Joints = Articulations

Allow for mobility

Create stability
Structural Classification of Joints

- Fibrous
- Cartilaginous
- Synovial
Functional Classification of Joints

- Definitely moveable
- Kind of moveable
- Not at moveable
Sutures – immovable fibrous joints
(a) Superior view

- Frontal bone
- Anterior fontanel
- Ossification center
- Parietal bone
- Posterior fontanel
- Occipital bone

(b) Lateral view

- Frontal bone
- Parietal bone
- Ossification center
- Posterior fontanel
- Sphenoidal fontanel
- Mastoid fontanel
- Temporal bone (squamous portion)
- Occipital bone

- Posterior: 2-3 months
- Sphenoidal: 6 months
- Mastoid: 6-18 months
- Anterior: 1-3 years
Synchondroses – immovable cartilaginous joints

Examples - The first sternocostal joints
Syndesmoses – Slightly movable fibrous joints

Example - The distal joint between the tibia and fibula
Symphyses – Slightly Movable Cartilaginous Joints

Fibrocartilage
Freely Movable Joints = Synovial Joints
Basic Characteristics of Synovial Joints

- Articular cartilage
- Joint Cavity
- Articular Capsule
- Synovial fluid
- Reinforcing ligaments
- Vascular
- Innervated
**Joint Cavity** = Space between the bones of the joint

Enclosed by the articular capsule

Contains synovial fluid
Articular Capsule

Fibrous capsule $\rightarrow$ Dense irr. CT, Continuous w periostea

Synovial Membrane
Synovial Fluid
Blood derivative

Lubrication
Shock absorption
Transport

Warming up?
Blood Vessels & Nerves

- Ligament
- Joint capsule
- Synovial membrane
- Fat pad
- Articular cartilage
- Blood vessel
- Nerve
- Muscle
- Synovial fluid
- Meniscus
- Bursa
- Tendon
Articular Cartilage

Hyaline Cartilage

Shock Absorption

Articular cartilage
Ligaments

Fibular collateral ligament

Tibial collateral ligament
Synovial joints - classified by the # of planes they move in.

1. Uniaxial

2. Biaxial

3. Triaxial (or multiaxial)
Basic Types of Synovial Joints

- Plane Joints
- Hinge Joints
- Pivot Joints
- Condyloid Joints
- Saddle Joints
- Ball-and-socket Joints
Plane Joints

- Radius
- Ulna
- Scaphoid
- Lunate
Hinge Joints

- Humerus
- Trochlea
- Ulna
- Trochlear notch
Pivot Joints

Atlantoaxial joint

Articular facet for dens of axis

Dens

Transverse ligament

Atlas (C₁)

Axis (C₂)
Condyloid Joints
Saddle Joints

Radius
Trapezium
Metacarpal of thumb
Ulna
Ball-and-Socket Joints

Head of humerus

Scapula

(f) Ball-and-socket joint
Synovial Joint Movements

- Angular Movements
- Gliding Movements
- Rotational Movements
Gliding Movements

Radius  
Ulna
Scaphoid  
Lunate
Gliding Movements

- Cervical vertebra
- Cervical disc
- Facet joint
- Facet capsule
Angular Movements

- Flexion
- Extension
- Abduction
- Adduction

Change the angle of the joint
Flexion vs. Extension
Flexion vs. Extension
Flexion vs. Extension

Hyperextension

Extension

Flexion
Abduction vs. Adduction
Rotational Movements

- Lateral rotation
- Medial rotation
- Rotation
Supination

Pronation
Supination
(radius and ulna are parallel)

Pronation
(radius rotates over ulna)