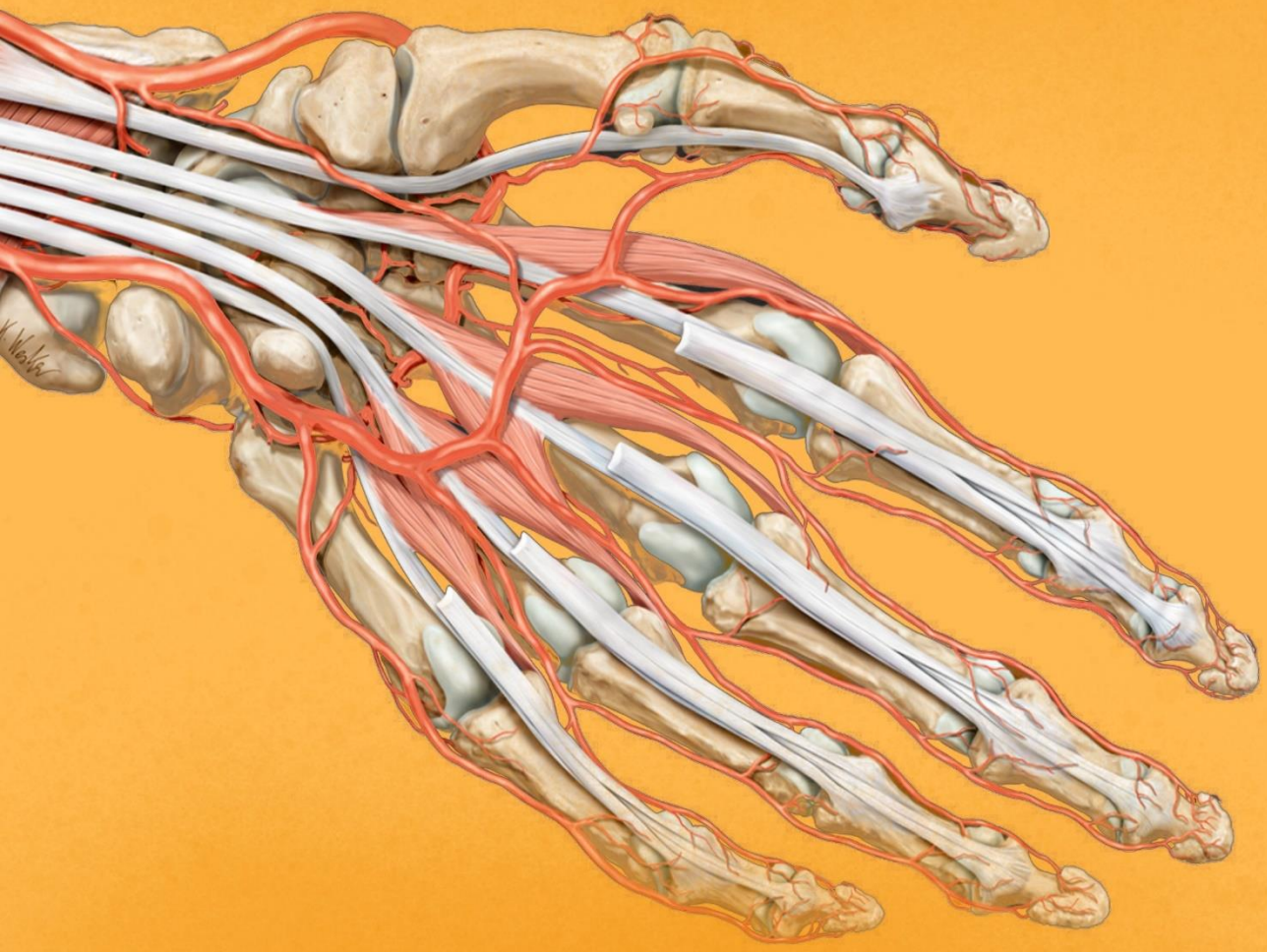
HATAHET ANATOMY



Appendicular Skeleton

Lecture: 3

Pages: 18, don't fret it's EZ

Lecture 3 Part 1: Upper limbs

The human skeleton is composed of 206 bones, but it is difficult to study as a whole, so anatomists came up with a classification for its components:

❖ **Axial skeleton**, consists of 80 bones located in the midline (axis) of the body, these bones are:

A. Skull: cranial & facial bones
B. Vertebral column
C. Auditory ossicles: malleus, incus and stapes
D. Mandible
E. Hyoid bone
F. Thorax, including sternum and ribs

❖ **Appendicular skeleton**, consists of 126 located away from the midline (laterally), these bones are:

A. Upper limbs (Upper extremities), 30 bones per limb: (Humerus, Radius, Ulna, Carpals, Metacarpals, Phalanges)
B. Lower limbs (Lower extremities), 30 bones per limb: (Femur, Tibia, Fibula, Patella, Tarsals, Metatarsals, Phalanges)
C. Girdles: sets of bones that help attaching the appendicular skeleton with the axial skeleton; because upper & lower limbs are not attached directly to the axial skeleton. Girdles include:

- **Shoulder girdle** (**Pectoral girdle**), attaches the upper limbs with the axial skeleton, includes: Scapula & Clavicle
- **Pelvic girdle** (**Hip girdle**), attaches the lower limbs with the axial skeleton, includes: 2 Hip (Coxal) bones

Shoulder girdle (Pectoral girdle)

Clavicle (Collar bone)

➢ General:

- the clavicle is a transverse, curved long bone that has an S-shape with
- it doesn't contain bone marrow
- it is the only horizontal bone in the appendicular skeleton
- clavicle is subcutaneous, which means that it can be felt under the skin by physical examination (palpation)
- the first bone to ossify in the embryo skeleton, and one of the most frequent bones to break, especially in the middle

➢ Position/Location:

- located between the sternum and scapula, and superior to the 1st rib
- both clavicles are met medially at the sternum, and each one sits in the clavicular

❶ ligament at each notch that attaches clavicle to sternum called (Sternoclavicular ligament)
❷ ligament that joins both clavicles medially together called (Interclavicular ligament)

➢ Geometry:

- **has 2 borders:**
  - anterior border
  - posterior border
- **has 2 curves:**
  - medial curve → convex anteriorly $^{2}/_{3}$
  - lateral curve → concave anteriorly $^{1}/_{3}$

Hint:
Anything in this lecture that is

Word → is a **muscle**
Word → is a **nerve**
Word → is **subcutaneous**
Word → is a **joint**

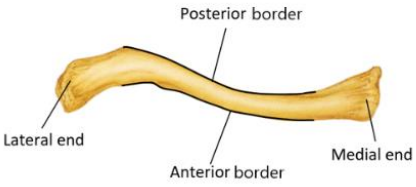
- **has 2 ends:**

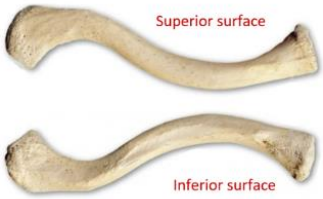
  - medial end → squared & bulky, it articulates with the manubrium sterni to form the (**Sternoclavicular joint**)
  - lateral end → flat and it articulates with the acromion process of the scapula to form the (**Acromioclavicular joint**)

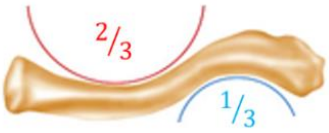
- **has 2 surfaces:**

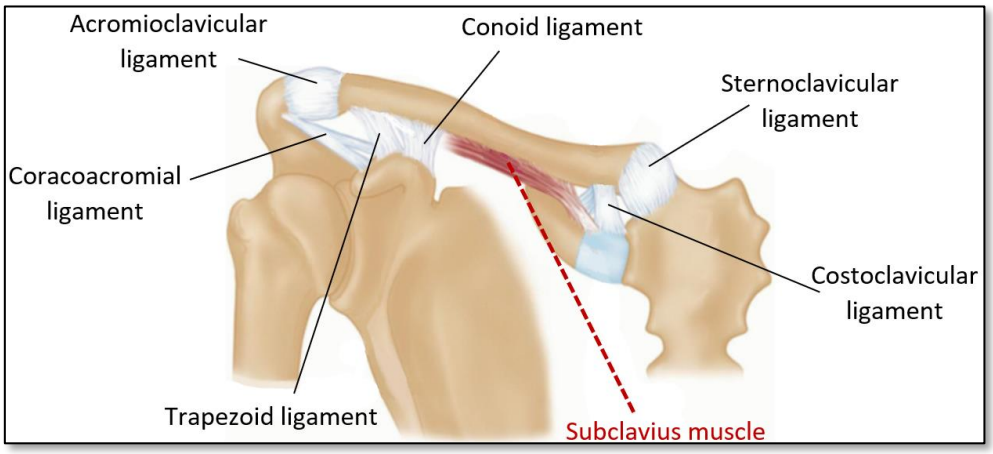
  - superior surface → smooth
  - inferior surface → rough; as it contains attachment points for 3 ligaments:

    - medially: (Costoclavicular ligament) attaches the clavicle with the 1st rib
    - laterally: (Trapezoid ligament & Conoid ligament), both of them together are called the (Coracoclavicular ligament)



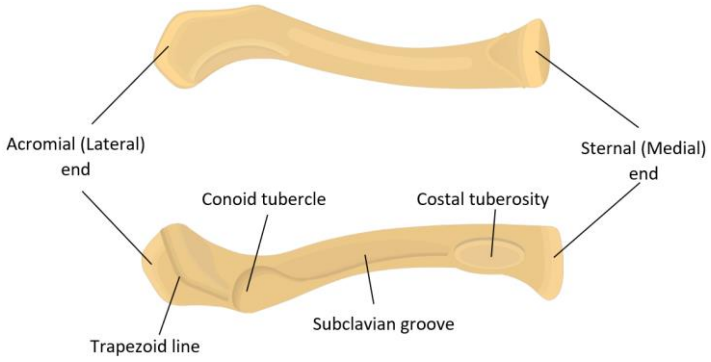






➢ Anatomy:

- **Sternal end (Medial end)**
- **Acromial end (Lateral end)**
- **Costal tuberosity**, where the ligament that attaches the clavicle with the 1st rib is located
- **Trapezoid line**, where the trapezoid ligament connects with the clavicle
- **Conoid tubercle**, where the conoid ligament connects with the clavicle
- **Subclavian groove**, runs from the costal tuberosity to conoid tubercle, serves as attachment point for the **Subclavius**



***Note:** The only attachment of the upper limbs with the axial skeleton is in the **Sternoclavicular Joint**

Scapula (Shoulder blade)

➢ General info:

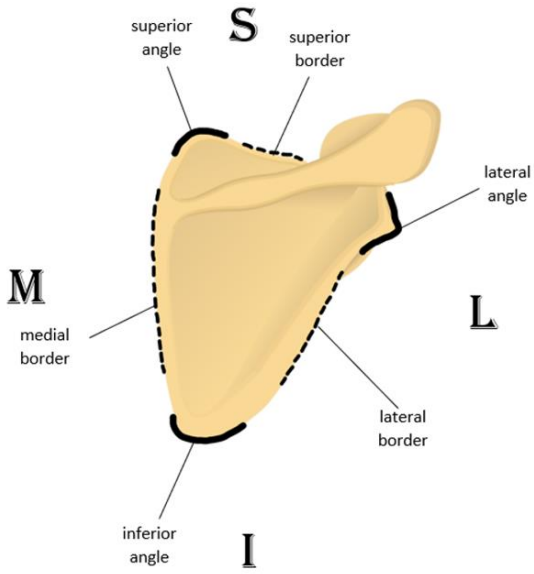
- scapula is a flat, triangular-shaped bone
- has no attachment with the **axial skeleton**, and held in place only by muscles

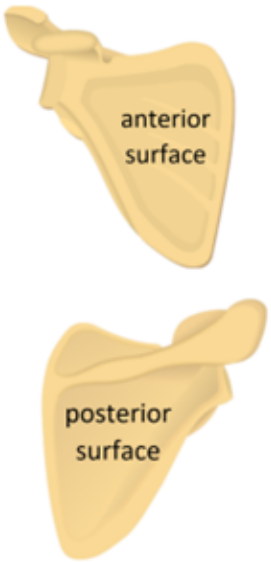
➢ Position/Location info:

- the scapula is located between the 2nd and the 7th ribs in the posterior part of the body
- articulates with the clavicle and the humerus

➢ Geometrical info:

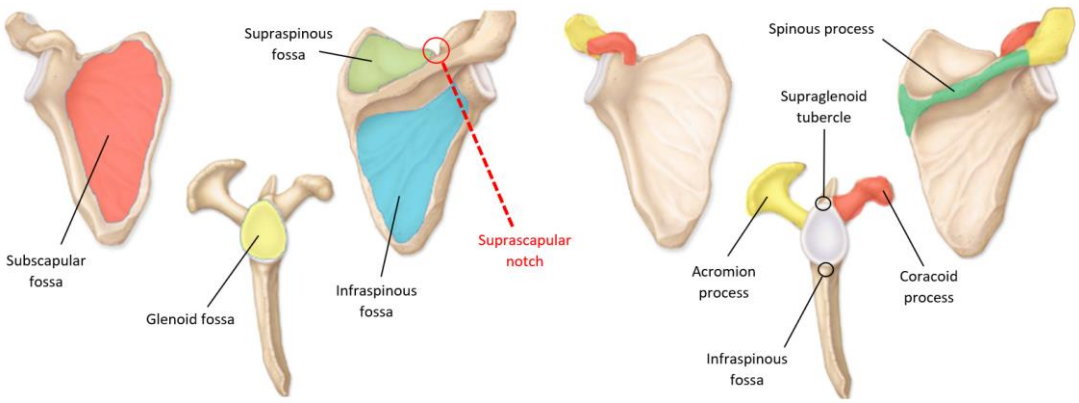
- **has 2 surfaces:**
  - Anterior surface
  - Posterior surface
- **has 3 borders:**
  - Superior border
  - Medial "vertebral" border
  - Lateral "axillary" border
- **has 3 angles:**
  - Superior angle (2nd rib)
  - Inferior angle (7th rib)
  - Lateral angle (**Shoulder joint**)





➢ Anatomical info:

- **Spinal process** (**Scapular spine**), transverse process that divides the posterior surface into superior and inferior
- **Acromion process**, the flattened lateral end of the spinal process, it marks the most superior point in the shoulder
- **Coracoid process**
- **Subscapular** (**Costal**) **fossa**, described as a fossa only if looked from the lateral view
- **Infraspinous fossa**, the fossa below the spinal process
- **Supraspinous fossa**, the fossa below the spinal process
- **Glenoid fossa/cavity**, the fossa that receives the head of the humerus and forms the shoulder joint, it has 2 little tubercles for muscles attachment: **Supraglenoid tubercle** & **Infraglenoid tubercle**
- **Suprascapular notch**, a notch at the superior border of the scapula where the **Suprascapular nerve** passes



Free upper limbs

Humerus

The humerus is the long bone that articulates with the scapula proximally to form the shoulder joint, and articulates with the bones of the forearm (Radius & Ulna) distally to form the elbow joint

✪ Proximal (Upper) end

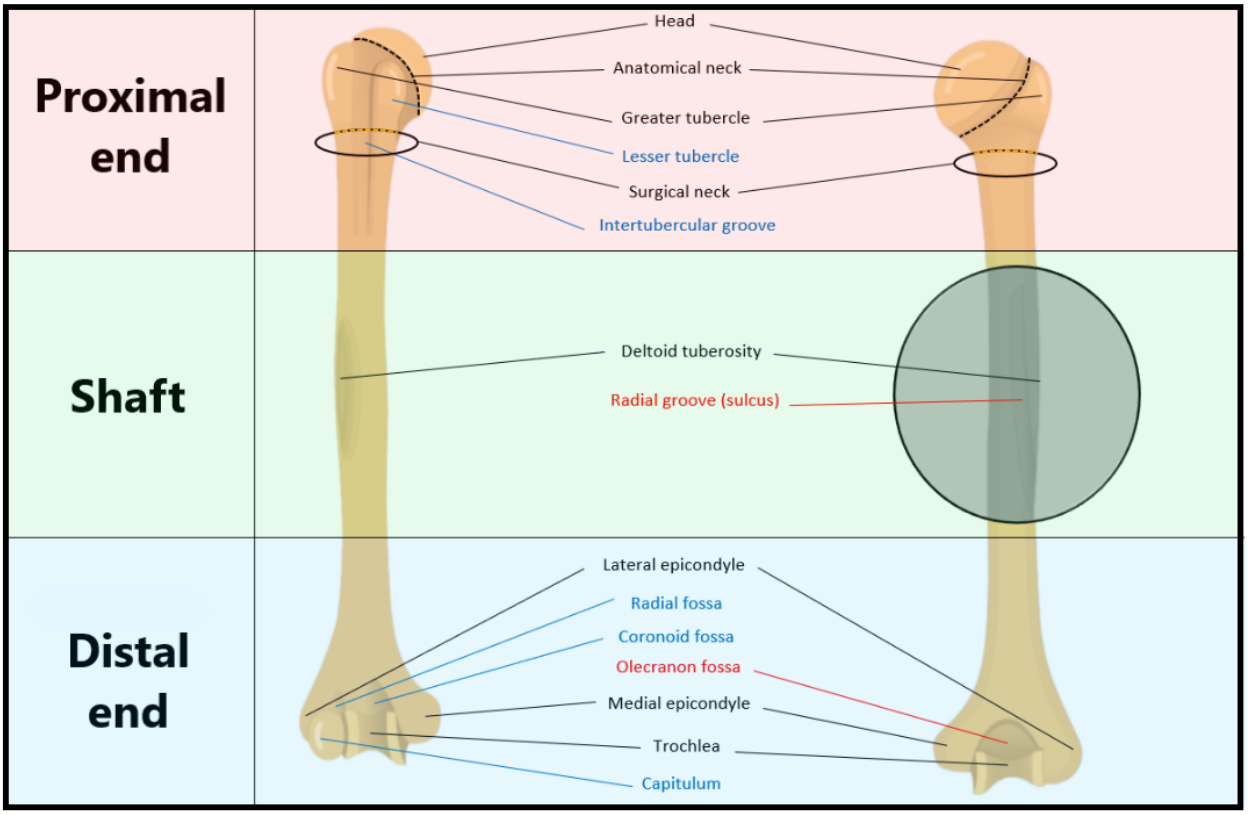
- **Head**, less than half-a-sphere structure covered with hyaline cartilage and it articulates with the glenoid fossa of the scapula to form the **Glenohumeral (Shoulder) joint**
- **Anatomical neck**, oblique groove distal to the head, and it is the epiphyseal plate (growth plate) in the adult humerus, and the capsule covering the shoulder joint stops at the anatomical neck
- **Surgical neck**, a constriction distal to the tubercles, it has that name; because it is the point where the humerus is commonly fractured
- **Greater tubercle**, elevation in the lateral side of the upper end and lateral to the head, **it is the most lateral structure in the entire humerus**
- **Lesser tubercle**, elevation in the anterior side of the upper end but inferior to the head
- **Intertubercular (Bicipital) sulcus**, long groove between both tubercles where a tendon of **Biceps brachii** passes

✪ Shaft (Body)

- **Deltoid tuberosity**, V-shaped elevation in the middle of the lateral part of the shaft, functions as an insertion of the **Deltoid muscle**, the muscle that makes the roundness of the shoulder
- **Radial groove**, groove that runs along the deltoid tuberosity and descends posteriorly, and it is where the **Radial nerve** runs through

✪ Distal (Lower) end

- **Trochlea**, pulley-shaped medial structure elevated in both sides (anterior & posterior) of the distal end and has a depression in between. The trochlea will articulate with the **Ulna** to form a part of the **Elbow joint**
- **Capitulum**, bulky, rounded lateral knob that articulates with the **Radius** to form the other part of the **Elbow joint**
- **Medial epicondyle**, its condyle is the Trochlea, it is larger than the lateral epicondyle, it is **subcutaneous** so it can be felt in the medial side of the elbow joint, plus the **Ulnar nerve** passes beneath (posterior to) the medial epicondyle
- **Lateral epicondyle**, its condyle is the Capitulum
- **Lateral supracondylar ridge**, long elevated bony structure located laterally above the capitulum
- **Radial fossa**, depression above the capitulum that receives the head of the radius when we flex the forearm
- **Coronoid fossa**, depression above the trochlea, it receives the coronoid process of the ulna when we flex our forearm
- **Olecranon fossa**, posterior depression above the condyles that receives the olecranon process of the ulna when we extend our forearm



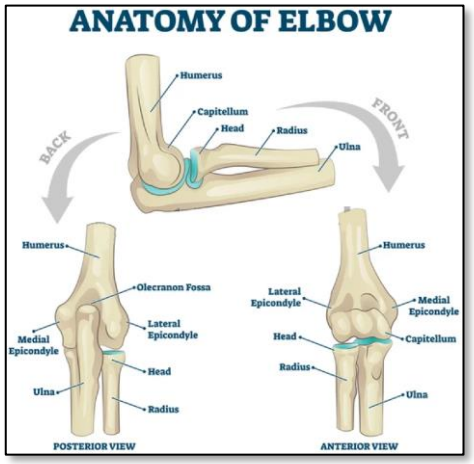
Bones of the forearm

❖ **Ulna**, (longer) the medial bone that makes the dominant articulation with **humerus**, starts cylindrical and ends flat

- **Olecranon process**, sits in the olecranon fossa of humerus when we extend (straighten) our elbow. Olecranon process makes the edge of the elbow when we flex our joint
- **Coronoid process**, sits in the coronoid fossa of the humerus when we flex our elbow
- **Trochlear notch**, notch that receives the trochlea to form a part of the **Elbow joint**
- **Radial notch**, depression inferior to the trochlear notch, it is where the head of the radius bone will sit in
- **Head**, located in the distal/inferior end and articulates with the radius at the ulnar notch
- **Styloid process**

❖ **Radius**, the lateral bone that makes the dominant articulation with **wrist bones**, starts flat and ends cylindrical

- **Head**, has 2 parts:
  - **Disc** → articulates with the radial notch of the ulna
  - **Socket** → articulates with the capitulum of the humerus
- **Neck**, small constriction below the head of the radius
- **Radial tuberosity**, oval elevation in the anterior side of the radius, serves as an attachment point for the **Biceps brachii**
- **Ulnar notch**, notch that allows the radius to pivot around the head of the ulna during pronation and supination of the forearm, wrist, and hand
- **Styloid process**

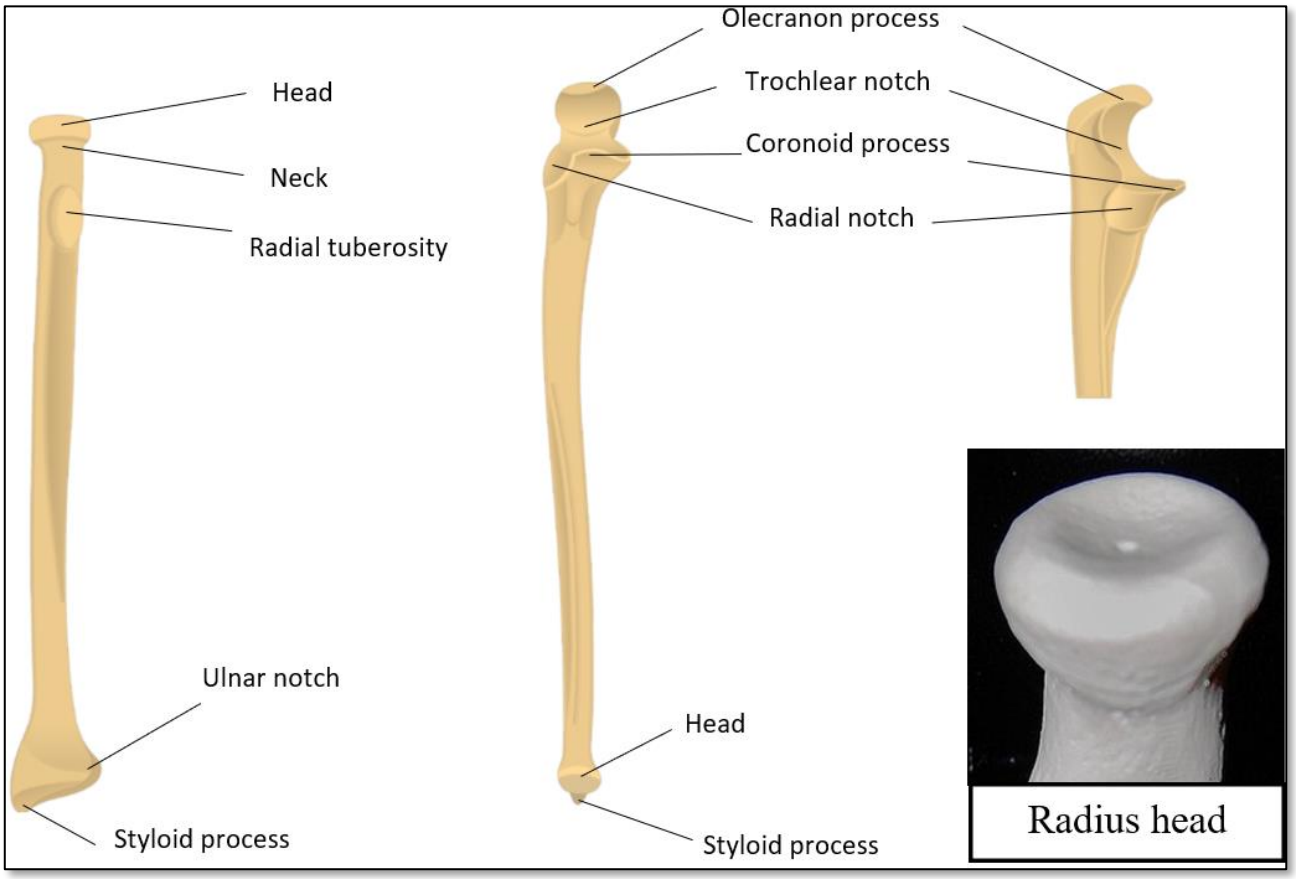


***Notes:**

- Only the Radius articulates with **2** of the wrist bones, but the Ulna does NOT make any articulation with wrist bones; because it is separated from them by a **fibrocartilage disc**
- Both radius and ulna have (**Interosseus Crests**) in their surfaces where the (**Interosseus Membrane**) that connects between both bones together is located
- Radius and Ulna articulate together in **3** points:

  ❶ Head of radius + Radial notch of ulna = **Proximal radioulnar joint**
  ❷ Head of ulna + Ulnar notch of radius = **Distal radioulnar joint**
  ❸ Shaft of radius + shaft of ulna → via and interosseus membrane

- **Interosseus Crest**: sharp surface that the interosseus membrane attaches with
- **Interosseus Membrane**: fibrous connective tissue that connects radius with ulna & tibia with fibula (discussed later)



***Note:** The elbow joint is made of **2** joints: **Humeroradial joint** & **Humeroulnar joint**

Bones of the wrist and hand

Carpals

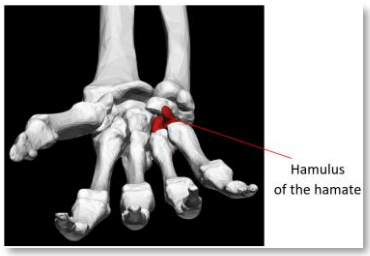
These are the 8 wrist bones that has several joints between them, these bones serve to attach the hand with the forearm bones. Carpals can be divided into 2 rows, each one consists of 4 bones, which are:

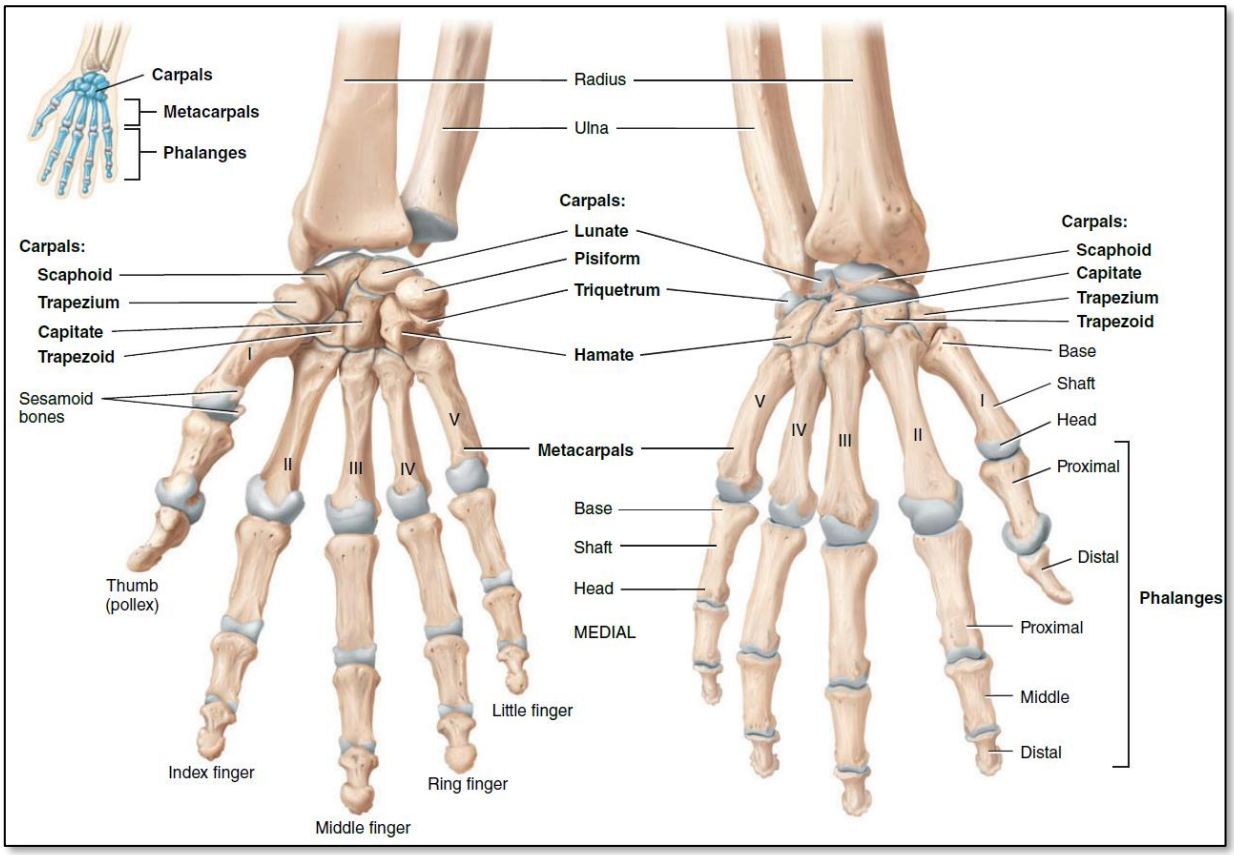
1) Proximal row (lateral-to-medial):

- **Scaphoid** [boat-shaped], the most frequently fractured carpal bone, it articulates with the lower end of the radius
- **Lunate** [moon-shaped], articulates with the lower end of the radius
- **Triquetrum** [3 corners]
- **Pisiform** [pea-shaped]

2) Distal row (lateral-to-medial):

- **Trapezium** [4-sided → sides are unparallel to each other], articulates with the thumb
- **Trapezoid** [4-sided → 2 sides are parallel to each other], articulates with the index
- **Capitate**, the largest carpal bone, it articulates with the middle finger
- **Hamate**, has a small hook-like process called (Hamulus), it articulates with both ring and little (pinky) fingers

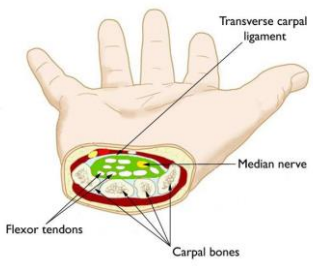




❖ Mnemonic to memorize the carpal bones ❖

Sally	Left	The	Party	To	Take	Cathy	Home
Scaphoid	Lunate	Triquetrum	Pisiform	Trapezoid	Trapezium	Capitate	Hamate

➢ Clinical correlation: Carpal Tunnel Syndrome



- Carpal tunnel is a passageway formed by the carpal bones and the transverse carpal ligament
- many structures pass through this tunnel, most importantly the Median nerve
- strenuous use of the forearm muscles, ex: (office jobs) will cause swelling of the tendons of these muscles and exert pressure on the median nerve, causing numbness and pain in the hand
- this syndrome is managed by a simple surgical procedure called (Carpal tunnel release)

Metacarpals

5 long bones that make the palm of the hand, they connect the carpals with phalanges, and each metatarsal has a **proximal base**, shaft and **distal head**.

Phalanges

Each finger contains 3 phalanges except for the thumb which lacks one phalanx, these bones are divided into 3 groups:

1) Proximal phalanges

2) Intermediate (Middle) phalanges, and the thumb lacks its intermediate phalanx

3) Distal phalanges

➢ Joints of all bones of the hand and wrist can be listed as the following:

❶ **Intercarpal joints** → between carpals themselves
❷ **Carpometacarpal joint** → between each one of carpals and their associated metacarpals
❸ **Metacarpophalangeal joint** → between metacarpals and phalanges, forming the knuckles
❹ **Interphalangeal joint** → between the phalanges of each finger, can be proximal or distal except for the thumb
❺ **Radiocarpal joint** → between radius and the carpals (Scaphoid & Lunate)

***Notes**:

- Metacarpals of each hand can be labelled with the numbers (I-V) starting with the thumb (I) to the little finger (V)
- The thumb is called (**Pollex**) and the big toe is called (**Hallux**)

Lecture 3 part 2: Lower limbs

Like the upper limbs, the lower limbs are composed of girdles and free limbs

Pelvic girdle (Hip girdle)

Pelvic girdle is composed of the (Hip bones), which are 2 flat bones that articulate together to make an incomplete ring-like structure called (Pelvis / Coxal), these two bones articulate:

- anteriorly together to form the (**Pubic symphysis**)
- posteriorly with the sacrum to form the (**Sacroiliac joint**)

Each hip bone is made up of 3 bones fused together, these bones are: Ilium, Ischium and Pubis

Ilium

Ilium is the superior bone that articulate with the sacrum to make the Sacroiliac joint, it is the largest hip bone

- **Body**, the largest and thickest part of the ilium, located inferior to the ala
- **Ala**, flat wing-like extension coming out of the body
- **Iliac spines**, 4 iliac spines serve as attachment points for the muscles of the trunk, hip and thigh, which are:

- Anterior superior iliac spine (ASIS)
- Posterior superior iliac spine (PSIS)
- Anterior inferior iliac spine (AIIS)
- Posterior inferior iliac spine (PIIS)

- **Iliac crest**, the superior thick margin of the ala, located between the (ASIS) and (PSIS)
- **Gluteal lines**, 3 elevated lines in the posterior surface of the ala, serve as attachments point for the **Gluteal muscles**
- **Arcuate line**, delineates the boundary between the body and ala of the ilium
- **Iliac fossa**, concave depression on the medial side of the ala, and it serve as an attachment point for the **Iliacus muscle**
- **Auricular surface**, medial ear-shaped surface of the ilium that articulates with the sacrum to make the **Sacroiliac joint**
- **Iliac tuberosity**, the point of attachment of the **Sacroiliac joint**

Ischium

Ischium is the postero-inferior bone of the pelvis bones

- **Body**, the largest and thickest part of the ischium
- **Ischial tuberosity**, egg-like structure, the most inferior part of the whole hip bone. It is the bone we feel when sitting
- **Ischial spine**, above it is the greater sciatic notch and below it is the lesser sciatic notch
- **Lesser sciatic notch**, allows some vessels & nerves to pass through
- **Ischial ramus**, the inferior bony extension of ischium body that links the ischium with the pubis

Pubis

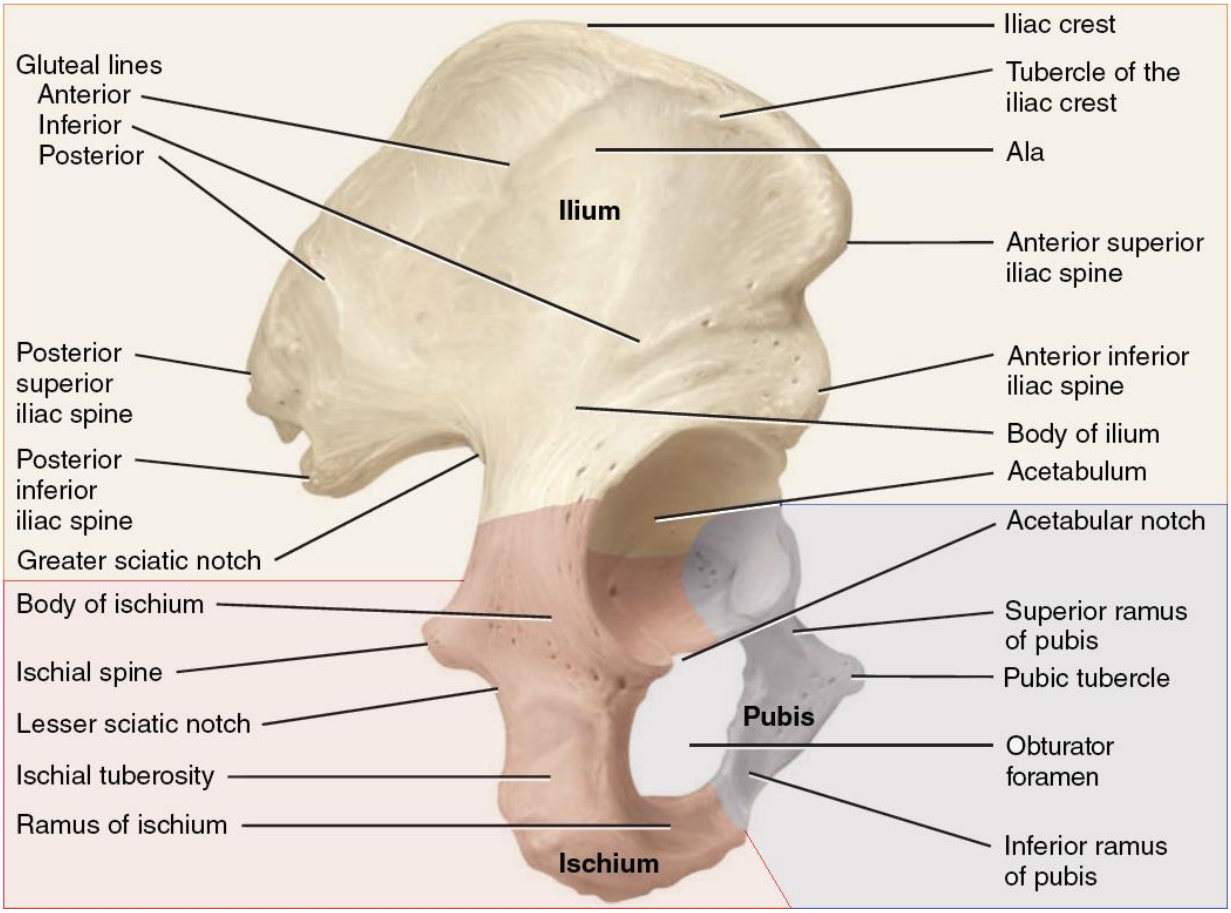
Pubis is the antero-inferior V-shaped bone that articulates with its other pair in the **Pubic symphysis**

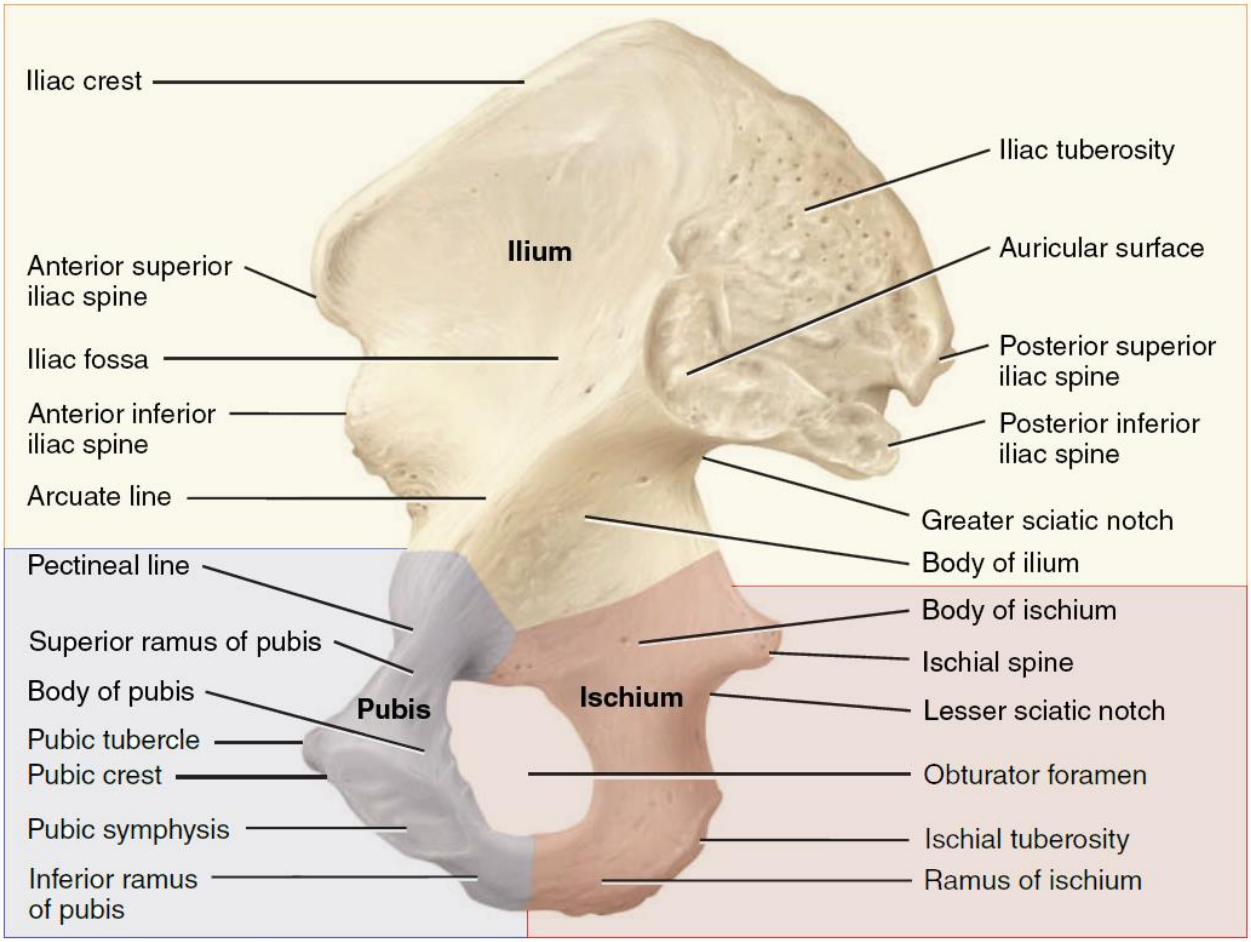
- **Body**, the largest and thickest part of the pubis, located between both rami of the pubis
- **Pubic crest**, the superior border of the body
- **Pubic tubercle**, projection at the lateral end of the pubic crest
- **Pubic symphysis**, the point where both pubis bones articulate together anteriorly
- **Pectineal line**, a sharp ridge that runs along the superior ramus, and serves as an attachment point for the **Pectineus muscle**. It is the inferior extension of the arcuate line that arises from the pubic tubercles
- **Superior ramus**
- **Inferior ramus**

***Note:** The ischial ramus plus the inferior ramus of the pubis are together called the **Ischiopubic ramus**

Features of the whole pelvis

- **Acetabulum**, cup-shaped socket that is formed by the articulation of the 3 bodies of the 3 bones of the hip; forming the (**Triradiate cartilage**). It is where the head of the femur articulates
- **Acetabular notch**, converted into a foramen by the acetabular ligament, and serve for 2 purposes: (blood vessels and nerves run through it / attachment point for the ligament of the head of the femur)
- **Obturator foramen**, the largest foramen in the skeleton formed by both ischium & pubis
- **Greater sciatic notch**, belongs to the ilium & ischium
- **Lesser sciatic notch**, belongs to the ischium



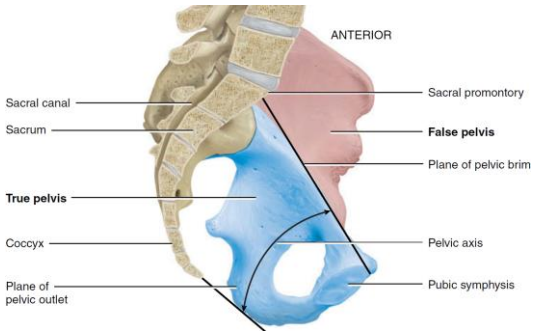


Pelvic brim

▪ **Pelvic brim**: imaginary boundary that connects the: **Sacral promontory**, **Arcuate line**, **Pectineal line**, **Pubic crest**, and **Pubic symphysis**, and it will divide the pelvis into:

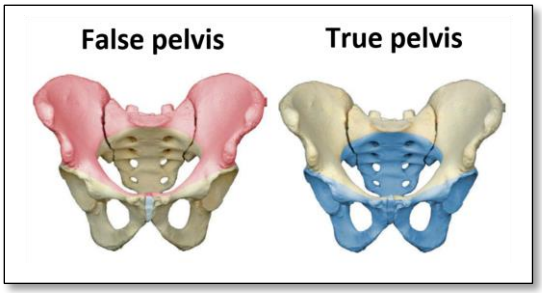
- Pelvic inlet: the superior opening of the true pelvis
- Pelvic outlet: the inferior opening of the true pelvis

▪ **Pelvic axis**: imaginary line that curves thought the true pelvis from the central point of the plane of the pelvis inlet to the central point of the plane of the pelvis outlet. It is the route that the baby's head takes as it descends through pelvis



True pelvis Vs False pelvis

The anatomists divided the pelvis into **False pelvis**; & **True pelvis**; based on their <u>locations in relation to the pelvic brim</u>:



Pelvis / Differences	True (Lesser) pelvis	False (Greater) pelvis
Definition	• the inferior part of the pelvis; below the pelvic brim • a part of the pelvic cavity	• the superior part of the pelvis; above the pelvic brim • a part of the abdominal cavity
Boundaries	• **Anterior** → Pubic bones • **Posterior** → Sacrum and Coccyx • **Lateral** → Inferior ilium and ischium	• **Anterior** → Abdominal wall • **Posterior** → Lumbar vertebrae • **Lateral** → Superior ilium and ischium
Contents	• Rectum, Urinary bladder • Vagina, Cervix, Uterine in FEMALES • Prostate in MALES	• Urinary bladder when it is filled, Lower intestines • Uterus, Ovaries, Uterine tubes in FEMALES

Free lower limbs

Femur

✪ Proximal (Upper) end

- **Head**, more that half-a-sphere process and more rounded than the head of the humerus, it will insert in the acetabulum
- **Fovea capitis**, depression in the head of the femur, which serves as an attachment point of a ligament that fixes the femur with the acetabulum
- **Anatomical neck**, constriction inferior to the head, it is an evident structure
- **Surgical neck**, located below the whole upper end
- **Greater trochanter**, large lateral bony elevation for the attachment of thigh & buttock muscles
- **Lesser trochanter**, small inferior bony elevation for the attachment of thigh & buttock muscles
- **Intertrochanteric line**, which is anterior and non-elevated line that continues posteriorly as the **Intertrochanteric crest** which is posterior and elevated line

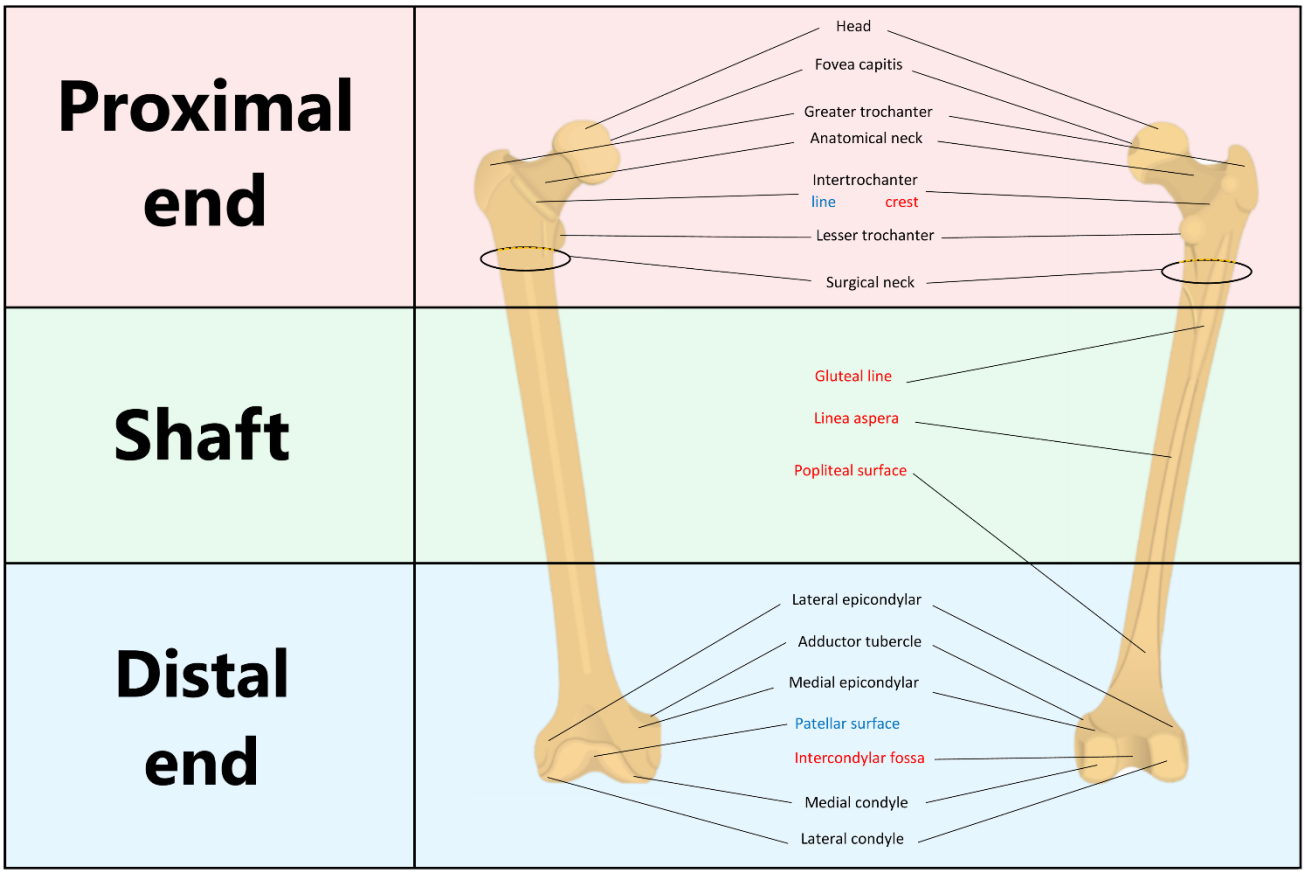
✪ Shaft (Body)

- **Gluteal tuberosity**, long elevation that serves as an attachment point for the **Gluteal muscle**
- **Linea aspera**, long elevation that starts as one line then, as it goes down, it splits into 2 lines:
  - Medial supracondylar line
  - Lateral supracondylar line
- **Popliteal surface**, the triangular area between the medial & lateral supracondylar lines

✪ Distal (Lower) end

- **Medial condyle**, medial oval-shaped elevation
- **Lateral condyle**, lateral oval-shaped elevation
- **Intercondylar fossa/notch**
- **Medial epicondyle**
- **Lateral epicondyle**
- **Adductor tubercle**, located above the medial & lateral epicondyles and serves as an attachment point for the muscles that move the thigh inwards (medially)
- **Patellar surface**, hyaline-covered area anteriorly for the patella to sit in

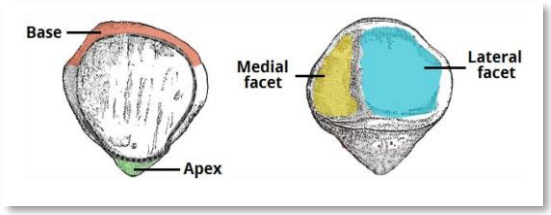
***Note**: In the lower end of the humerus, the medial epicondyle is larger than the lateral epicondyle, but in the lower end of the femur, both epicondyles have the same size (مرة اجا عليها سؤال بالميكاب)



Patella (Kneecap)

▪ **Patella** (**Kneecap**): sesamoid triangular bone, its base is proximal, and its apex is distal, located in the tendon of the **Quadriceps femoris muscles**, it has multiple functions:

❶ protects the knee joint
❷ maintains the position of the tendons in that area
❸ increases the leverage (the mechanical advantage) of the joint



The articular surface of the patella is located in its posterior surface, and it consists of 2 unequal facets:

- **Medial facet**, the smaller facet that articulate with the medial condyle of the femur
- **Lateral facet**, the larger facet that articulates with the lateral condyle of the femur

Bones of the leg

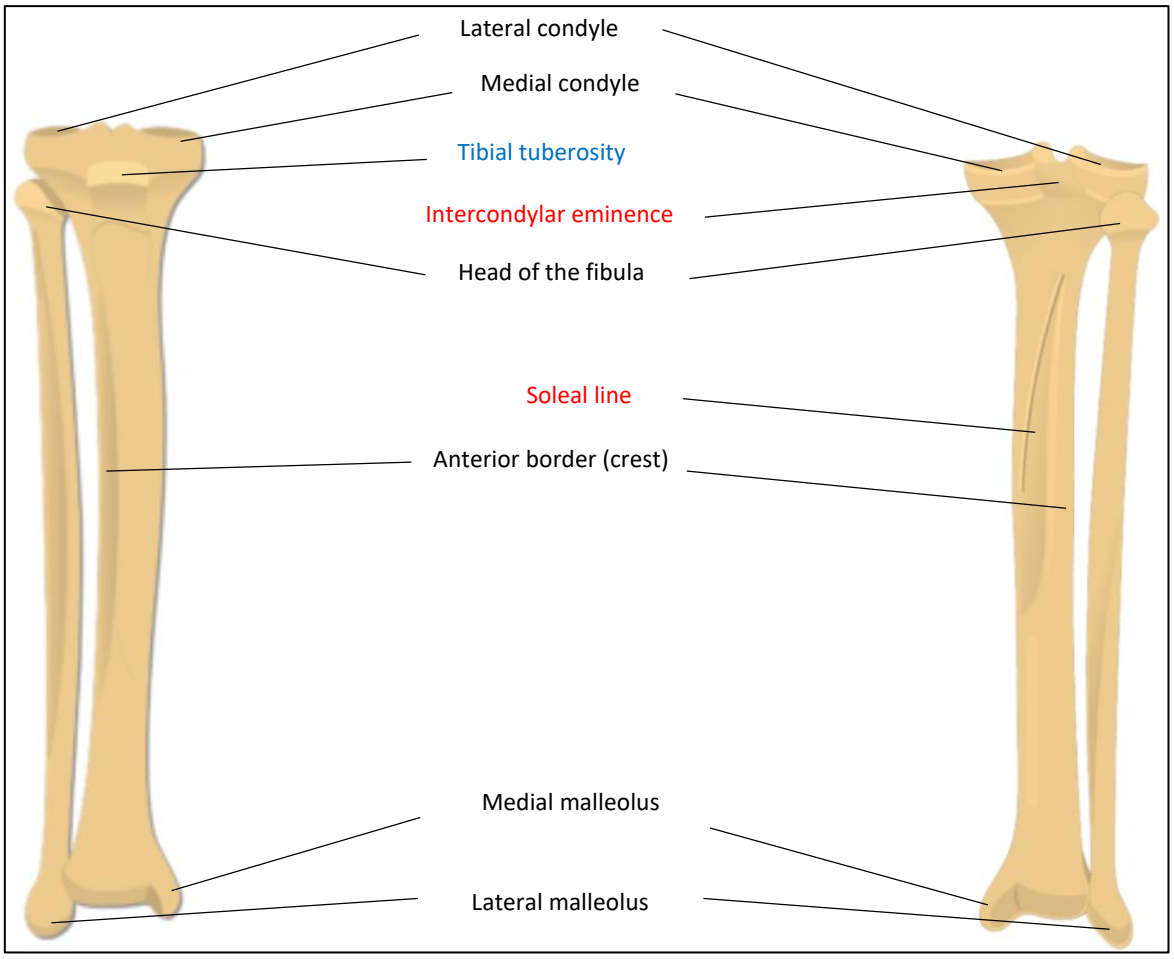
❖ Tibia (Shin bone)

- **Medial condyle**, articulates with the medial condyle at the lower end of the femur
- **Lateral condyle**, articulates with the lateral condyle at the lower end of the femur
- **Intercondylar eminence**, spiky posterior elevation between the condyles of the tibia
- **Tibial tuberosity**, a rough subcutaneous surface in the anterior side of the upper end of the tibia
- **Anterior border** (**Anterior crest**), a sharp subcutaneous ridge at the lateral surface of the tibia

- **Soleal line**, oblique ridge that serves as an attachment point for the **Soleus muscle**
- **Medial malleolus**, a subcutaneous projection at the distal end of the tibia that articulates with the Talus bone
- **Fibular notch**, it is where the fibula attaches distally with the tibia to make the **Tibiofibular joint**

❖ Fibula

- **Head**, articulates with the inferior surface of the lateral condyle.
- **Lateral malleolus**, a subcutaneous projectile that articulates with Talus bone.



***Note**: Knee joint (**Tibiofemoral joint**) is made of the distal condyles of the femur & the proximal condyles of the tibia

Bones of the foot

Tarsals

which are the 7 ankle bones, divided into:

1) Proximal row:

- **Talus**, receives the weight of the body from the tibia and articulates with both tibia in the medial malleolus and fibula in the lateral malleolus, forming the **Ankle joint**
- **Calcaneus** (**Calcaneum**) **[the heel bone]**, the largest and the most posterior tarsus and it is the first bone to reach the ground when we walk
- **Navicular** **[boat-shaped]**, articulates with talus and receives a part of the weight

2) Distal row:

- **Cuboid** [4-sided cube-shaped], articulates with the 4th & 5th toes
- **Medial cuneiform (1st cuneiform)**, articulates with the big toe (Hallux)
- **Intermediate cuneiform (2nd cuneiform)**, articulates with the 2nd toe
- **Lateral cuneiform (3rd cuneiform)**, articulates with the 3rd toe

Metatarsals

5 long bones that connect tarsals with phalanges, and each metatarsal has a **proximal base**, shaft and **distal head**.

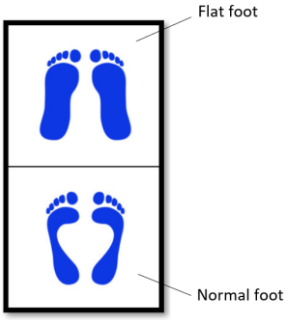
Phalanges

Each toe consists of 3 phalanges except for the big toe which lacks one phalanx, these bones are divided into 3 groups:

1) Proximal phalanges

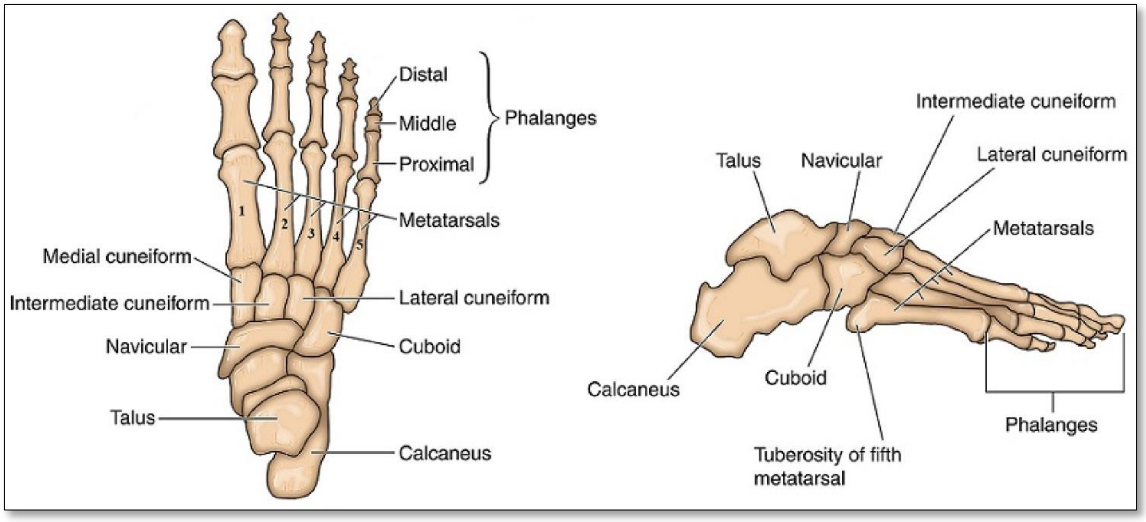
2) Intermediate (Middle) phalanges, and the big toe lacks its intermediate phalanx

3) Distal phalanges



➢ Joints of all bones of the hand and wrist can be listed as the following:

❶ **Intertarsal joints** → between tarsals themselves
❷ **Tarsometatarsal joint** → between tarsals and metatarsals
❸ **Metatarsophalangeal joint** → between metatarsals and phalanges
❹ **Interphalangeal joint** → between phalanges of each toe, can be proximal or distal except for the big toe
❺ **Talocrural joint (Ankle joint)** → between talus, tibia and fibula



***Notes:**

- Metacarpals of each hand can be labelled with the numbers (I-V) starting with the thumb (I) to the little finger (V)
- The thumb is called (**Pollex**) and the big toe is called (**Hallux**)

✪ To summarize the body weight-bearing mechanism, the body weight is transferred as the following sequence ✪

Vertebral column → Sacrum → Humerus → Tibia → Navicular → Distal tarsals & Metatarsals

Questions

Questions 1-10 for upper limbs, and 11-20 for lower limbs 👍

1) The joint between each carpal and its associated metacarpal is called:

A. Intercarpal joint
B. Metacarpophalangeal joint
C. Interphalangeal joint
D. Carpometacarpal joint

2) In Carpal Tunnel Syndrome, which nerve is primarily affected due to compression within the carpal tunnel?

A. Ulnar nerve
B. Radial nerve
C. Median nerve
D. Brachial plexus

3) A fracture to the medial distal end of the humerus will most likely result in the injury of which of the following nerves?

A. Radial nerve
B. Ulnar nerve
C. Median nerve
D. Musculocutaneous nerve

4) How many points does both Radius and Ulna articulate **together**?

A. 2
B. 3
C. 4
D. They don't form any direct articulation between each other

5) When the forearm is flexed, which depression on the distal end of the humerus receives the head of the radius?

A. Radial fossa
B. Coronoid fossa
C. Olecranon fossa
D. Lateral supracondylar ridge

6) Which of the following statements about the clavicle is/are CORRECT?

A. the clavicle forms an articulation with the humerus
B. it has 2 surfaces: a rough superior surface, and a smooth inferior surface
C. clavicle is considered a flat bone with bone marrow on its medullary cavity
D. None of the listed statements are correct

7) How many bones are there from elbow joint (Humerus is not included) to the end of upper limb?

A. 29
B. 32
C. 10
D. 27

8) A 25-year-old man came to the emergency department after a car accident, upon physical examination it was found that he can't feel sensations on the dorsum of the right hand. Doctors suspected a fracture and suggested an X-ray imaging to the upper limb. They discovered a fracture in the humerus shaft. Which of the following nerves are most susceptible to being injured?

A. Radial nerve
B. Ulnar nerve
C. Median nerve
D. Musculocutaneous nerve

9) Which part of the scapula is considered the most superior point of the shoulder?

A. Glenoid fossa
B. Spine of scapula
C. Acromion process
D. Coracoid process

10) Which of the following carpal bones are mis-matched with their associated information?

A. Hamate – has a small hook-like process
B. Lunate – crescent-shaped bone of the distal row
C. Trapezium – articulates with the thumb
D. joints lying between the carpal bones – termed Intercarpal joints

11) The intertrochanteric crest is a continuation of the _____ and located in the _____ end of the femur.

A. intertrochanteric line, proximal
B. greater trochanter, distal
C. lesser trochanter, distal
D. linea aspera, distal

12) Which of the following structures does NOT contribute in forming the pelvic brin

A. Pubis symphysis
B. Arcuate line
C. Pubic crest
D. Ischial ramus

13) Which of the following structures separate between the true pelvis and false pelvis?

A. Arcuate line
B. Pectineal line
C. A+B
D. Ischial tuberosity

14) One of the following statements about patella is CORRECT, choose this one:

A. Patella is a classified as short bone
B. Patella articulates with fibula, forming the Patellofibular joint
C. The apex is distal, and the base is proximal
D. All of the statements are correct

15) The CORRECT statement about the femur anatomy is (**Make-up question, use your brain, and use the logic**):

A. femur head is more rounded and ball-like than the humerus head
B. both distal (medial & lateral) epicondyles are equal in size
C. the femur makes an articulation with the fibula
D. All of the statements are correct

16) The bones that form the ankle joint are:

A. Tibia + Talus
B. Fibula + Calcaneus
C. Tibia + Fibula + Calcaneus
D. Tibia + Fibula + Talus

17) The triangular area located between the medial and lateral supracondylar lines on the femur is known as:

A. Popliteal surface
B. Linea aspera
C. Intercondylar fossa/notch
D. Intertrochanteric line

18) The tarsal bone that articulates with the 4^{th} and 5^{th} toes is:

A. Medial cuneiform
B. Intermediate cuneiform
C. Lateral cuneiform
D. None of the above

19) Are the questions at the end of each lecture SANAWAT (Past Years Questions - PYQs)?

A. True
B. False

20) Fovea capitis is the:

A. spiky posterior elevation between the condyles of the tibia
B. depression in the head of the femur that serves as an attachment point of the femur with the acetabulum
C. long elevation that serves as an attachment point for the gluteal muscle
D. superior thick margin of the ala of ilium

Answers

1	2	3	4	5	6	7	8	9	10
D	C	B	B	A	D	A	A	C	B
11	12	13	14	15	16	17	18	19	20
A	D	C	C	D	D	A	D	B	B