

Anatomy & Physiology

Chapter 5

Joints of the Skeletal System

- Articulations - junctions between bones
- Function of joints
 - Bind parts of skeleton together
 - Makes bone growth possible
 - Permits skeleton to change shape during childbirth
 - Enables body to move in response to muscle contractions

Classification of Joints

Classified by type of tissue that binds bones at each junction

- **Fibrous Joints**
 - ligaments connect bone to bone
- **Cartilaginous Joints**
 - cartilage connects bones
- **Synovial Joints**
 - most common
 - allow for free movement

Classification of Joints

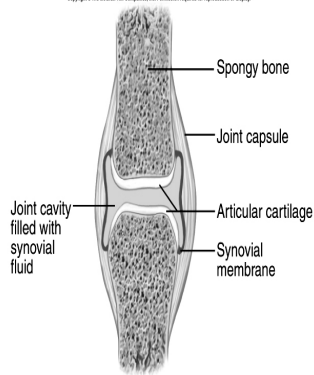
Grouped according to degree of movement

- Synarthrotic – immovable
 - Skull sutures
- Amphiarthrotic – slightly movable
 - Joints between vertebrae; cartilage between epiphysis of long bones
- Diarthrotic – freely movable
 - Shoulder or hip joint

Synovial Joints

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- Diarthrotic
- Consist of
 - Articular cartilage
 - Joint capsule
 - Joint cavity
 - Synovial membrane
 - Synovial fluid
 - Bursae
 - Menisci
 - Ligaments



Synovial Joints

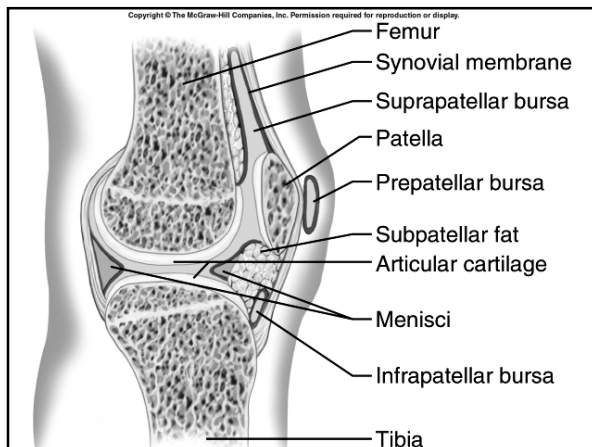
- **Articular cartilage –**
 - Hyaline cartilage at end of bones
 - Minimizes friction between bones
- **Joint capsule –**
 - Helps hold bones together
 - Prevents excessive movement in joint
- **Synovial membrane**
 - Inner membrane
 - Secretes synovial fluid
 - Stores adipose tissue which forms fatty pads w/in joint
- **Synovial fluid**
 - Moistens, lubricates joint
 - Supplies nutrients to articular cartilage

Synovial Joints

- **Menisci**
 - **Disc of fibrocartilage**
 - **Helps to distribute body wt.**

- **Bursae**
 - **Fluid filled sacs**
 - **Cushions bony areas**
 - **Adds in movement**

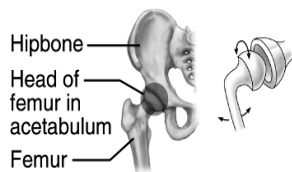
- **Ex. Knees and elbows (Tennis elbow)**



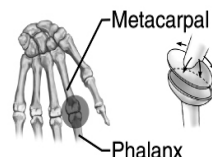
6 Types of Synovial Joints

- Ball-and-Socket Joint**
- bone w/head articulates w/cavity of another
 - hip
 - shoulder

- Condyloid Joint**
- knuckle joint
 - between metacarpals & phalanges



(a) Ball-and-socket joint

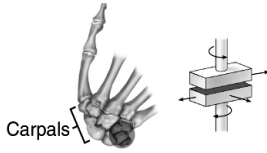


(b) Condyloid joint

6 Types of Synovial Joints

Gliding Joint

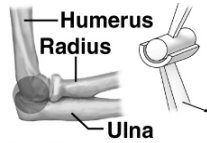
- flat surfaces allow back & forth movement
- between carpals & tarsals



(c) Gliding joint

Hinge Joint

- convex surface of 1 bone joins w/concave surface of another
- elbow
- between phalanges

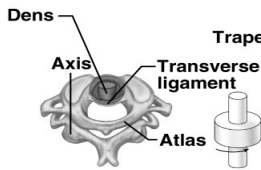


(d) Hinge joint

6 Types of Synovial Joints

Pivot Joint

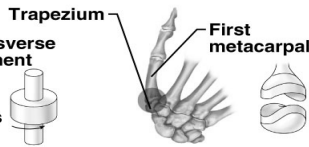
- cylinder surface of 1 bone rotates w/in a ring of bone
- atlas w/ dens of axis



(e) Pivot joint

Saddle Joint

- surface has both convex or concave areas
- between carpal & 1st metacarpal of thumb



(f) Saddle joint

Clinical Application

Joint Disorders

Sprains

- forceful twisting of cartilage, ligaments, or tendons associated with joints
- longer to heal due to lack of circulation

Bursitis

- inflammation of bursa sac
- overuse of a joint

Arthritis

- inflamed, swollen, painful joints
 - Rheumatoid Arthritis – swollen, deformed joints; crippling
 - Osteoarthritis – wear & tear of cartilage; bone spurs develop
 - Gout – build up of uric acid in joints; painful
