BONES AND BONE MARKINGS TO KNOW

Axial Skeleton

Skull
A. Cranial bones (8)
   a) Frontal (1)
      - Frontal sinus
      - Supraorbital foramen
   b) Parietal (2)
      - Sagittal suture
      - Coronal suture
   c) Temporal (2)
      - Zygomatic process
      - External auditory meatus
      - Styloid process
      - Mandibular fossa
      - Mastoid process
   d) Occipital bone (1)
      - Lambdoidal suture
      - Foramen magnum
      - Occipital condyles
   e) Sphenoid bone (1)
      - Sella turcica
      - Sphenoid sinus
   f) Ethmoid (1)
      - Perpendicular plate
      - Crista galli
      - Superior and middle nasal conchae
      - Cribiform plate
      - Ethmoidal sinuses

c) Zygomatic (2)
   - Temporal process

d) Lacrimal (2)
   - Lacrimal sulcus (groove)

e) Nasal bone (2)

f) Inferior nasal concha (2)
g) Vomer (1)

C. mandible (1)
   - Horseshoe – shaped body
   - Alveoli = sockets
   - Ramus – two rami extend upward at the posterior end of the body
   - Mandibular condyle
   - Coronoid process
   - Mandibular notch
   - Mental foramina
   - Mandibular foramina

D. Middle Ear Bones
   a) Malleus = hammer (2)
   b) Incus = anvil (2)
   c) Stapes = stirrup (2)

E. Hyoid Bone (1)
   - U-shaped bone in the neck that is not attached directly to any other bone

F. Fetal Skull
   a) Fontanels
      - Anterior
      - Anterolateral
      - Posterior
      - Posterolateral
   b) Sutures

B. Facial Bones
   a) Maxilla (2)
      - Alveoli = sockets
      - Palatine process
      - Maxillary sinus
      - Infraorbital foramen
   b) Palatine (2)
Vertebral Column

Types

A. Cervical: C₁ – C₇ (7)
   - Transverse foramen
     a) Atlas
        - superior surfaces of its transverse processes articulate with occipital condyles of skull; allow one to nod “yes”
     b) Axis
        - Odontoid process = dens
          - forms joint with atlas; allows one to rotate head from side to side to indicate “no”

B. Thoracic: T₁ – T₁₂ (12)

C. Lumbar: L₁ – L₅ (5)

D. Sacrum (1)
   - Formed by fusion of five sacral vertebrae
   - Median sacral crest
   - Sacral canal
   - Sacral hiatus

E. Coccyx (1)
   - Formed by fusion of four to five coccygeal vertebrae
   - human tailbone

F. Ribs (24)
   - Structure
     - Head
     - Neck
     - Tubercle
     - Shaft or body
   - Types
     - True or vertebrosternal (7 pairs)
     - False (5 pairs)
     - Vertebrochondral (3 pairs)
     - Floating (2 pairs)

G. Sternum (1)
   - Superior manubrium
   - Central body
   - Xiphoid process
Appendicular Skeleton

Shoulder (pectoral) Girdle

A. Scapula (2)
   - Spine
   - Acromion process
   - Glenoid cavity
   - Coracoid process

B. Clavicle
   - Sternal end
   - Acromial end

Upper Limb

C. Humerus (2)
   - Head
   - Anatomical neck
   - Surgical neck
   - Greater and lesser tubercles
   - Deltoid tuberosity
   - Capitulum (lateral condyle)
   - Trochlea (medial condyle)
   - Lateral and medial epicondyles
   - Olecranon fossa
   - Coronoid fossa

D. Radius (2)
   - Head
   - Radial tuberosity
   - Styloid process (lateral)

E. Ulna (2)
   - Trochlear notch
   - Coronoid process
   - Olecranon process
   - Radial notch
   - Styloid process

F. Carpels (16)
   - form wrist; bones arranged in two irregular rows, bond by ligaments that restrict movement

- trapezium, trapezoid, capitate, hamate, pisiform, triquetral, lunate, scaphoid

G. Metacarpals (10)
   - form palm; numbered 1 to 5 from thumb-side of hand toward little finger

H. Phalanges (28)
   - bones of fingers; three bones (proximal, middle, distal) in each finger, except thumb, which has two bones (proximal and distal)

Pelvic Girdle

A. Os cox or coxal (hip) bones (2)
   
   Regions
   - Ilium
   - Ischium
   - Pubis
   - Symphysis pubis
   - Acetabulum
   - Greater sciatic notch
   - Obturator foramen
   - Male vs. Female pelvis structure

Lower Limb

A. Femur (2)
   - Head
   - Fovea capitis
   - Neck
   - Greater and lesser trochanter
   - Medial and lateral condyles
   - Patellar surface
   - Medial and lateral epicondyles
B. Patella (2)

C. Tibia (2)
- Medial and lateral condyles
- Tibial tuberosity
- Medial malleolus

D. Fibula
- Head
- Lateral malleolus

E. Tarsals (14)
- Bones that form the ankle
  Calcaneus
  Tarsal bone that forms the heel and is inferior to the talus
  Talus
  - articulates with the tibia and fibula to form ankle joint; lies between tibia and calcaneus

Articulations

Diarthroses (synovial)

Structure of a movable joint
- Joint cavity
- Articular (hyline) cartilage; covers articulating surfaces
- Articular capsule enclosing the joint
- Outer dense fibrous (white) connective tissue including ligaments
- Articular disks at some joints
- Bursae

Types
A. Ball-and-socket
- Examples are shoulder and hip
  - Movement: flex/extend; abduction/adduction; rotation

B. Hinge
- Examples are knee, elbow, ankle and interphalangeal joints
  - Movement: They produce an angular, opening-and closing motion like that of a hinged door.

Parts of the knee joint
- Anterior and posterior cruciate ligaments
- Medial and lateral menisci
- Tibial and fibular collateral ligaments
- Quadriceps tendon
- Patellar ligament
- Transverse ligament

C. Planar (Gliding)
- Examples are the intercarpal joints (between carpal bones at the wrist), intertarsal joints, sternoclavicular joints, acromioclavicular joints.
  - Movement: flexion, extension, hyperextension. Rotation is prevented by ligaments.

D. Pivot
- Atlas to Axis joint
  - Movement: the atlas rotates around the axis and permits the head to turn from side to side as in signifying “NO”

E. Condyloid
- Examples are the wrist and metacarpo-phalangeal joints for digits 2 and 5.
  - Movement: flex/extend or abduct/adduct

F. Saddle
- Between thumb, metacarpal and trapezium
  Movement: opposition allows tip of thumb to touch tip of other fingers; rotation in all 3 anatomical planes