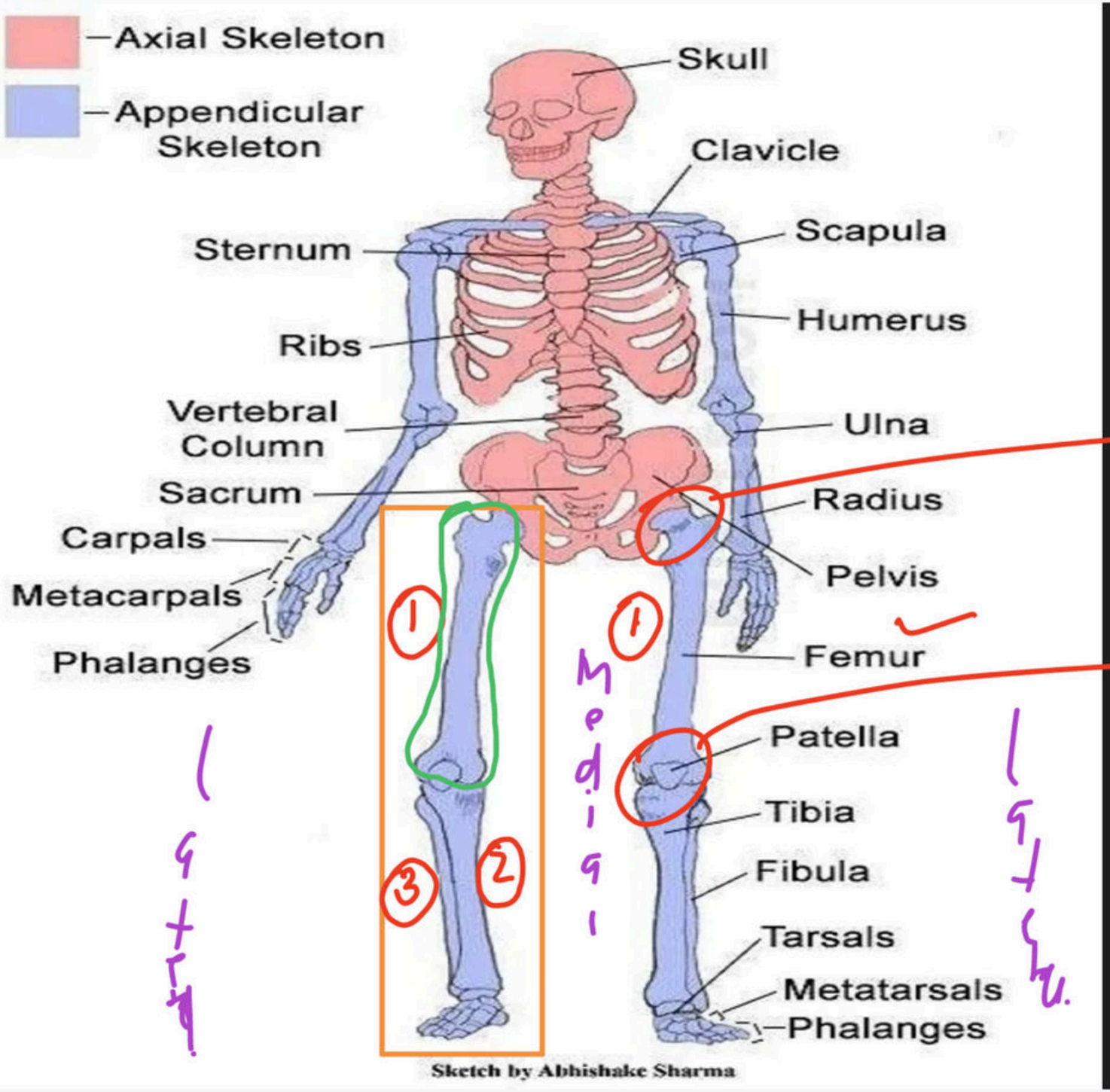
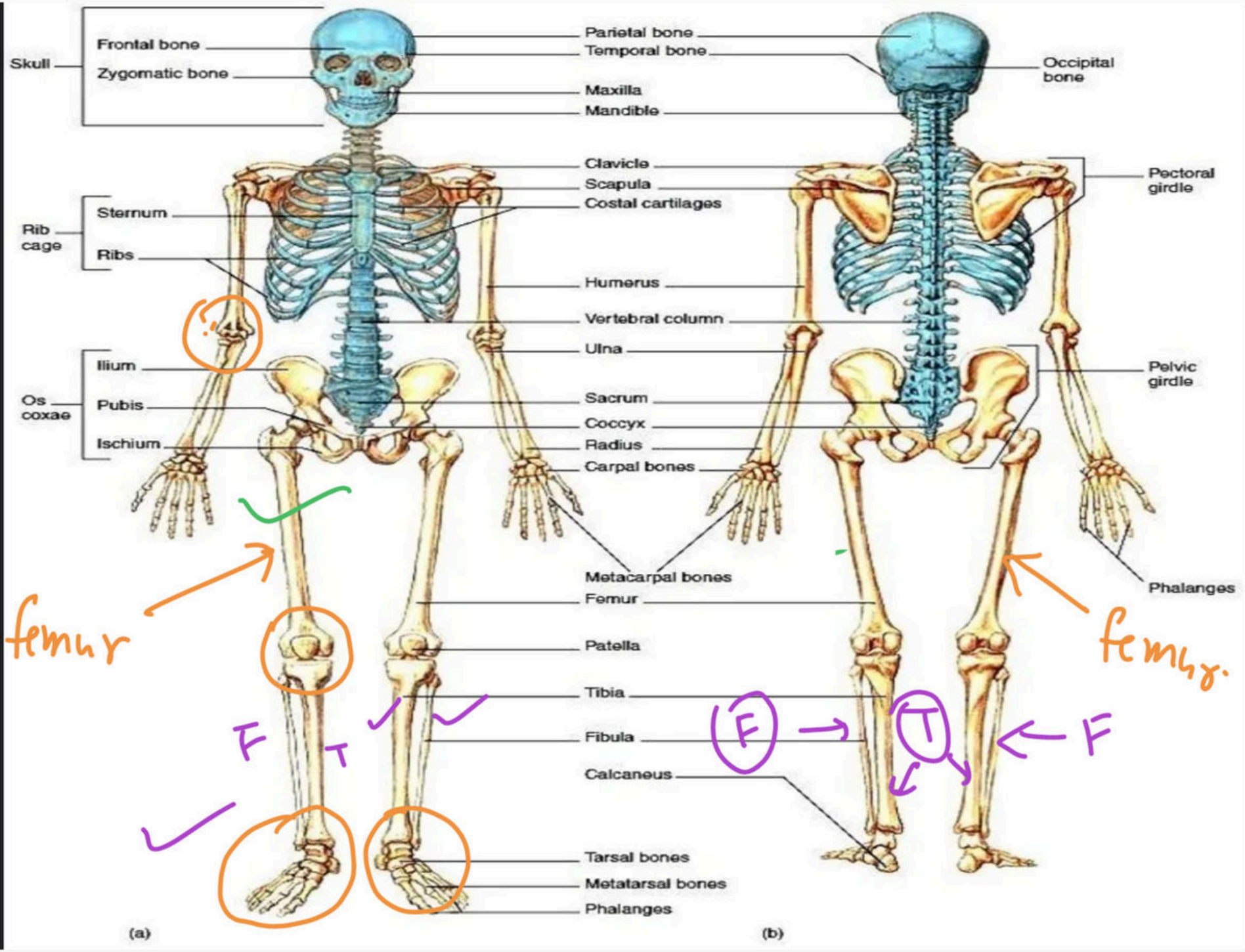
Human Skeleton - II

Course on Human Skeleton

Dr Amit Gupta • Lesson 2 • Sept 20, 2021


Axial Skeleton
Appendicular Skeleton
Skull
Clavicle
Scapula
Sternum
Humerus
Ribs
Vertebral Column
Ulna
Sacrum
Radius
Carpals
Pelvis
Metacarpals
Femur
Phalanges
Patella
Tibia
Fibula
Tarsals
Metatarsals
Phalanges
Hip Joint
Knee Joint
Sketch by Abhishake Sharma


Skull
Frontal bone
Zygomatic bone
Rib cage
Sternum
Ribs
Os coxae
Ilium
Pubis
Ischium
Parietal bone
Temporal bone
Maxilla
Mandible
Clavicle
Scapula
Costal cartilages
Humerus
Vertebral column
Ulna
Sacrum
Coccyx
Radius
Carpal bones
Metacarpal bones
Femur
Patella
Tibia
Fibula
Calcaneus
Tarsal bones
Metatarsal bones
Phalanges
Occipital bone
Pectoral girdle
Pelvic girdle
Phalanges
(a)
(b)

FEMUR

Strongest, heaviest and largest bone

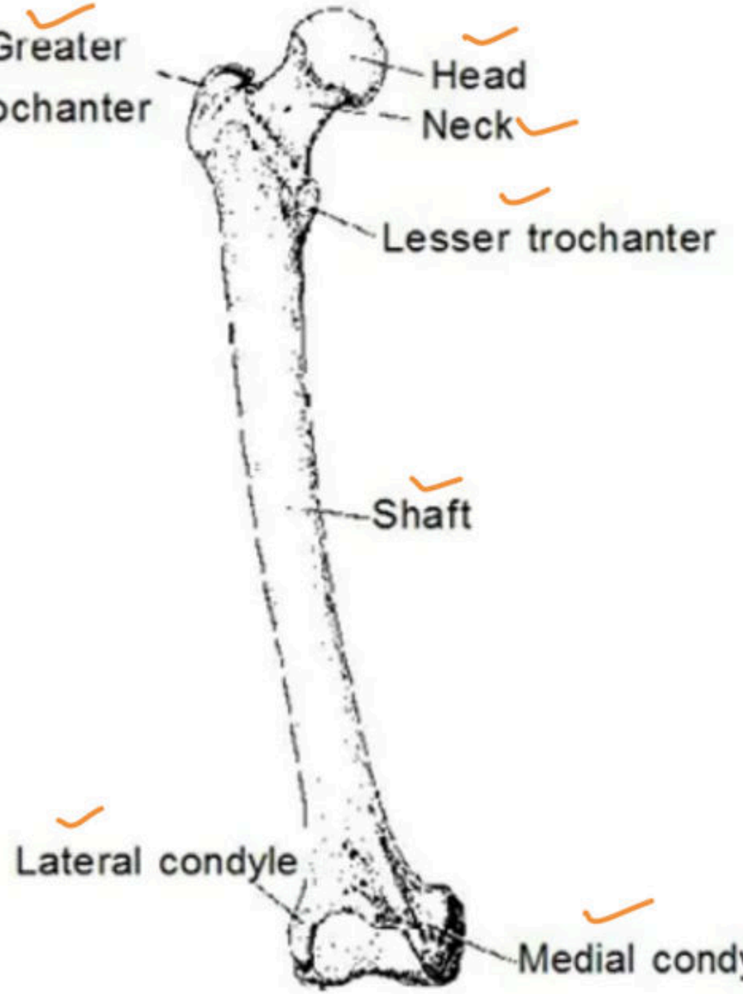
Head :

– Articulates with acetabulum to form the hip joint. (Ball and Socket joint)

Greater and lesser trochanter are rough projections to provide attachment to muscles.

Lower end : It widely expanded to form two large condyles, one medial & one lateral.

Patella bone : Small, triangular, sesamoid bone. It is knee bone and located in the pateller groove of femur bone upon knee joint.

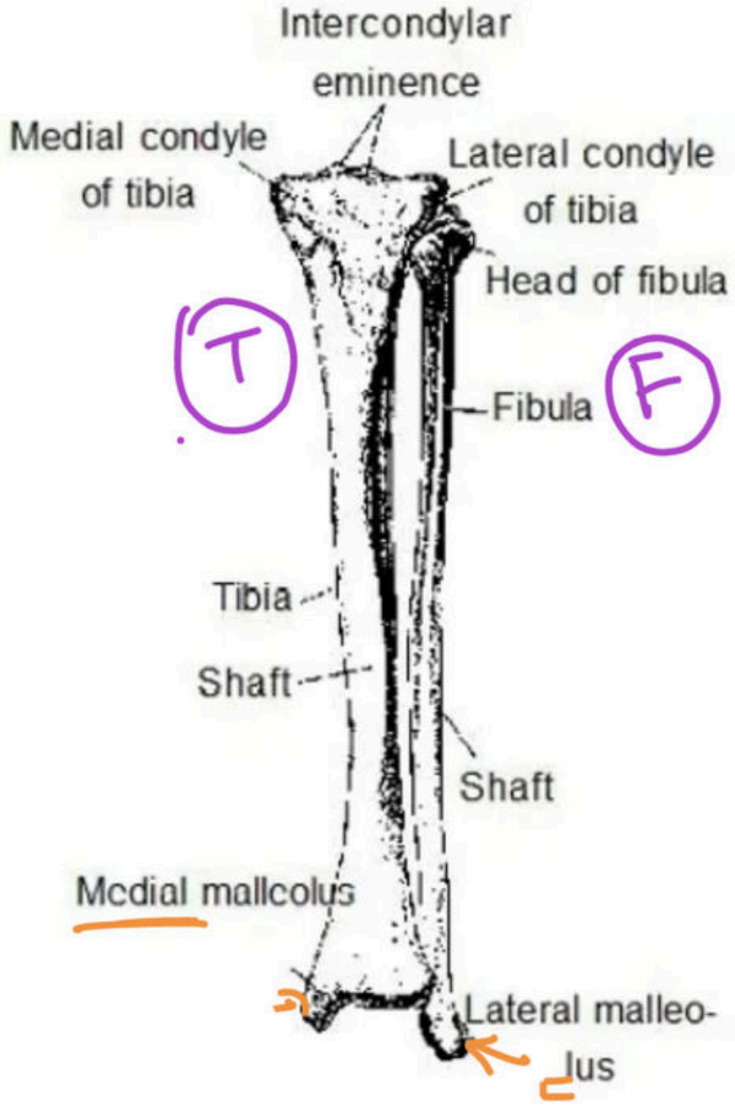


Right femur from anterior aspect

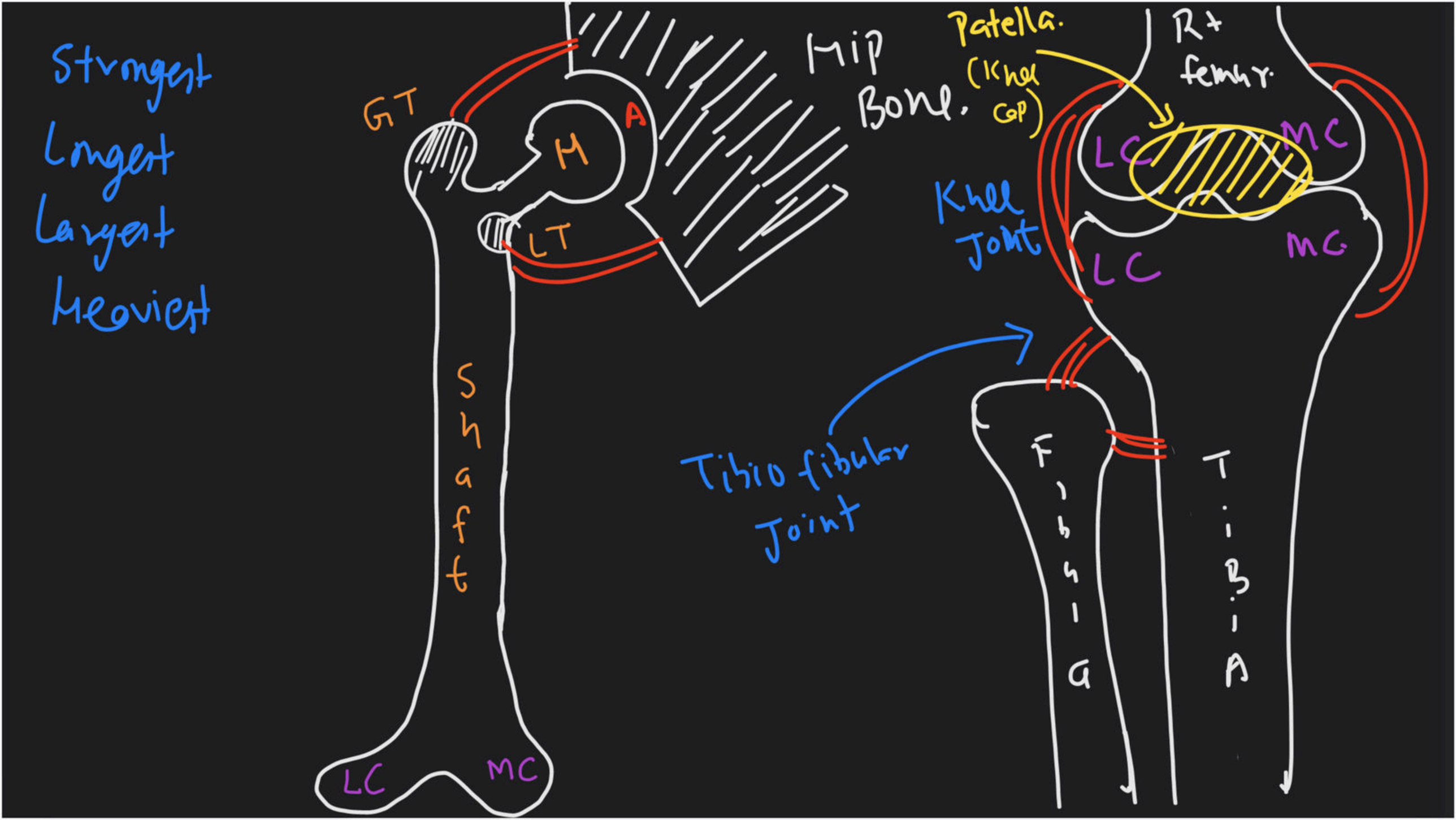
TIBIA

Medial & larger bone of the leg.

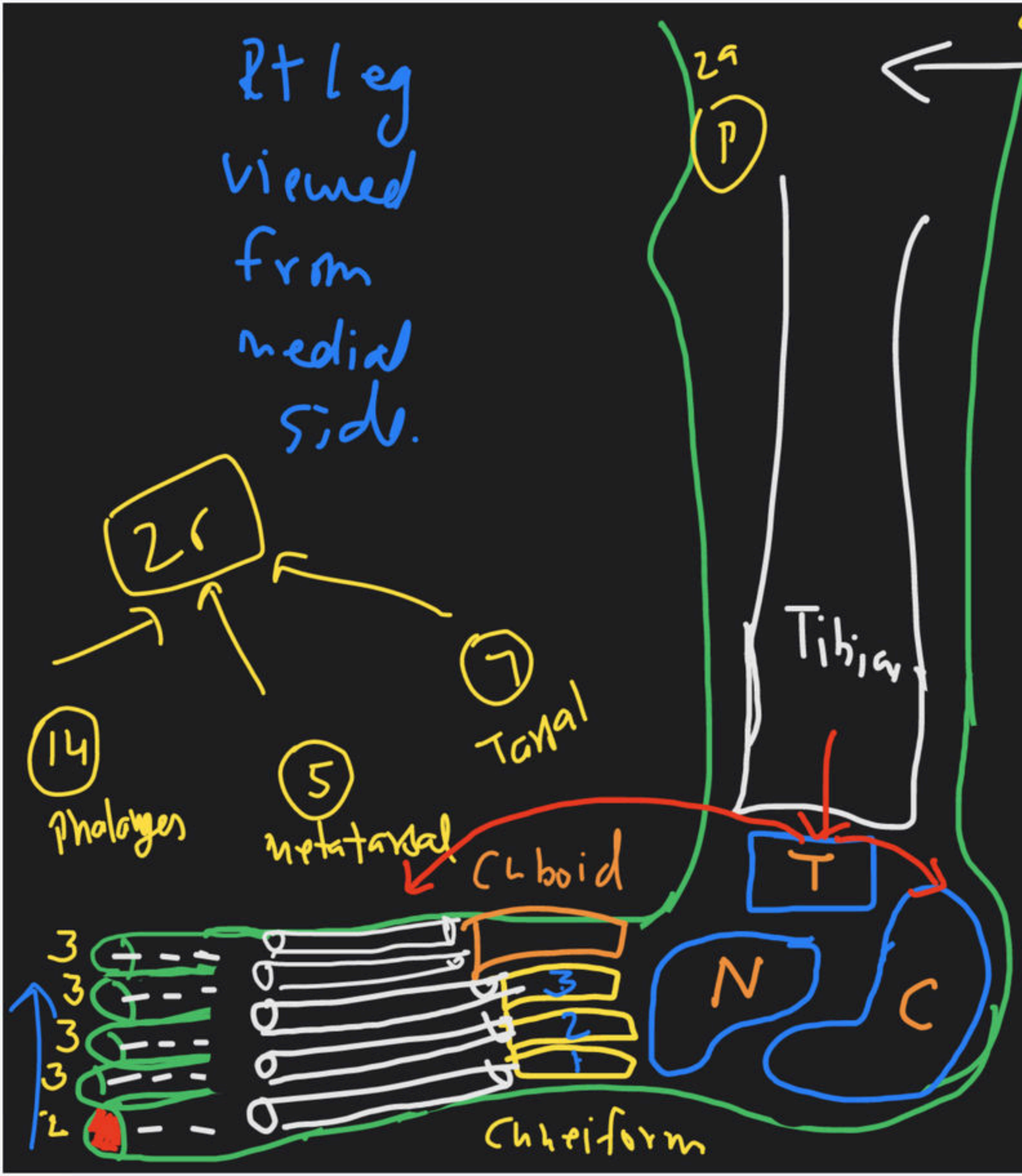
Upper end : Expanded from side to side to form two large condyles. Which articulates with femur bone.



Left tibia and fibula (anterior aspect)


Strongest
Longest
Largest
Heaviest
Hip Bone.
GT
A
H
LT
Shaft
LC
MC
Patella.
(Knee cap)
Rt femur.
LC
MC
Knee Joint
LC
MC
Tibio fibular Joint
Fibula
Tibia

Rt leg viewed from medial side.



30

27, 28
T F

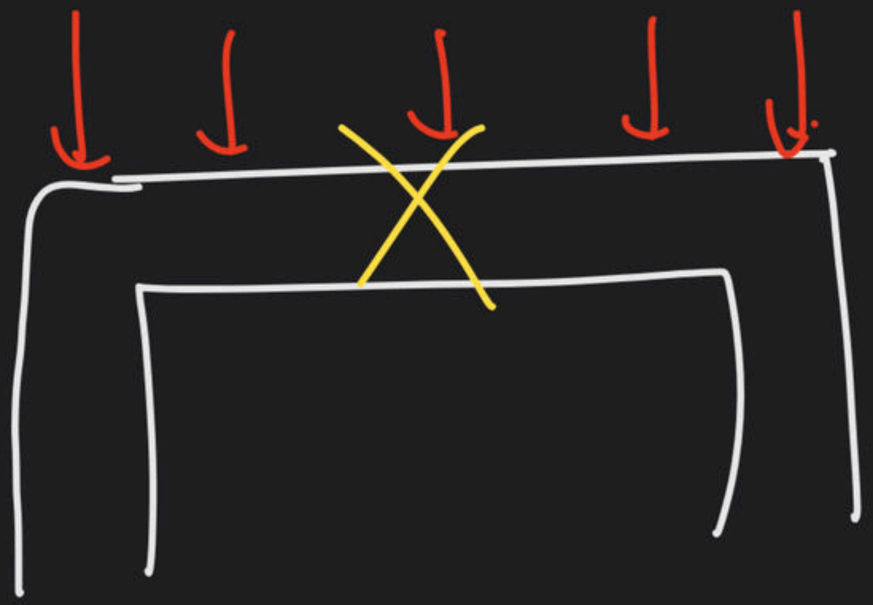
Arches below the foot

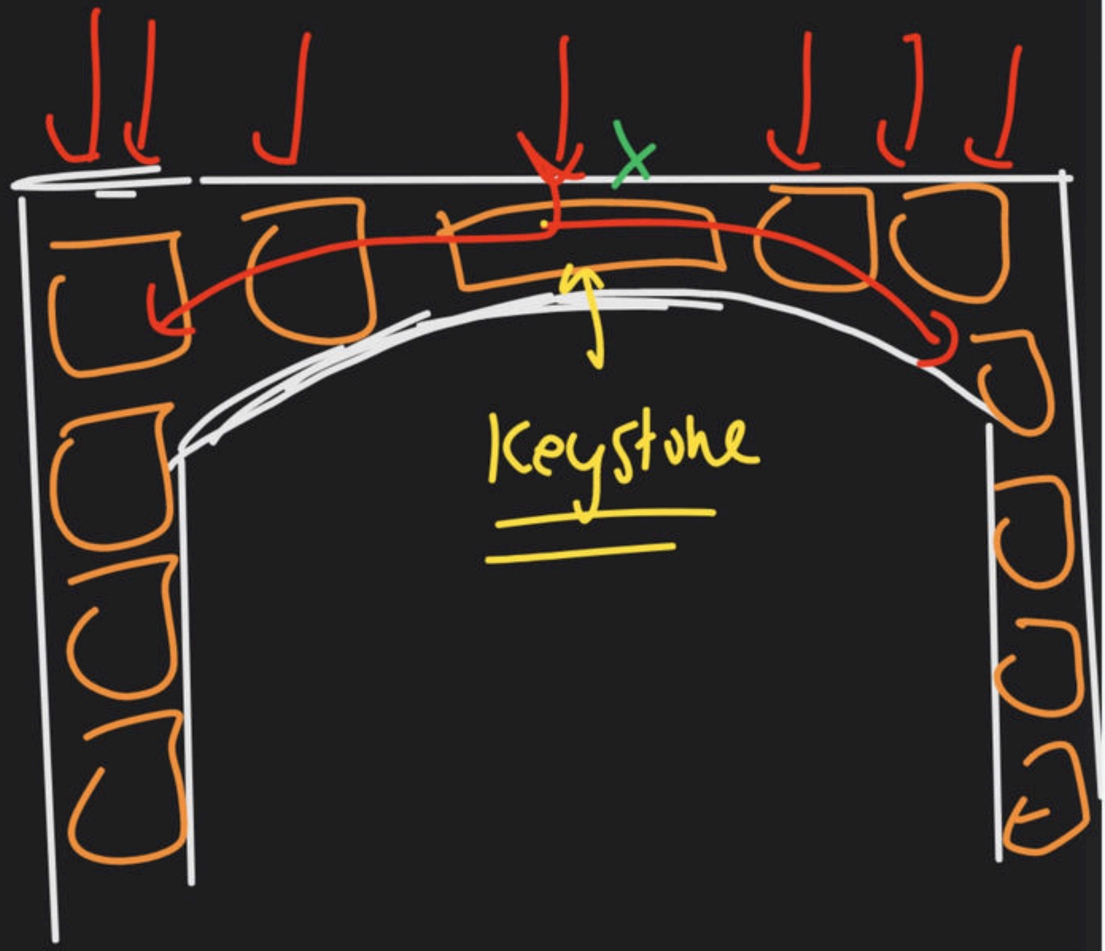
Pressure ∝ 1/area.

Human
Kangaroo
Aves.

Sprain
⇓
tear in Ligament

Equal Distribution.





TARSALS

Ankle is made of seven tarsal bones arranged in two rows.

Proximal row : Talus above, Navicular in between and Calcaneum below.

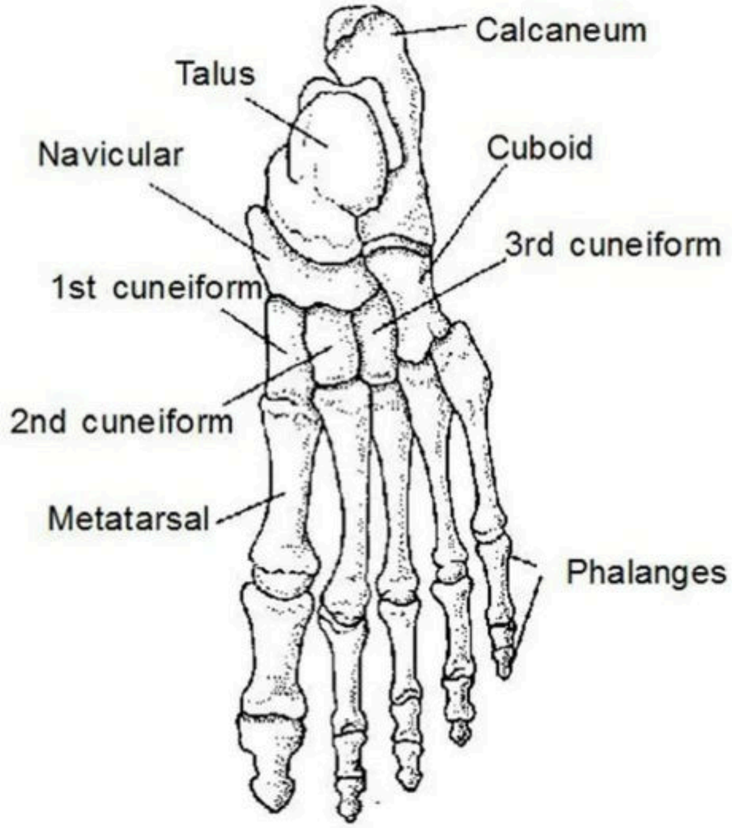
Tarsal bones are much larger & stronger than carpal bones because they have to support & distribute body weight.

Talus is second largest tarsal bone, lies between tibia above & calcaneum below.

Calcaneum : Largest tarsal bone, forms the prominence of heal.

Communicate body weight towards posterior during standing condition.

Distal row :- Four tarsal bones lying side by side (three cuneiform and one cuboid)



Bones of left foot (Upper aspect)

Meta tarsuls

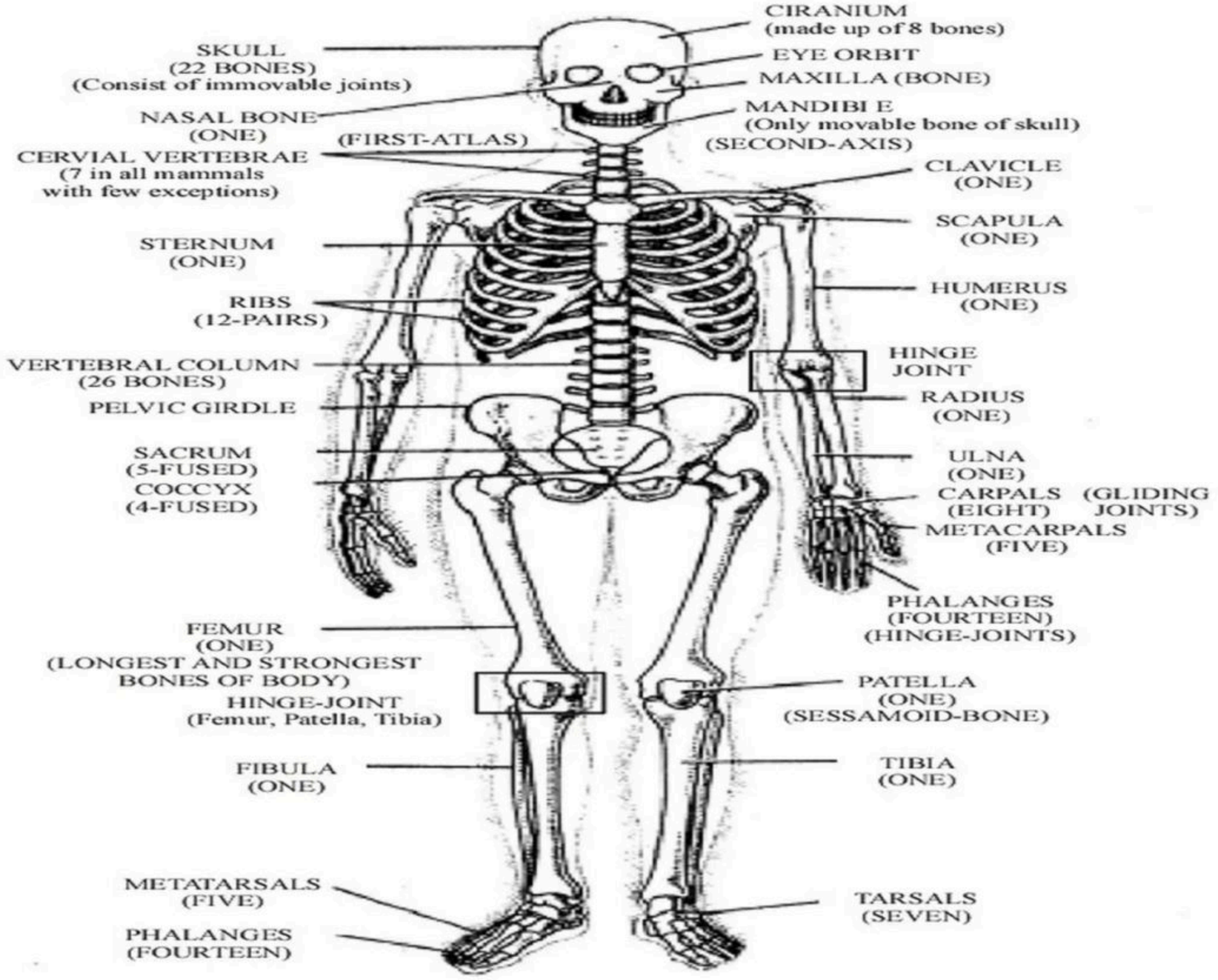
Made of 5 meta tarsal bones which are **numbered medial to lateral.**

Phalanges

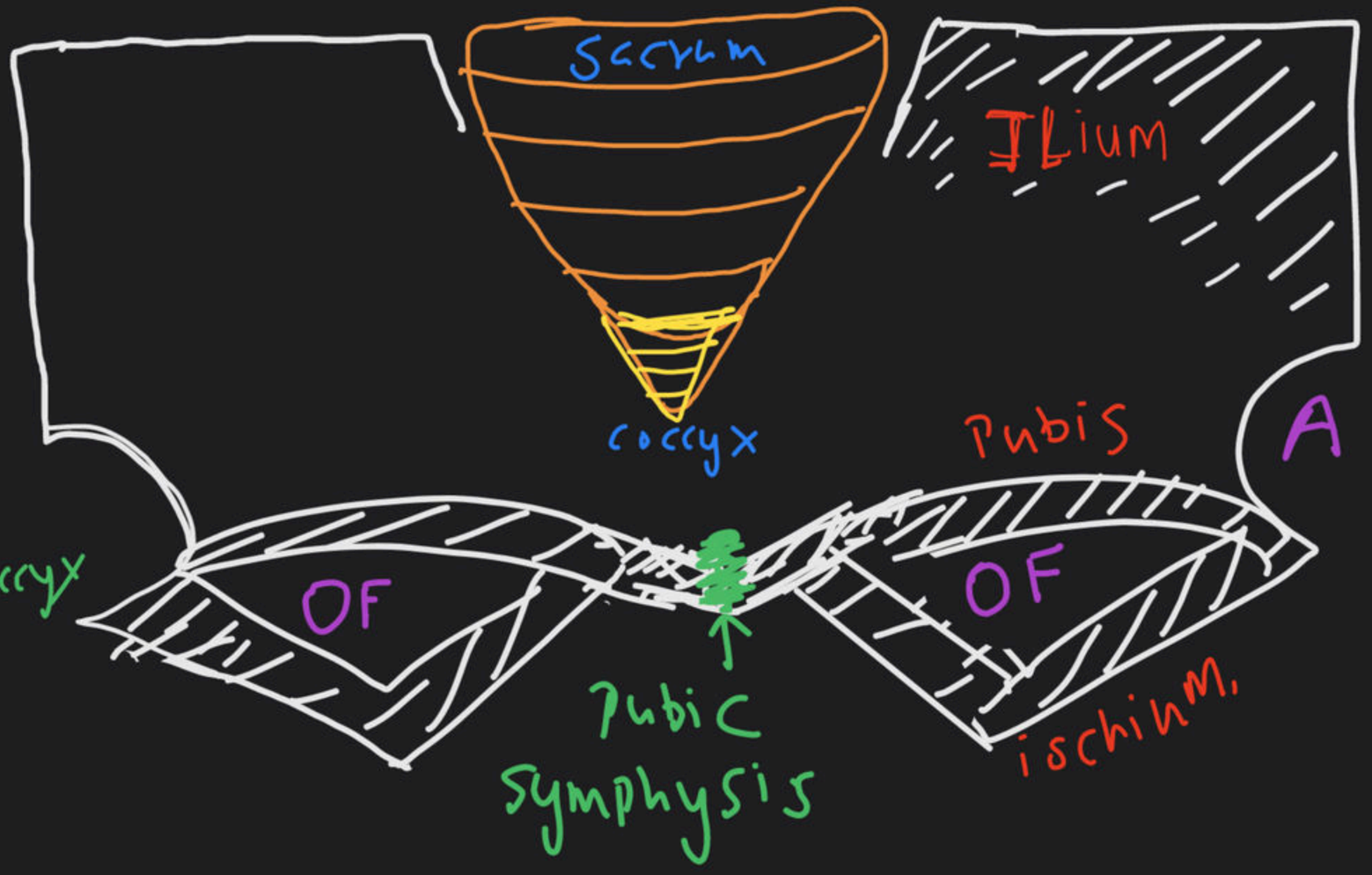
14 Phalanges, 2 for great toe & 3 each for other four **toes**.

As compared to Phalanges of hand these are small in size.

Digital formula = 23333



Endoskeleton Framework of Man



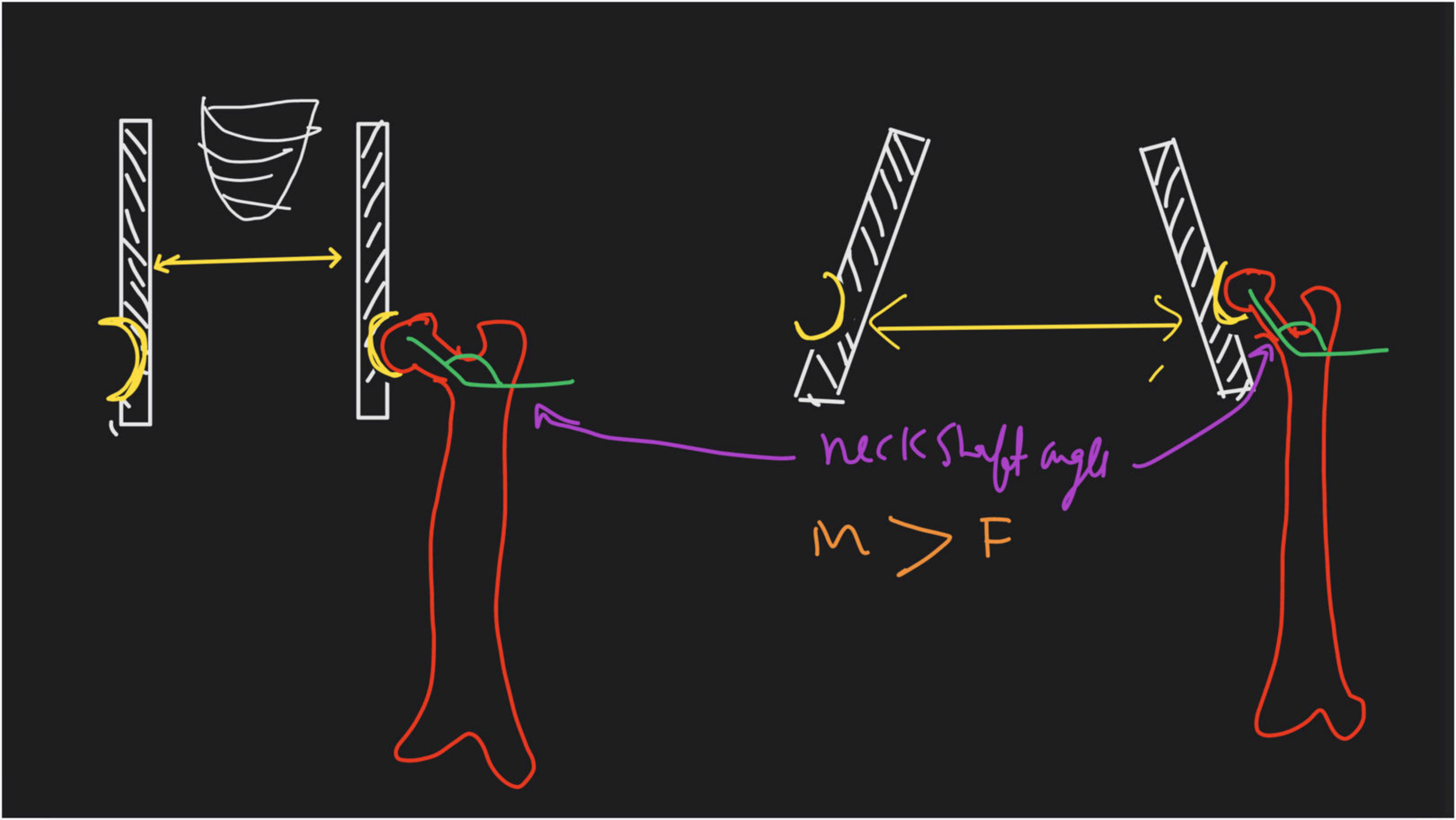
Each Pelvic girdle ⇊ (1) Hipbone.

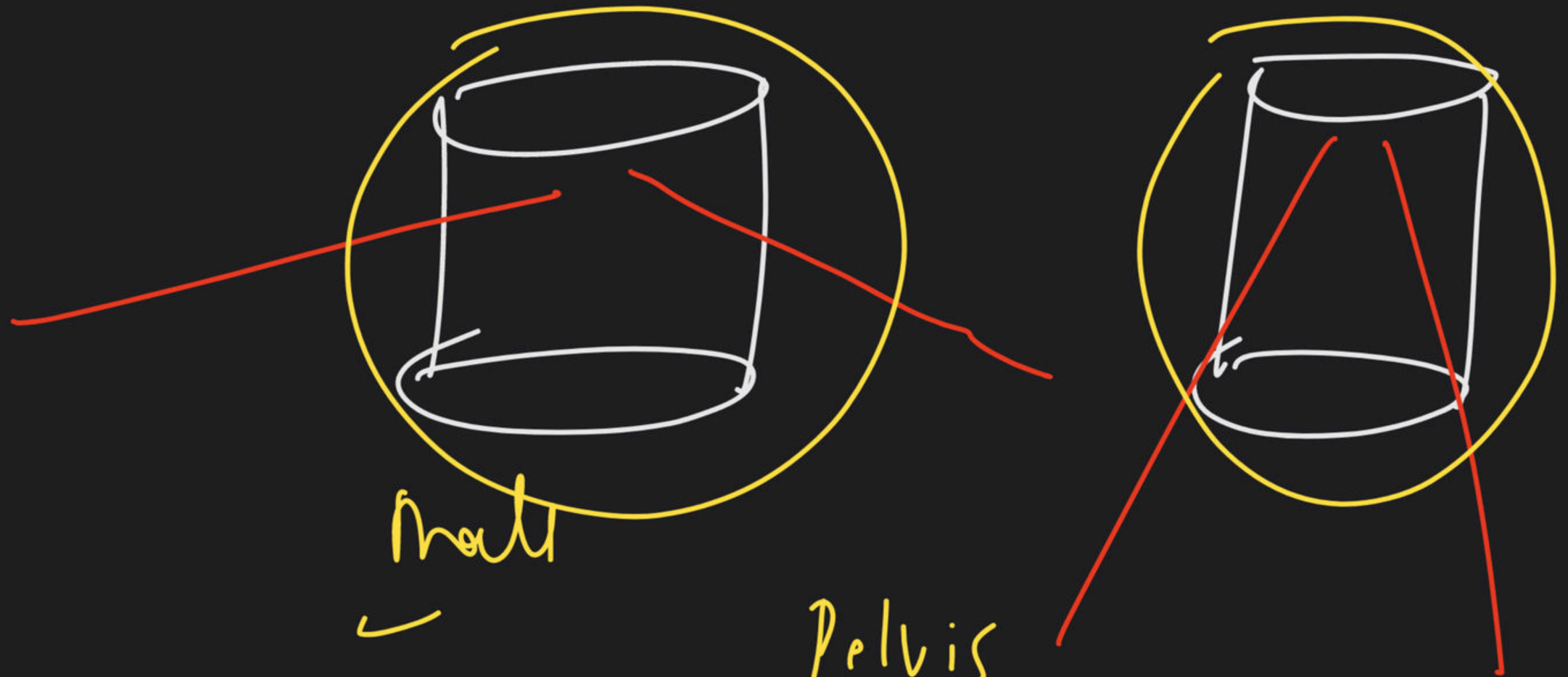
Pelvis = (2 Hip bone, Sacrum, Coccyx)

Hip Bone = innominate / coxal bone

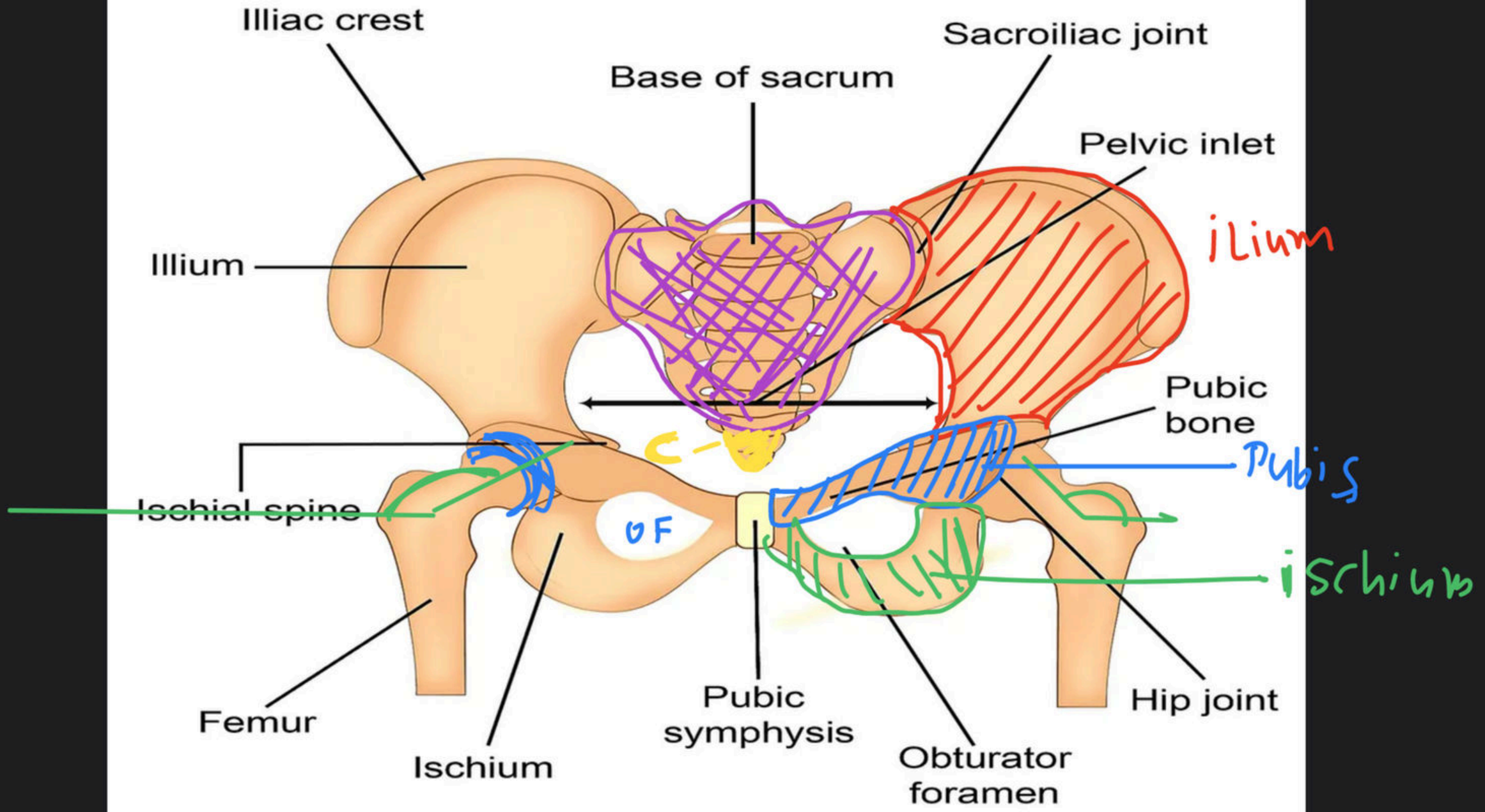
obturator foramen = only mammals

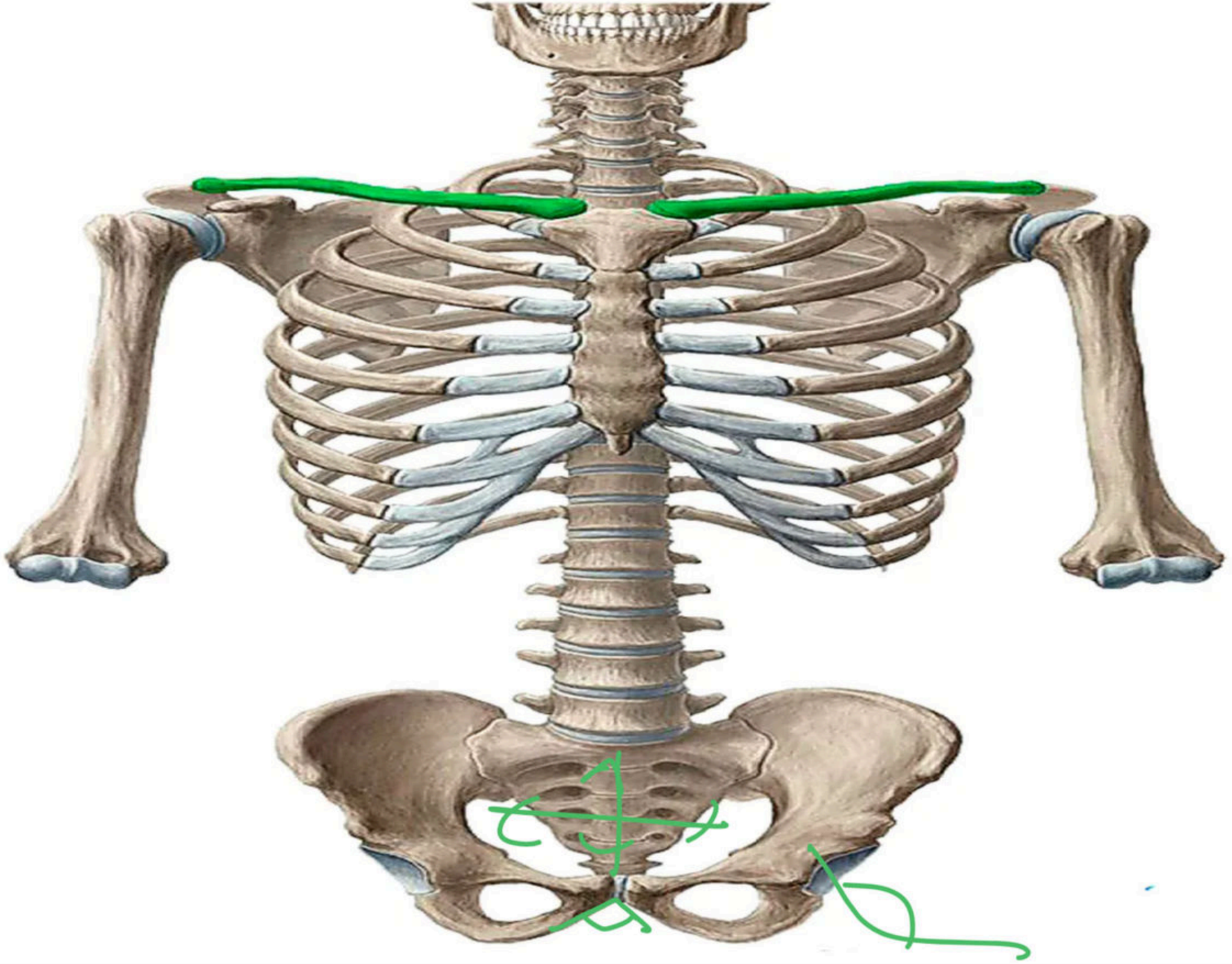
internal Diameter of Pelvis F > M.


neck shaft angle
M > F

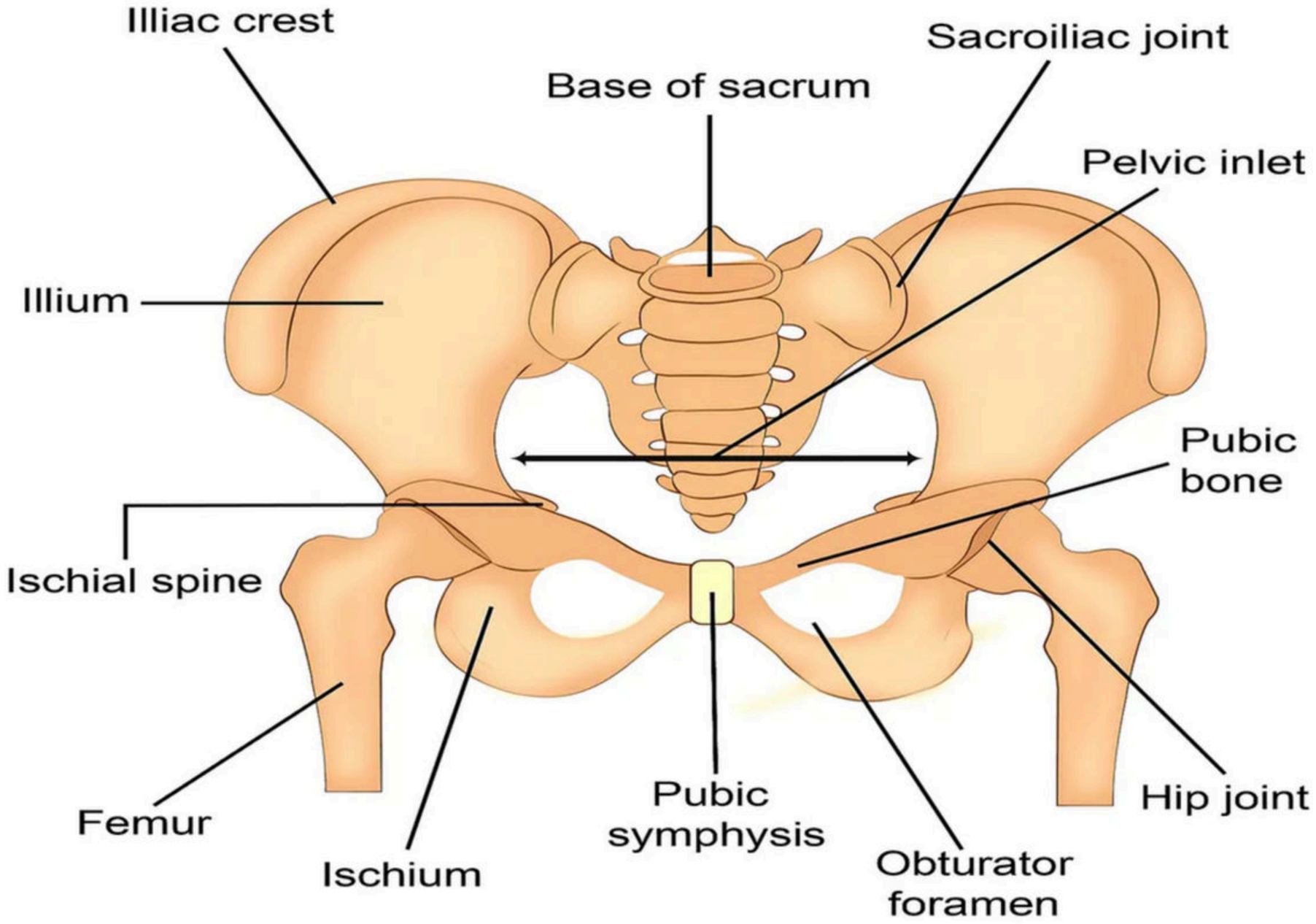

Mouth
Pelvis

Pelvic Girdle

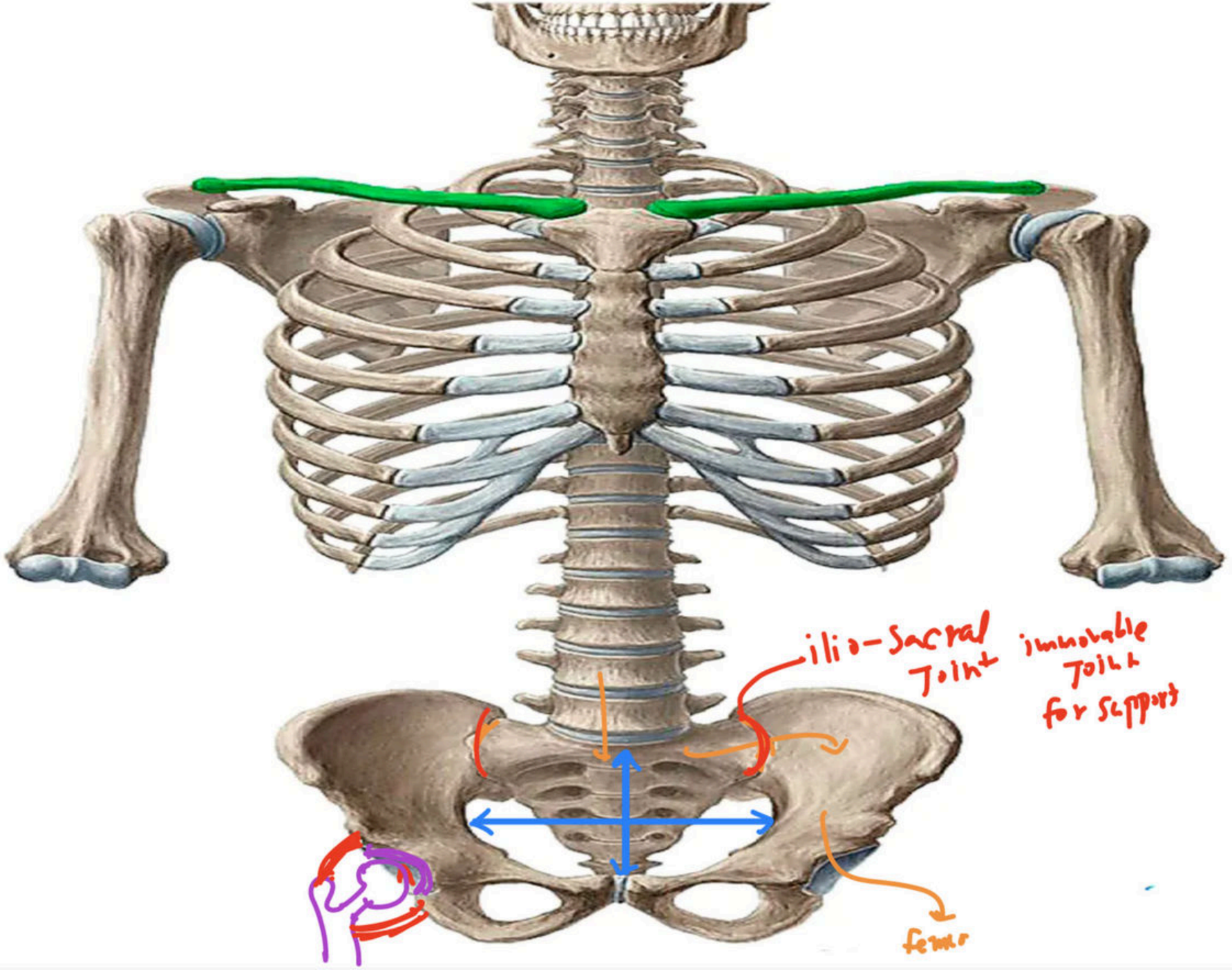




Pelvic Girdle



SMJAG



BONES OF HIND LIMB

Total number of bones in each hind limb : 30

Thigh bone : Femur – 1

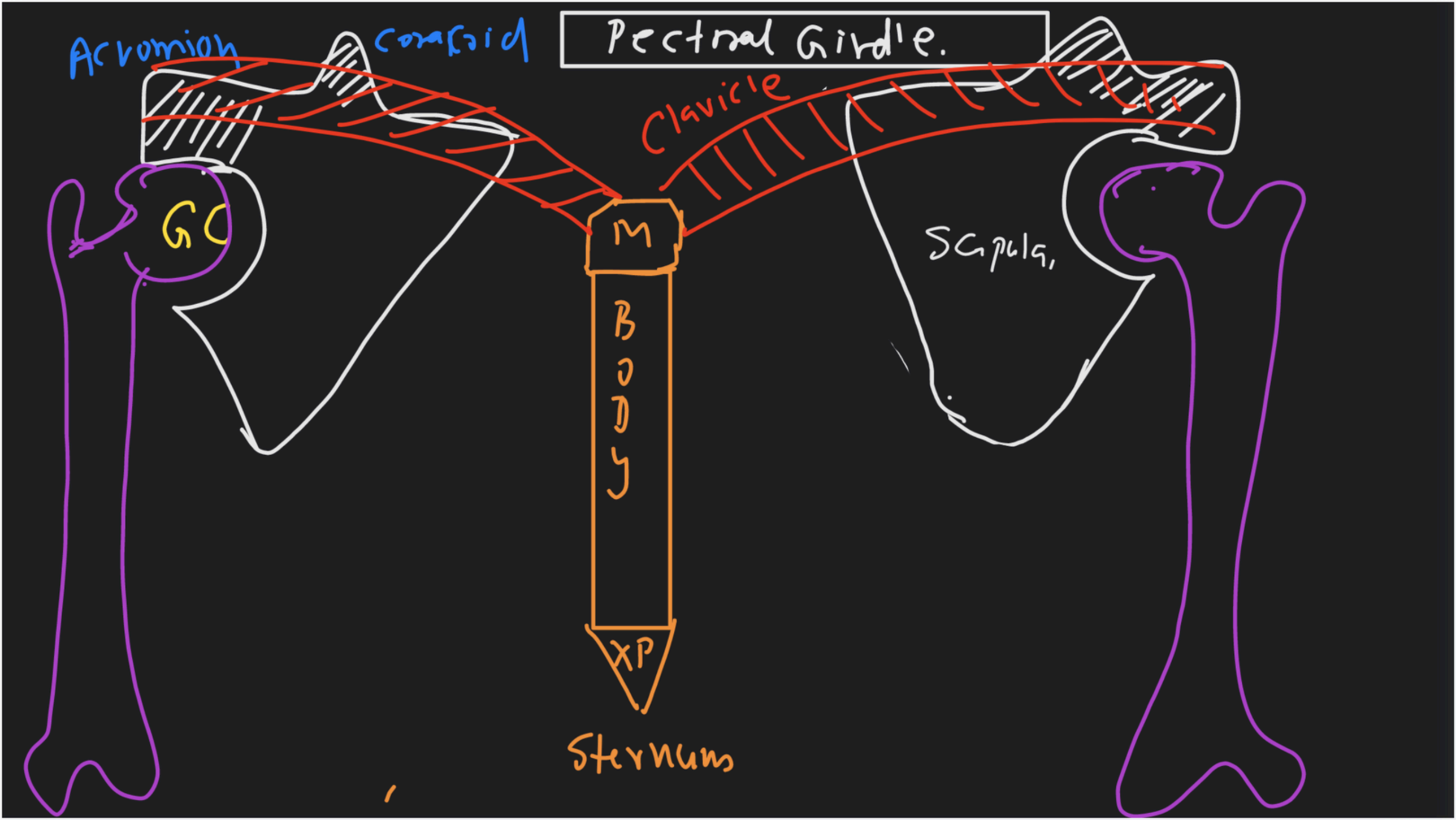
Knee bone : Patella – 1

Shank region – Tibia and tibula – 2

Ankle region Tarsals – 7

Sole : Melatarsals – 5

Toes : Phalanges – 14


Pectral Girdle.
Acromion
Coracoid
Clavicle
GC
M
BODY
XP
Scapula
Sternum

PECTORAL GIRDLE

Pectoral girdle : Each pectoral girdle consists of two bones i.e.

Scapula + Clavicle

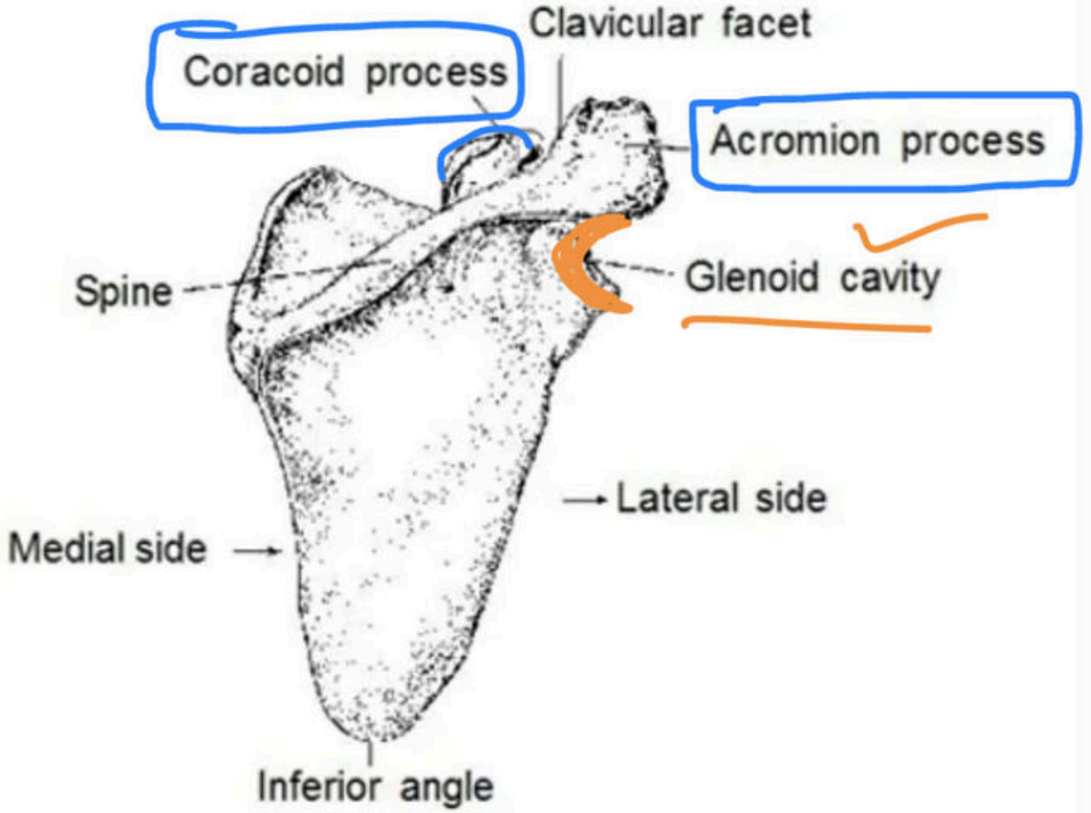
Scapula has 3 process which provide attachment to muscles

– Spinous process

– Acromion process

– Coracoid process

It also has a glenoid cavity to accomodate head of Humerus.



Right scapula from dorsal aspect

- **Clavicle (Collar Bone) :** is a weak, thin, cylindrical bone.

Medial End :

Articulates with the manubrium.

Lateral End :

articulates with acromion process of scapula.

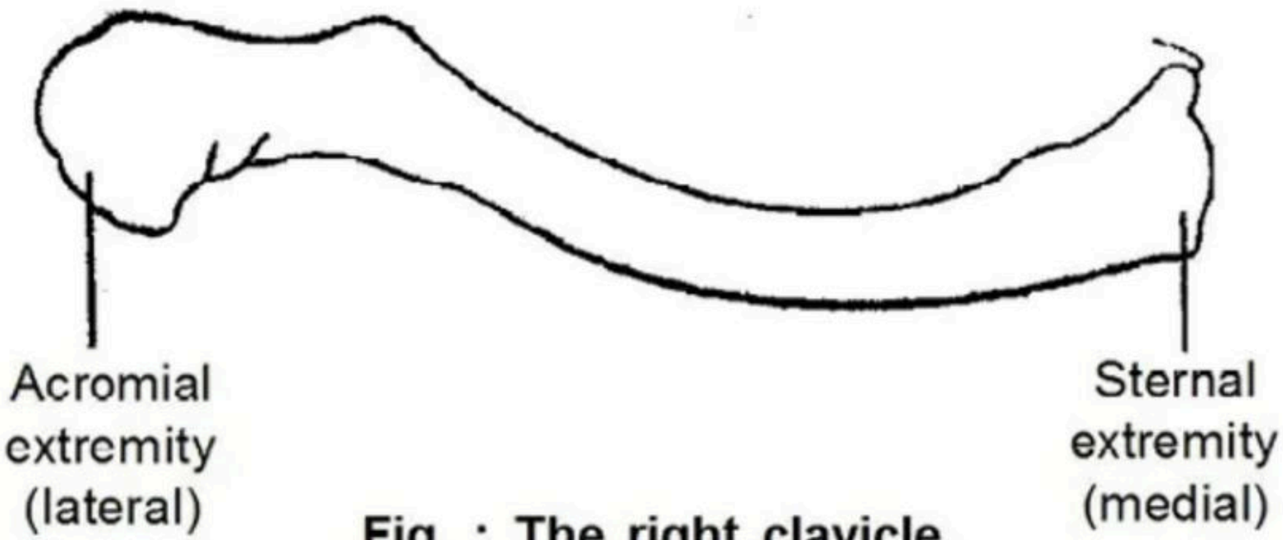


Fig. : The right clavicle

STERNUM

It is 15 cm long flat bone. It is divided into three segments – Manubrium, body and xiphoid process.

Upper part Manubrium :

Quadrilateral shaped. Its lateral border joints with first rib pair.

In its clavicular notch, medial end of clavicle bone articulates.

Body (Middle part)

Its lateral border. forms joint with 2nd rib to 7th rib

Lower part Xiphoid process : Smallest part, lower half of 7th rib articulates here.

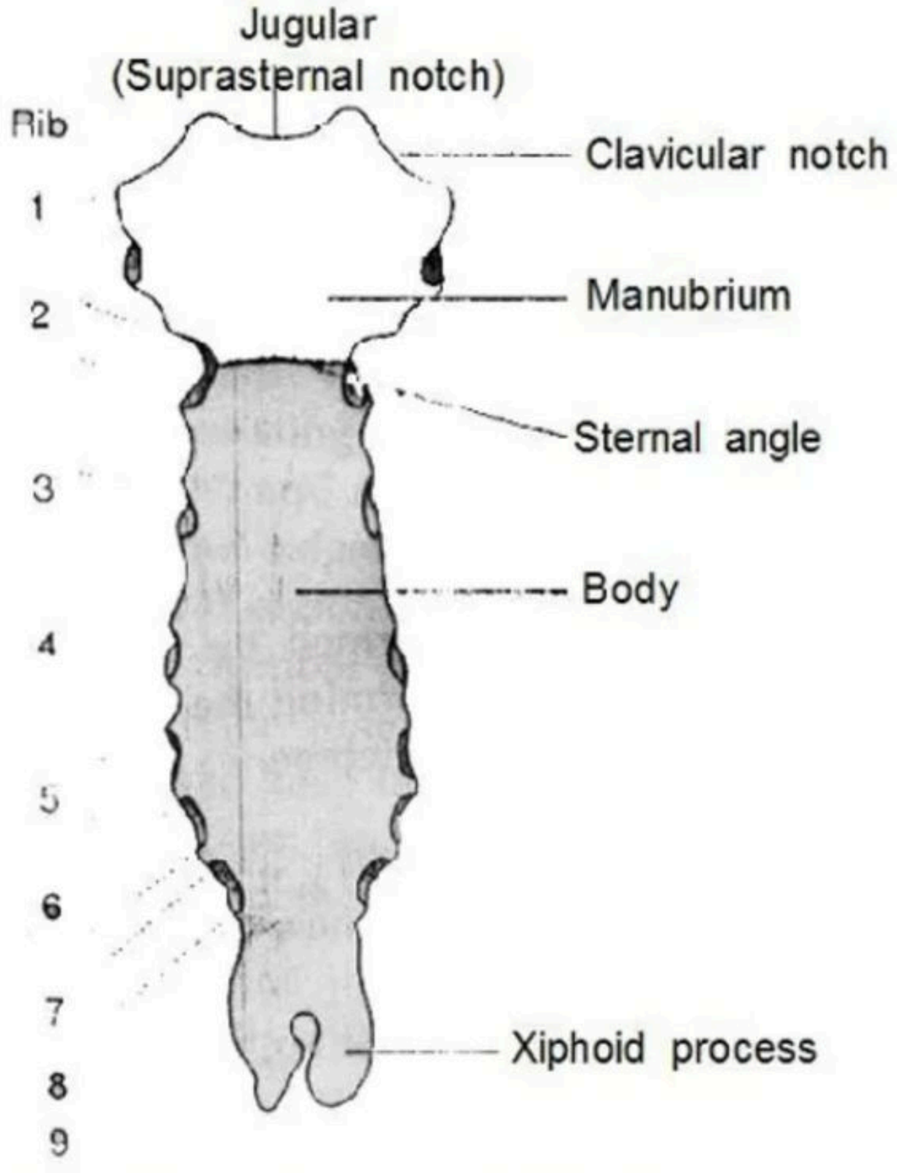
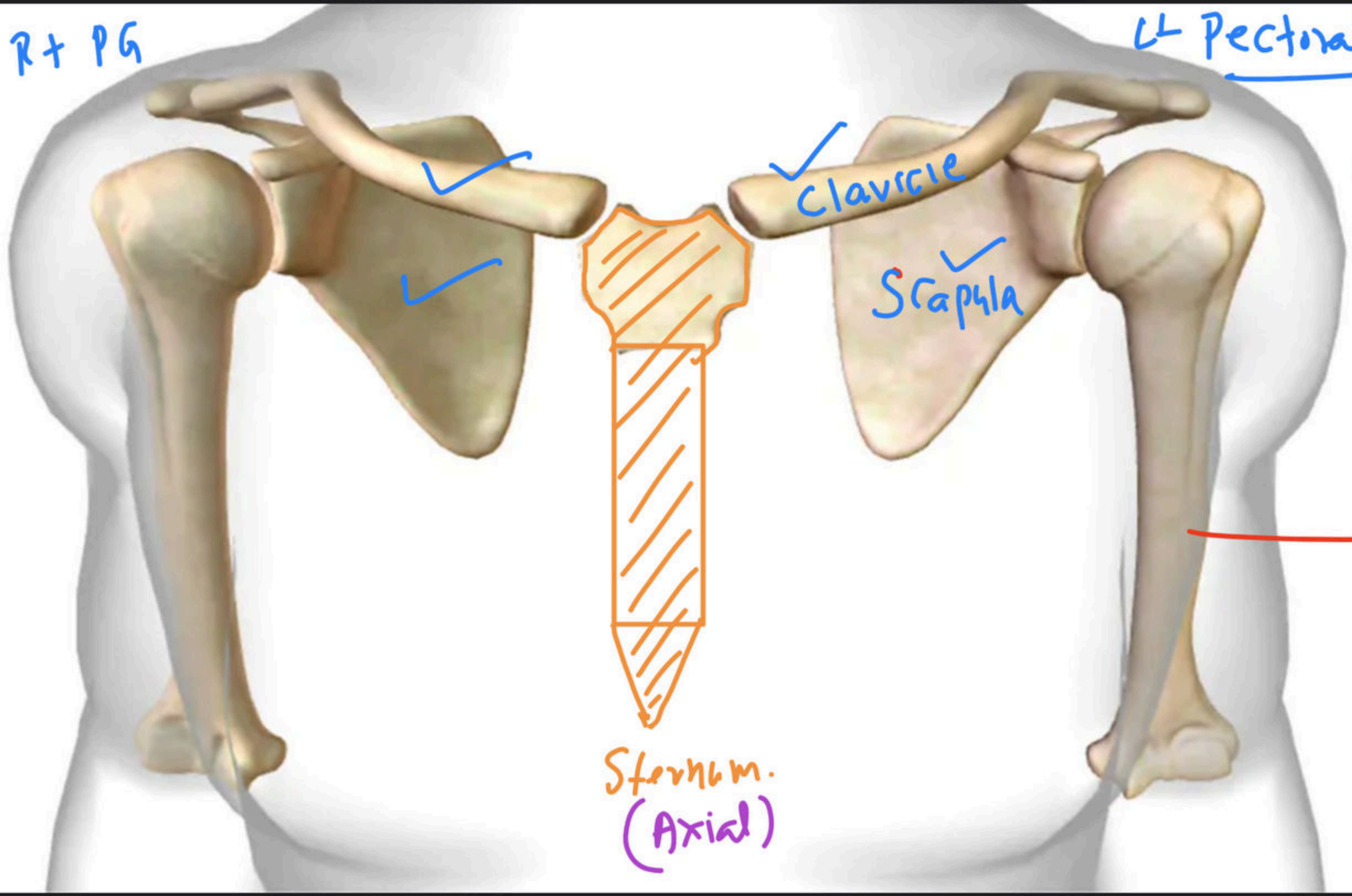


Fig. : The sternum and its attachments

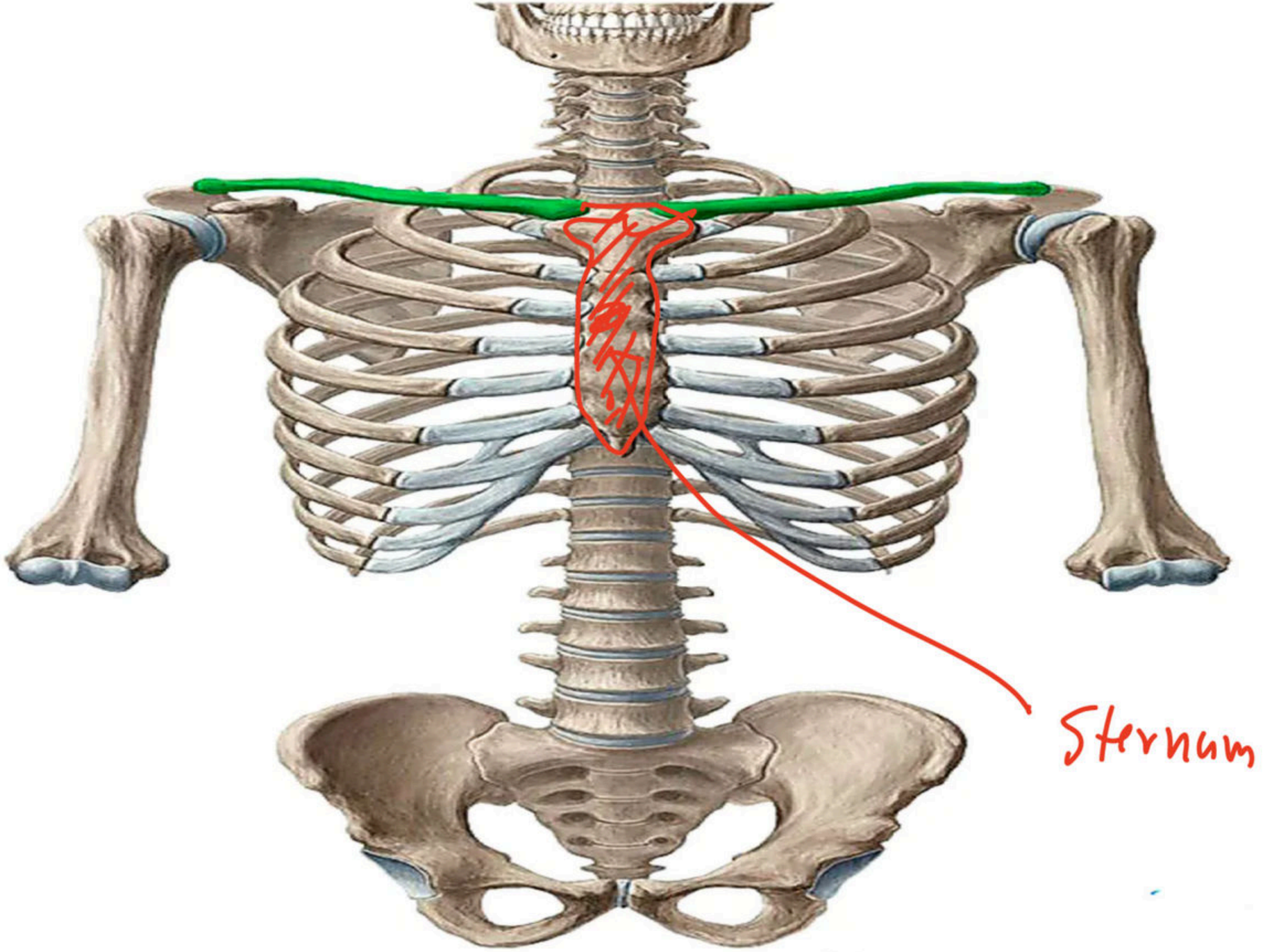


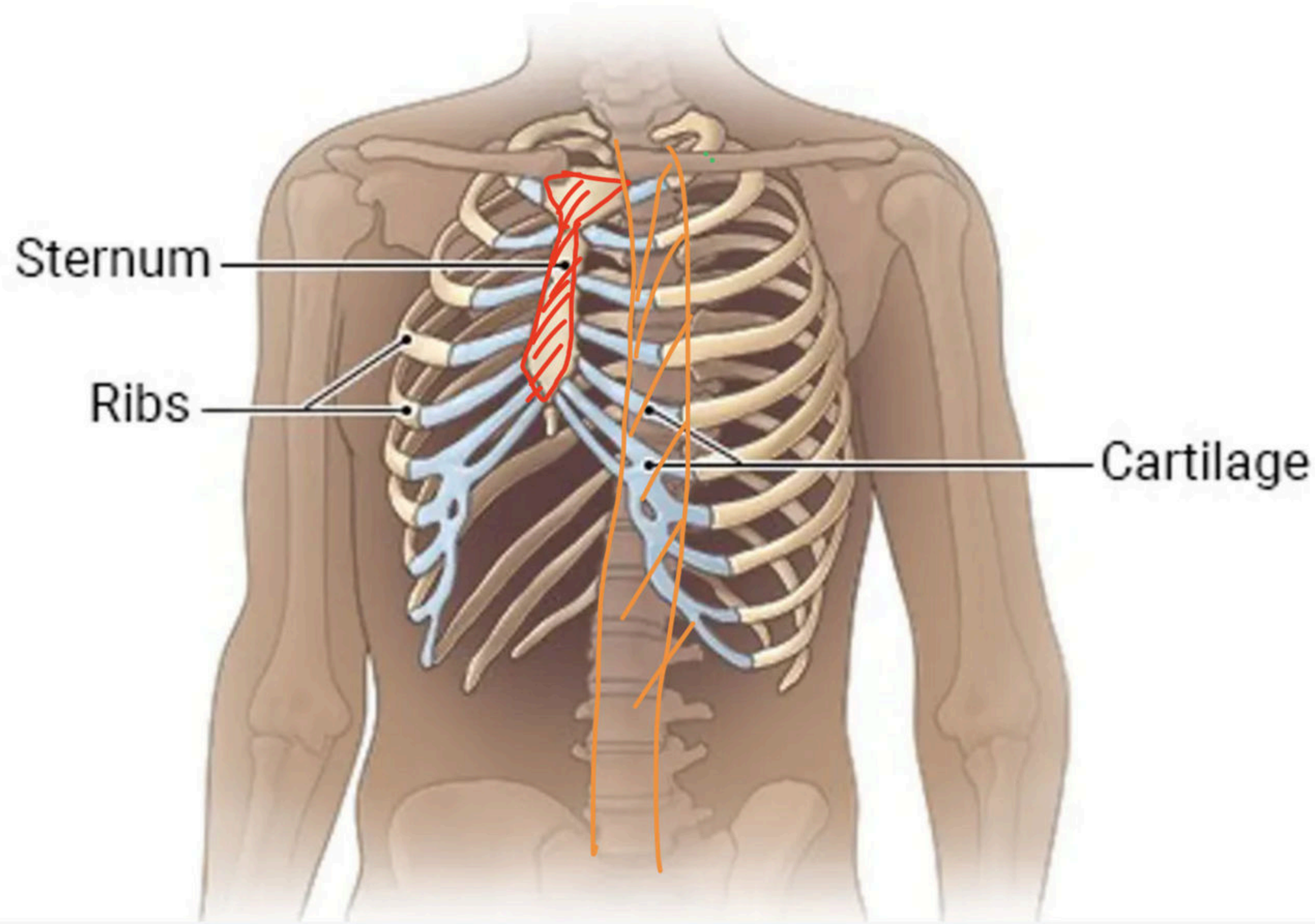
LL Pectoral Girdle

↓

Clavicle + Scapula.

Humerus (Appendicular)


Sternum


Sternum
Ribs
Cartilage