The Appendicular Skeleton

- Allows us to move and manipulate objects
- Includes all bones besides axial skeleton:
  - the limbs
  - the supportive girdles
The Pectoral Girdle

• Also called the shoulder *girdle*
• Connects the arms to the body
• Positions the shoulders
• Provides a base for arm movement
The Clavicles

- Also called *collarbones*
- Long, S-shaped bones
- Originate at the *manubrium* (*sternal end*)
- Articulate with the *scapulae* (*acromial end*)

The Scapulae

- Also called *shoulder blades*
- Broad, flat triangles
- Articulate with arm and collarbone
The Scapula

- Anterior surface: the subscapular fossa
- Body has 3 sides:
  - superior border
  - medial border (vertebral border)
  - lateral border (axillary border)

Structures of the Scapula
Processes of the Glenoid Cavity

- **Coracoid process:**
  - anterior, smaller

- **Acromion:**
  - posterior, larger
  - articulates with clavicle
  - at the **acromioclavicular joint**

Structures of the Scapula

- **Posterior surface**

Figure 8-3c
Posterior Features of the Scapula

- **Scapular spine:**
  - ridge across posterior surface of body
- **Separates 2 regions:**
  - supraspinous fossa
  - infraspinous fossa

The Humerus

Figure 8-4
Humerus

• Separated by the **intertubercular groove:**
  – greater tubercle:
    • lateral
    • forms tip of shoulder
  – lesser tubercle:
    • anterior, medial

• **Head:**
  – rounded, articulating surface
  – contained within joint capsule

• **Anatomical neck:**
  – margin of joint capsule

• **Surgical neck:**
  – the narrow metaphysis

Humerus

• **Deltoid tuberosity:**
  – a bulge in the shaft
  – attaches deltoid muscle

• **Radial groove:**
  – for radial nerve
  – posterior to deltoid tuberosity

• **Medial and lateral epicondyles:**
  – for muscle attachment

• **Condyle of the humerus:**
  – articulates with *ulna* and *radius*
Humerus

- **Medial and lateral epicondyles:**
  - for muscle attachment
- **Condyle of the humerus:**
  - articulates with *ulna* and *radius*
- **Trochlea:**
  - coronoid fossa and olecranon fossa
  - articulates with ulna
- **Capitulum:**
  - radial fossa
  - articulates with radius

The Forearm
Ulna: Articulations with the Humerus

- Forearm *extended*:  
  - olecranon enters olecranon fossa
- Forearm *flexed*:  
  - coronoid process enters coronoid fossa

Ulna: Other Articulations

- Radial notch:  
  - articulates with head of radius  
  - forms *proximal radioulnar joint*
- Ulnar head:  
  - prominent styloid process  
  - attaches to *articular disc* between forearm and wrist
The Radius

- Lateral bone of forearm
- Disk-shaped radial head above the neck
- Radial tuberosity below the neck, attaches biceps

The Wrist

![Image of the wrist with labeled bones](a) Anterior view  (b) Posterior view

Figure 8-6
The 4 Proximal Carpal Bones

- **Scaphoid bone:**
  - near styloid process
- **Lunate bone:**
  - medial to scaphoid
- **Triquetrum:**
  - medial to lunate bone
- **Pisiform bone:**
  - anterior to triquetrum

The 4 Distal Carpal Bones

- **Trapezium:**
  - lateral
- **Trapezoid bone:**
  - medial to trapezium
- **Capitate bone:**
  - largest
- **Hamate bone:**
  - medial, distal
Metacarpal Bones

• The 5 long bones of the hand
• Numbered I–V from lateral (thumb) to medial
• Articulate with proximal phalanges

Phalanges of the Hands

• Pollex (thumb):
  – 2 phalanges (proximal, distal)
• Fingers:
  – 3 phalanges (proximal, middle, distal)
The Pelvic Girdle

Made up of 2 hipbones (ossa coxae)
Strong to bear body weight, stress of movement
Part of the pelvis
Os Coxae

- Made up of 3 fused bones:
  - ilium (articulates with sacrum)
  - ischium
  - pubis

The Acetabulum

- Also called the *hip socket*
- Is the meeting point of the ilium, ischium, and pubis
- Is on the lateral surface of the *os coxae*
- Articulates with head of the femur
- Ilium
- Greater sciatic notch:
  - for sciatic nerve
The Pelvis

Comparing the Male and Female Pelvis
Pelvis Modifications for Childbearing

- Enlarged pelvic outlet
- Broad pubic angle (> 100°)
- Less curvature of sacrum and coccyx
- Wide, circular pelvic inlet
- Broad, low pelvis
- Iliac project laterally, not upwards

Bones of the Lower Limbs

- **Femur** (thigh)
- **Patella** (kneecap)
- **Tibia and fibula** (leg)
- **Tarsals** (ankle)
- **Metatarsals** (foot)
- **Phalanges** (toes)
The Femur

• The longest, heaviest bone

Femur: The Shaft

• Linea aspera:
  – most prominent ridge of shaft
  – attaches hip muscles
  – joins epicondyles

• Medial and lateral epicondyles:
  – above the knee joint

• Medial and lateral condyles:
  – separated by intercondylar fossa and patellar surface
  – form part of knee joint
The Patella

- Also called the **kneecap**
- A sesamoid bone
- Formed within tendon of *quadriceps femoris*
- **Base** attaches *quadriceps femoris*
- **Apex** attaches *patellar ligament*
The Tibia

![The Tibia Diagram](image)

The Ankle

- Also called the *tarsus*:
  - consists of 7 *tarsal bones*
Bones of the Ankle

- **Talus:**
  - carries weight from tibia across trochlea
- **Calcaneus (heel bone):**
  - transfers weight from talus to ground
  - attaches Achilles tendon
- **Cuboid bone:**
  - articulates with calcaneus

Ankle Bones

- **Navicular bone:**
  - articulates with talus and 3 cuneiform bones
- **Medial cuneiform**
- **Intermediate cuneiform**
- **Lateral cuneiform**
Feet: Metatarsal Bones

- 5 long bones of foot
- Numbered I–V, medial to lateral
- Articulate with toes
- Phalanges:
  - bones of the toes
- Hallux:
  - *big toe*, 2 phalanges (distal, proximal)
- Other 4 toes:
  - 3 phalanges (distal, medial, proximal)