Skeletal Articulations

Classification of Joints:
- Joint complexity
- # of axes present
- Joint geometry
- Movement capabilities

Synarthroses (immovable)
- Fibrous joints can absorb shock and permit little or no movement of the articulating bones

Amphiarthroses (slightly movable)
- Cartilaginous joints absorb shock and permit more motion of adjacent bones

Diarthroses or synovial (freely movable)
- Articulating bone surfaces are covered with articular cartilage, an articular capsule surrounds the joint

Synovial Joints

- Categories: motion around 1, 2 and 3 axes of rotation (uniaxial, biaxial, triaxial) and limited motion (nonaxial)
  - Gliding: (plane; arthrodial), bone surfaces are flat, nonaxial gliding movement (intercarpals, facet joints of vertebrae)
  - Hinge: (ginglymus): one articulating bone surface is convex and the other is concave (ulnohumeral, interphalangeal)

- Pivot (screw, trochoid): rotation around one axis (atlantoaxial)
- Condyloid (ovoid, ellipsoidal): one articulating bone surface is an ovular convex shape, the other is reciprocally shaped concave surface (flexion, extension, abduction, adduction and circumduction are permitted) (2nd-5th metacarpophalangeal joints and the radiocarpal joints)

- Saddle (sellar): articulating bone surfaces are both shaped like the seat of a riding saddle (same movements as condyloid yet with greater ROM allowed) (carpometacarpal joint of the thumb)
- Ball and socket (spheroidal): surfaces of the articulating bones are reciprocally convex and concave (rotation in all 3 planes is permitted) (hip and shoulder)
• **Long bones** – levers
• **Flat bones** – protection
• **Short bones** – cushion forces

• **Mechanical functions of Skeletal System**
  – Support for weight bearing
  – Protection of organs
  – Links between joints
  – Sites for muscle attachment

• **Physiological Functions of Skeletal System**
  – Storage of Ca, Phosphorus
  – Bone marrow produces blood cells, part of body’s immune system
  *Osteocytes: basic cells in matrix of bone
  *Osteoblasts: bone-forming cells
  *Osteoclasts: bone-eroding cells

• **Types of Bone:**
  – Spongy bone – lattice meshwork of bony rods
    – Surrounded by blood vessels and associated material
Compact Bone – more solid
• (most Ca in bone is here, but the Ca in spongy bone is more easily released into blood when required)

Anthropometry
• Science that deals with human body
  – Size/Proportions/Composition
    Somatotyping
    - ectomorph, mesomorph, endomorph

• Based on build tend to follow activities that lend your build to them (strength, endurance)