

**Aim-** Identification of appendicular bones.

## References

1. Structural Organisation In Animals-Animal Tissues, Trueman's Elementary Biology, K.N. Bhatia, et al., Edition 2016, pp. 168-213
2. Haematology, Practical Human Anatomy And Physiology, S.R. Kale et al., Nirali Prakashan, Eight Edition, 2002, pp. 5-9.

## Theory

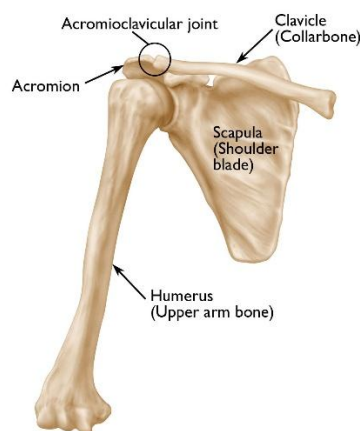
It is situated at the lateral side, which extends outwards from the principal axis. The appendicular skeleton system comprises the pectoral girdle (shoulder girdle), pelvic girdle (hip girdle), upper limbs or arms bones, and lower limbs or legs.

## PECTORAL GIRDLE

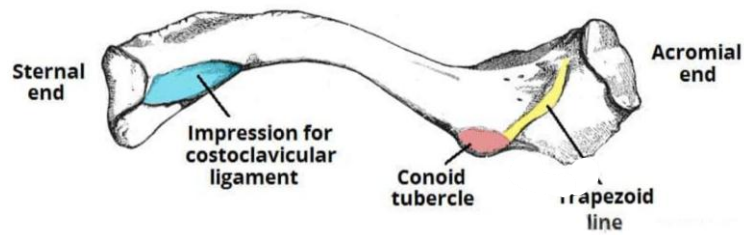
Each pectoral girdle consists of two bones: 1 clavicle and 1 scapula.

**Scapula-** The scapula is a flat bone with a ridge called the spine and a triangular body. The spine ends in an expanded part called the acromion, which connects to the clavicle. On the lateral end, there's a projection called the coracoid process, which attaches to muscles and ligaments. The scapula's body has two surfaces.

- i) The costal surface, which is concave and marked by ridges.
- ii) The dorsal surface, divided into two parts by the spine into upper small supraspinous fossa and lower area forming infraspinous fossa.



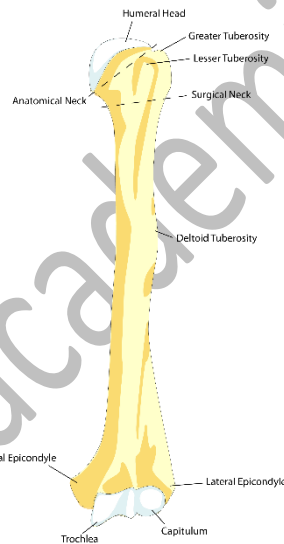
**Clavicle:** The collar bone, or clavicle, connects the scapula to the sternum. It's "S"-shaped, with a shaft and two ends: acromial (flat) and sternal (quadrangular).



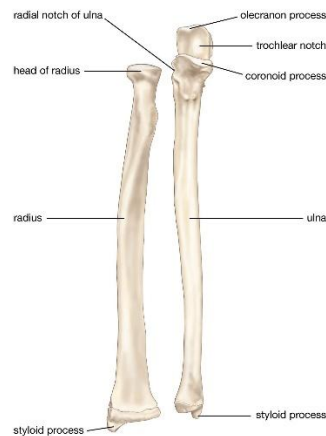
## BONES OF THE ARMS

Each arm consists of 30 bones: 1 humerus, 1 radius, 1 ulna, 8 carpal bones, 5 metacarpal bones, 5 digits (14 phalanges).

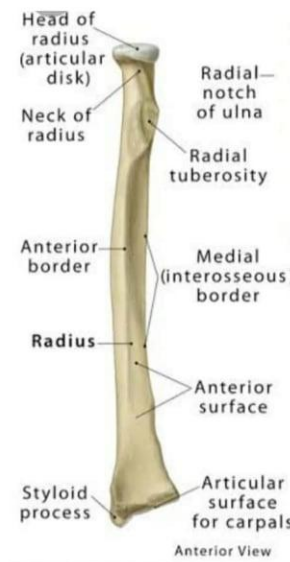
**Humerus:** The humerus, the longest and strongest upper arm bone, has a proximal, shaft, and distal end. The proximal end includes the head, neck, and lower tubercle. The distal end has the capitulum, trochlea, and fossae.



**Ulna:** The ulna, found on the inner side of the forearm, is longer than the radius. Its proximal end includes the olecranon and coronoid processes, while the distal end has a smooth surface for joining with the radius and a styloid process for ligaments.



**Radius:** The radius, a forearm bone, has a proximal, shaft, and distal end. Its upper end has a disc-shaped head that connects with the humerus's capitulum and a narrow neck below it. The distal end widens for articulation with carpal bones.



**Carpal, metacarpal, and phalanges:** The wrist comprises two rows of eight carpals: scaphoid, lunate, triquetrum, and pisiform in the proximal row, and trapezium, trapezoid, capitate, and hamate in the distal row. The palm is formed by five metacarpals, each with a proximal end connecting to carpals, a middle shaft, and a distal end linking to phalanges. Fourteen phalanges make up the fingers and thumb, with each bone called a phalanx.

## PELVIC GIRDLE

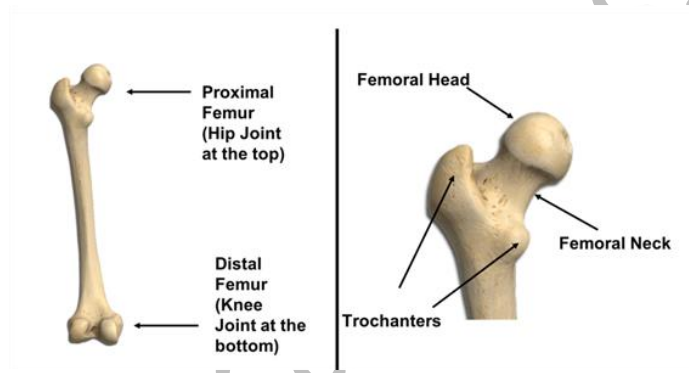
The pelvis comprises two hip bones, each consisting of three separate bones: the ilium, ischium, and pubis. The acetabulum forms the hip joint, a deep depression on the outer surface connecting with the femur's head. The ilium is a flat plate above the acetabulum, featuring the

iliac crest on its upper border and a greater sciatic notch. The ischium is below and behind the acetabulum, while the pubis is in front and below it. The ischium has a lesser sciatic notch, and there's an opening called the obturator foramen.

## BONES OF THE LEGS

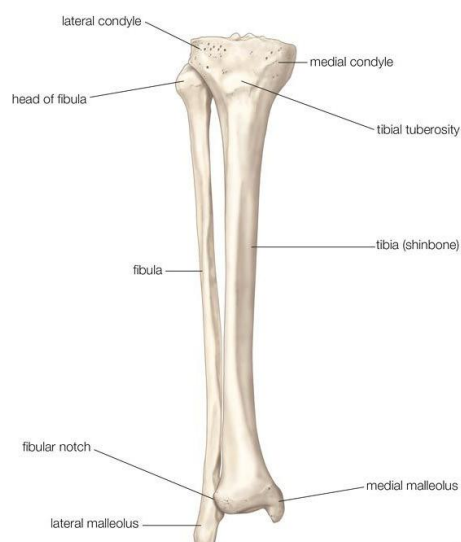
Each leg consists of 30 bones: 1 femur, 1 tibia, 1 fibula, 1 patella (knee cap), 7 tarsal bones, 5 metatarsal bones, 5 digits (14 phalanges).

**Femur:** The femur, the body's longest and strongest bone, has a rounded head at the upper end, a constricted neck, and greater and lesser trochanters. The head connects to the pelvic girdle's acetabulum, and the neck leads to the long shaft with the trochanters. At the lower end are two condyles, lateral and medial, separated by an intercondylar fossa.



**Patella:** It is a flat, sesamoid bone. It is roughly triangular.

**Tibia:** The second longest bone, is thicker and positioned more towards the front and inner side of the leg. It has a broad upper end with two condyles and a flat lower end that forms the ankle joint with the talus bone.



**Fibula:** The fibula is shorter, thinner, and positioned more laterally and deeply. Its head articulates with the lateral condyle of the tibia, and the lower end connects to the lower part of the tibia.



**Tarsal, metatarsal and phalanges:** The foot consists of seven tarsal bones (calcaneum, talus, cuboid, navicular, and three cuneiforms), five metatarsal bones, and 14 phalanges—three in each toe and two in each big toe.