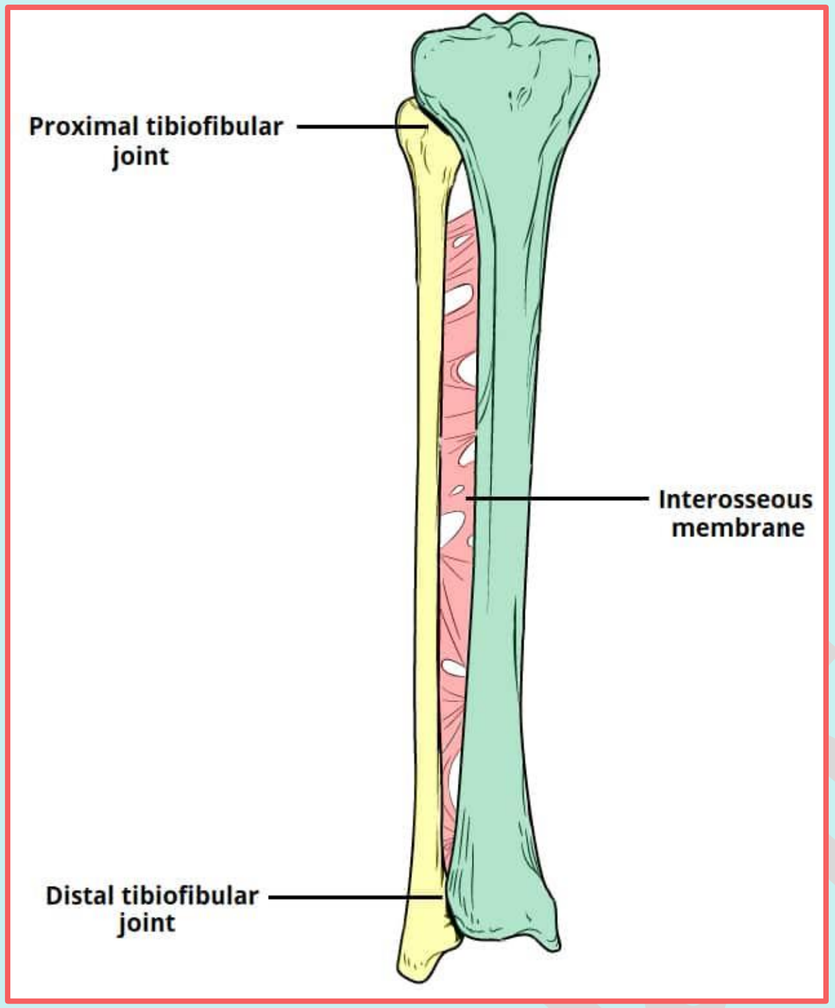
Tibiofibular Joints

- There are three joints between the tibia and fibula:

1. Superior (proximal) Tibiofibular:
   - A plane synovial joint between the head of the fibula and the lateral condyle of the tibia.

2. Middle Tibiofibular:
   - A fibrous joint formed by the interosseous membrane connecting the shafts of the tibia and fibula.

3. Inferior (distal) Tibiofibular:
   - A fibrous joint between the distal fibula and the fibular notch of the tibia.

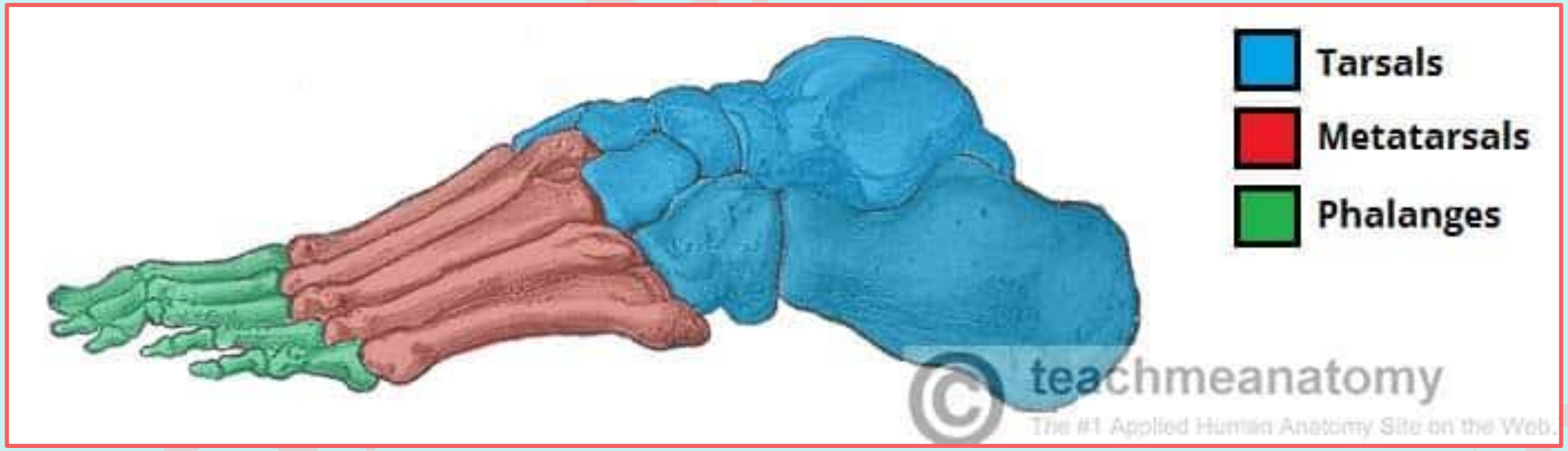


Check List:

3. Foot bones

✓ The skeleton of the foot, from posterior to anterior, consists of:

1. Tarsals
2. Metatarsals
3. Phalanges



Check List:

3. Foot bones

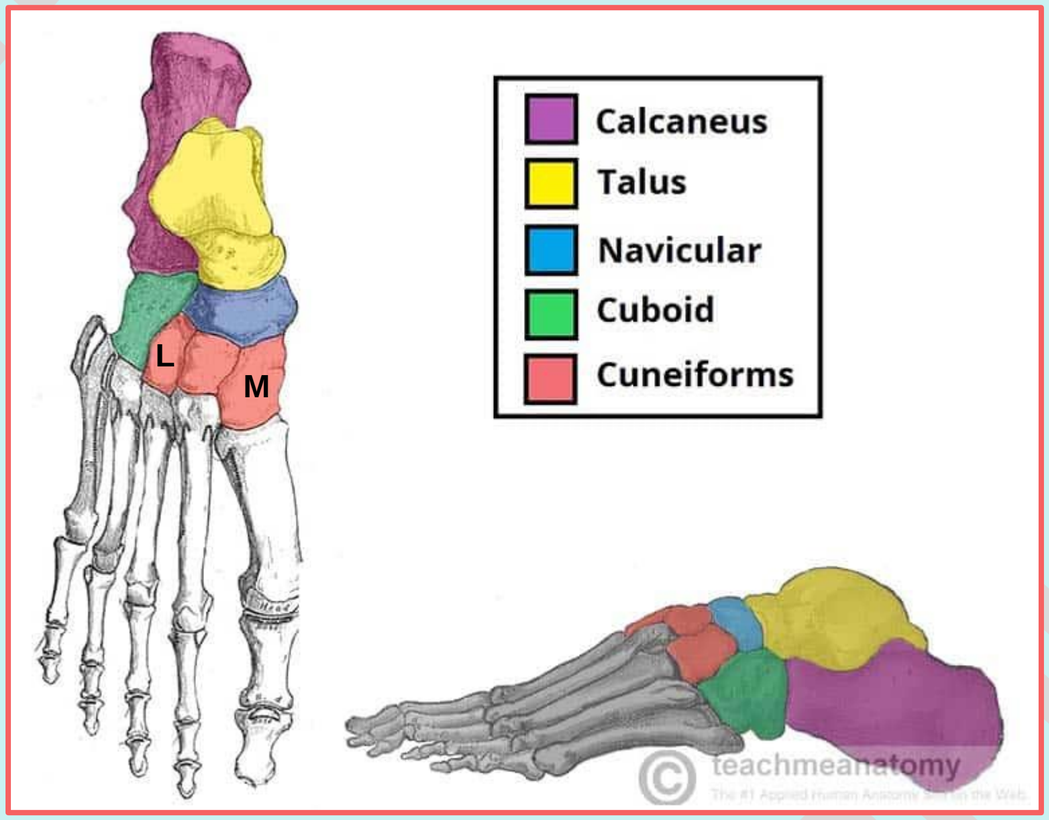
1. Tarsal Bones:

- Short bones.
- Arranged in three rows:

i. **Proximal row:** consists of talus and calcaneus.

ii. **Middle row:** consists of navicular.

iii. **Distal row:** consists of three cuboid and cuneiforms (medial, intermediate, and lateral)

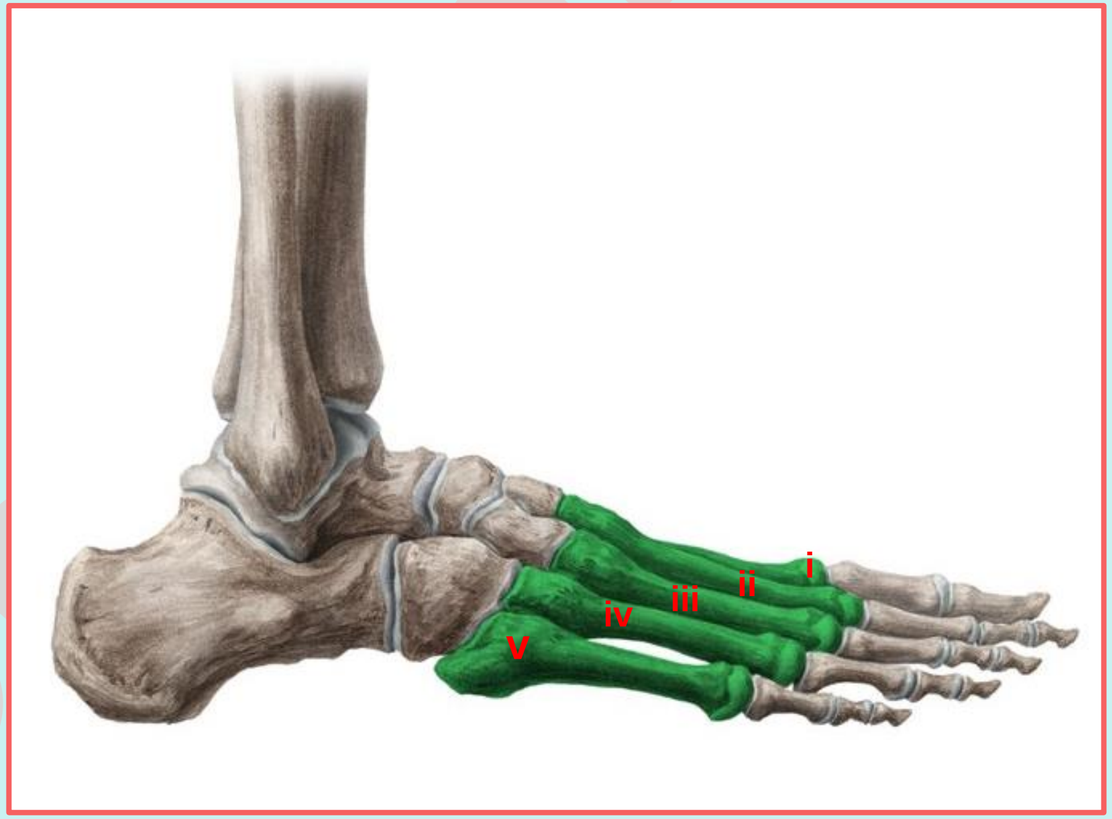


Check List:

3. Foot bones

2. Metatarsals:

- 5 Metatarsal Bones.
- Each metatarsal consists of three parts: proximal base, an intermediate shaft, and distal head.
- They are numbered from medial to lateral sides as first, second, third, fourth, and fifth.



Check List:

3. Foot bones

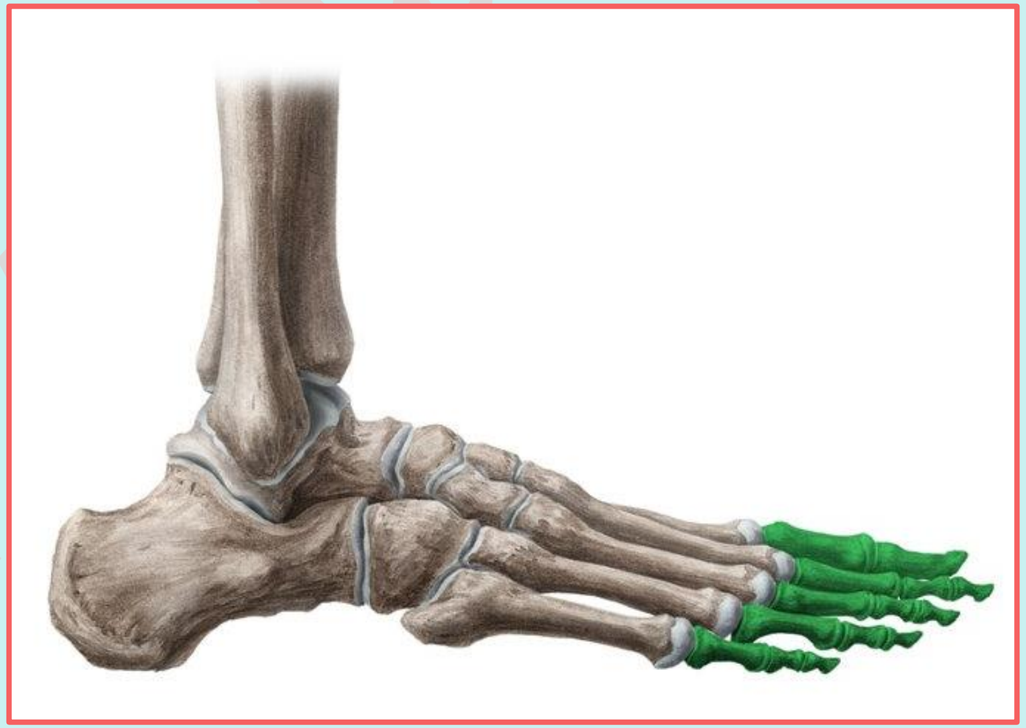
3. Phalanges:

- They are 14 in number in each foot:

  - Great toe: 2 phalanges (proximal and distal)

  - Other toes: 3 phalanges each (proximal, middle, distal).

- Each phalanx (singular) consists of a proximal base, an intermediate shaft, and distal head.



Check List:

Ankle Joint

Type:

- A synovial hinge joint.

Articular Surfaces:

1. Lower end of the tibia, including the medial malleolus.
2. Lateral malleolus of the fibula.
3. Body of the talus.