APPENDICULAR SKELETON

I. Pectoral (Shoulder) Girdle

-two bones; anterior clavicle and posterior scapula

-function: to attach the upper limb to the axial skeleton and provide a point of attachment for the muscles that move the upper limb

Note: Only the clavicle attaches to the axial skeleton ; the shoulder joint socket is shallow to allow unrestricted movement of the humerus --good for mobility, but poor stability.

A. CLAVICLE

-slender, double curved, long-bone

-articulates medially with the manubrium and laterally with the acromion process of the scapula

-functions: attachment point for muscles of upper body; holds the scapula and upper limb laterally away from the thorax

B. SCAPULA(E) (Shoulder blades)

-thin triangular flat bone

-three borders are the superior border, medial border, and lateral (axillary) boarder

-three angles are the superior angle, lateral angle, and the inferior angle

-the spine is a sharp projection on the posterior surface; it ends laterally at the acromium which helps form the acromioclavicular joint

-coracoid process projects anteriorly from the superior border

-supraspinous and infraspinous fossa are shallow depressions found above and below the spine.

II. Upper Limb

A. ARM (between the shoulder and the elbow)

-humerus is the sole bone of the arm; typical long bone; articulates with the scapula proximally and the radius/ulna distally.

-features: head (articulates with the glenoid cavity); greater and lesser tubercle (muscle attachment points) separated by the intertubercular groove; deltoid tuberosity (midway down the shaft on the lateral side); radial grove (posterior aspect of the shaft, passage of radial nerve); trochlea (medial, pulley-shaped condyle on the distal end, articulated with ulna); capitulum (lateral, ball shaped condyle on distal end, articulates with the radius); medial and lateral epicondyles; coronoid fossa (superior to the trochlea on anterior surface); olecranon fossa (superior to trochlea on posterior side); radial fossa (lateral to coronoid fossa, receives head of the radius when the elbow is flexed)

B. FOREARM: (Ulan and Radius)

-radioulnar joints: proximal and distal areas where the radius and ulna articulate

-in the anatomical position, the radius lies laterally and the ulna medially

Ulna

-longer than the radius; main responsibility is to form the elbow joint with the humerus

-proximal end: olecranon process, coronoid process and trochlear notch

-note: laterally on the coronoid process is the radial notch

-distal end: ulnar shaft narrows as it runs distally; medial to the head is the styloid process

Radius

-thin proximally and wide distally

-features: the head (articulates with the humerus at the radial notch); radial tuberosity (rough projection that anchors the biceps brachii); ulnar notch (site of articulation with ulna)

C. HAND (carpus = bones of wrist; metacarpus = bones of hand; phalanges = bones of fingers)

Carpus: consists of eight carpal bones which slide past one another during movement

Metacarpus: composed of five long bones numbered 1-5 from thumb to little finger

Phalanges: 14 total; each finger has three except the thumb which only has two

III. Pelvic Girdle (attaches the lower limbs to the body; supports visceral organs of the pelvis)

-formed by a pair of coxal bones, each called on ox coxae (hip bone)

-each coxal bone consists of three separate bones -- the ilium, ischium and pubis (these bones are firmly fused together as adults)

-at the point of fusion of the ilium, ischium, and pubis is a deep hemispherical socket called the acetabulum which articulates the femur to the hip joint

A. ILIUM

-consists of body and a winglike portion the ala

-iliac crests are the superior margins of the ala; iliac crests terminate anterosuperiorly in blunt anterior superior iliac spine, and posterosuperiorly in the sharp posterior superior iliac spine; below these are the far less prominent anterior inferior iliac spine and the posterior inferior iliac spine.

-inferior to the posterior inferior iliac spine the ilium indents to form the greater sciatic notch (allows for the passage of the sciatic nerve to the thigh)

-the medial surface of the ilium is concave = iliac fossa

B. ISCHIUM (posteroinferior part of the ox coxae, "L-shaped")

-features: the ischial spine (projects medially into the pelvic cavity); lesser sciatic notch; ischial tuberosity (inferior to the ischial spine); and the ischial ramus

C. PUBIS: --anterior portion of the ox coxae

-"v-shaped" with superior and inferior rami issuing from flat medial body

-the body lies medially, and the anterior border forms the pubic crest

-the bodies of the pubic bones are joined by fibrocartilage at the midline = pubic symphysis joint

-the area where the two rami of the pubis run laterally to meet the body of the pubis and the ramus of the ischium define a large opening called the obturator foramen

IV. Lower Limb

-carries the entire weight of the body when standing

A. THIGH

-single bone is called the femur (the largest, strongest bone in the body)

-proximal features: head (ball-like on the proximal end); fovea capitis (a hole found in the head where ligament attaches the head to the acetabulum); neck (carries head, weakest part of the femur); greater and lesser trochanter connected by the intertrochanteric line (anteriorly) and the intertrochanteric crest (posteriorly); gluteal tuberosity (inferior to the intertrochanteric crest); linea aspera (long line that extends from the gluteal tuberosity)

-distal features: the lateral and medial condyles (articulate with the tibia); intercondylar notch (found between the condyles); medial and lateral epicondyles (flank the condyles superiorly)

the patella articulates with the anterior femoral surface, this bone is a sesamoid triangular bone enclosed in the quadriceps tendon.

B. LEG

-formed by two parallel bones, tibia and fibula

Tibia (the larger leg bone)

-receives weight of the body from the femur and transmits it to the foot

-proximal end has concave medial and lateral condyles separated by an irregular projection, the intercondylar eminence; inferior to the condyles on the anterior surface is the tibial tuberosity; the tibia also has an anterior crest (easily palpated, triangular in X-section); distally, the medial malleolus is obvious, forms the inner bulge of the ankle.

Fibula (stick-like bone)

-head at the upper end; and the lateral malleolus at the lower end-- the lateral bulge of the ankle.

C. FOOT

-two important functions, to support body weight, and to propel body forward when walking.

Tarsus: made up of 7 tarsal bones.

-two largest are the talus and the calcaneus (heel of the foot)

-other tarsal bones are cuboidal, navicular, medial cuneiform, intermediate cuneiform, and the lateral cuneiform

Metatarsus: 5 bones arranged in parallel -- correspond to the metacarpals in the hand

Phalanges: 14 bones (smaller than corresponding bones of the fingers); each digit has a proximal, middle and distal section except the great toe.

D. ARCHES OF THE FOOT

-there are 3 arches in the foot, two longitudinal and one transverse

-help shape the foot in such a manner that is most effective in supporting the weight of the body