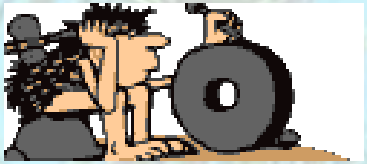
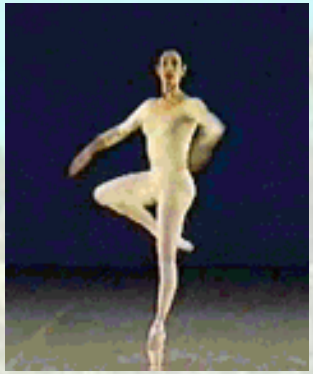


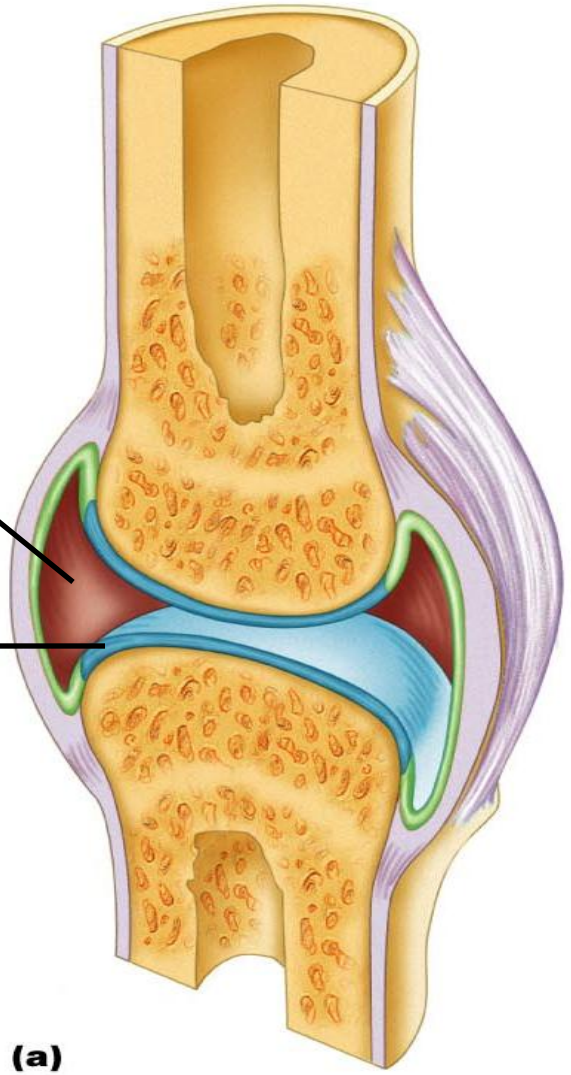
CHAPTER 8
JOINTS

Synovial



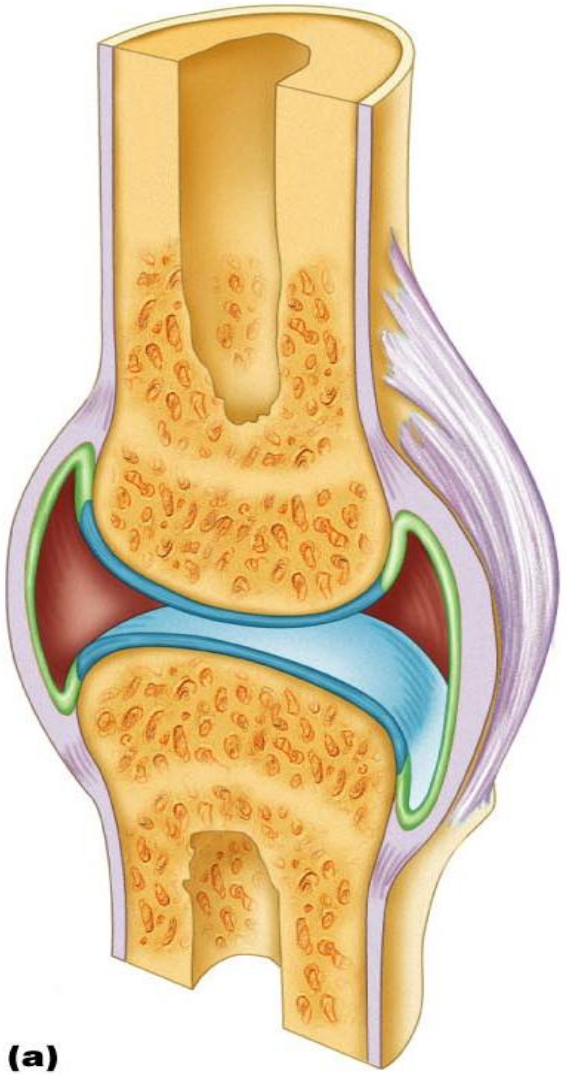
Synovial Joints

- Joint (synovial) cavity
  - -Not an actual space
  - – "potential space"
- Articular Cartilage (hyaline)
  - – Covers bone surfaces, makes slick and smooth
  - – Protects bones from being crushed – matrix has more water
  - – No perichondrium



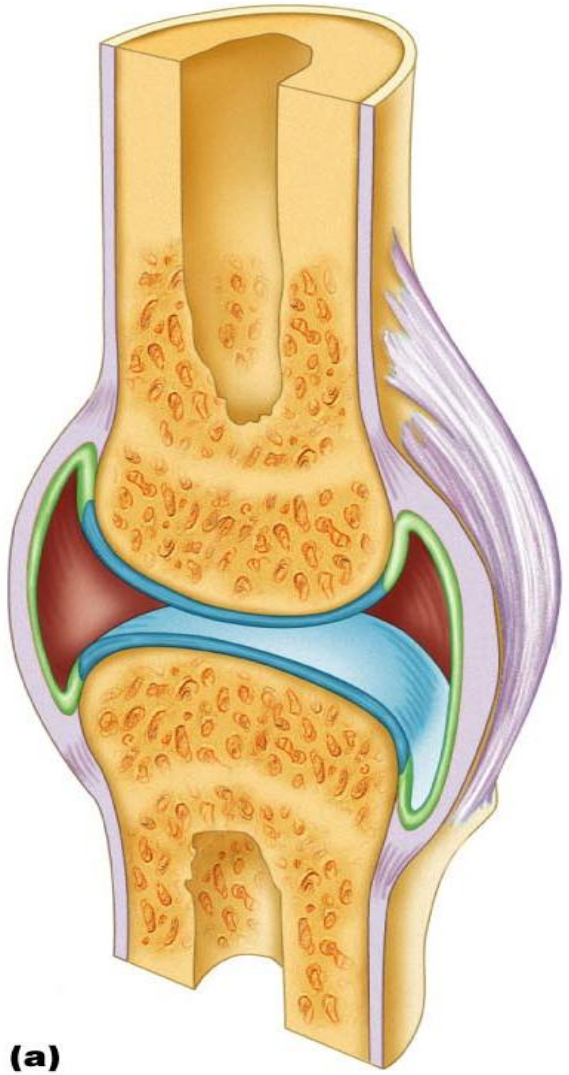
Synovial Joints

- **Synovial Fluid**
  - Slippery fluid that fills the joint cavity
    - Has a viscous, egg white consistency
  - Reduces friction between the cartilages (bones)
  - Helps with shock absorption
  - Provides nutrients



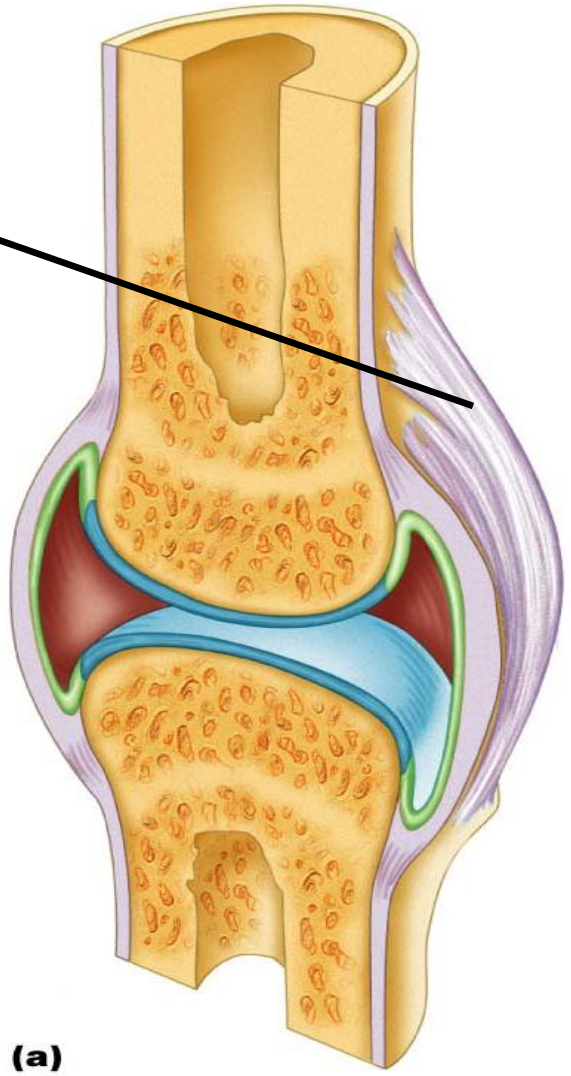
Synovial Joints

- **Articular Capsule**
  - Encloses the joint cavity
  - Double layer of articular cartilage



Synovial Joints

- **Reinforcing ligaments**
  - Surrounds the joint cavity
  - Reinforces and strengthens by many ligaments



Types of Synovial Joints

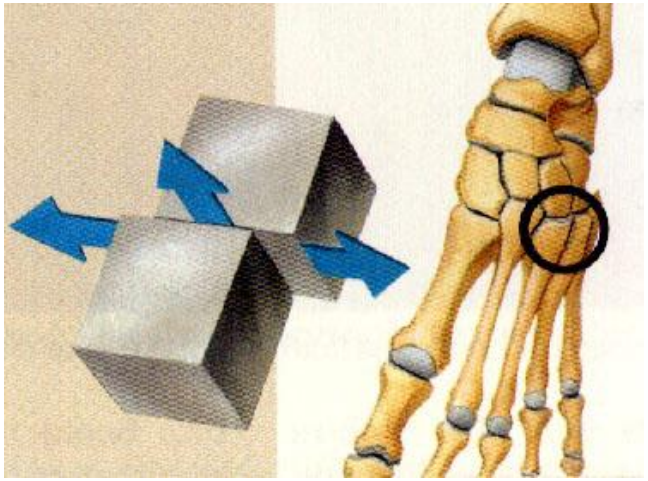
- Plane Joints
- Hinge Joints
- Pivot Joints
- Condyloid Joints
- Saddle Joints
- Ball and Socket Joints

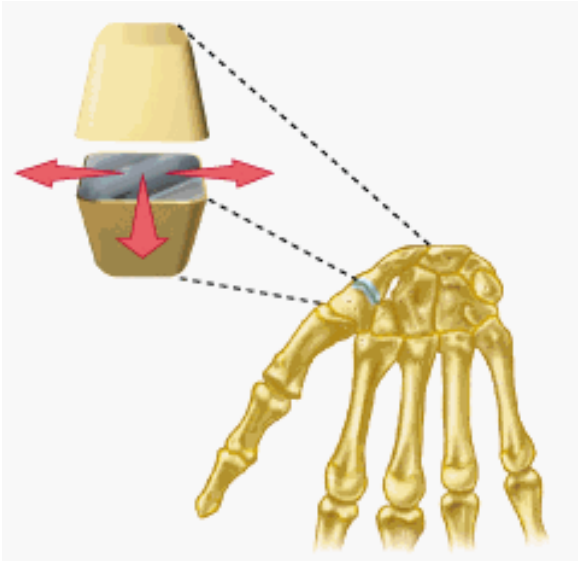
Types of Movement

- Gliding
- Angular motion
  - Flexion, extension, abduction, adduction, circumduction (2)
- Rotation
  - Rotation, protation, and supination
- Special
  - Inversion, eversion, dorsiflexion, plantarflexion, opposition, protraction, retraction, elevation, depression

Synovial Joints - Plane

- Flat bone surfaces
- Intercarpal and intertarsal joints



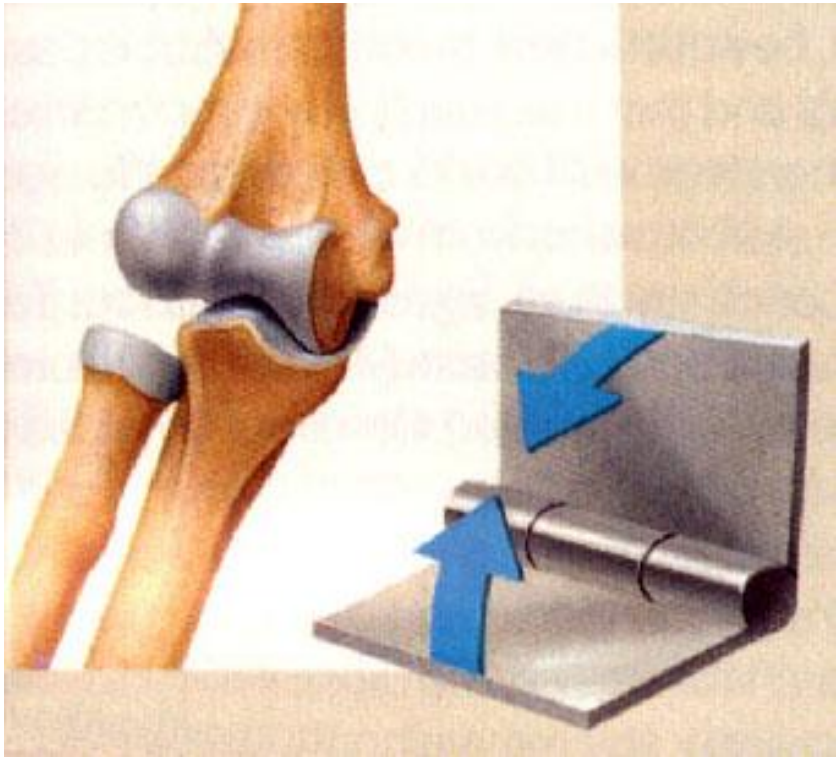


Movement Allowed

- Gliding
  - Simplest movement
  - One "flat" bone surface glides or slips over another similar surface

Synovial Joints - Hinge

- A convex or cylindrical projection of one bone fits into a trough-shaped surface on another
- Fingers, knees, elbow, toes

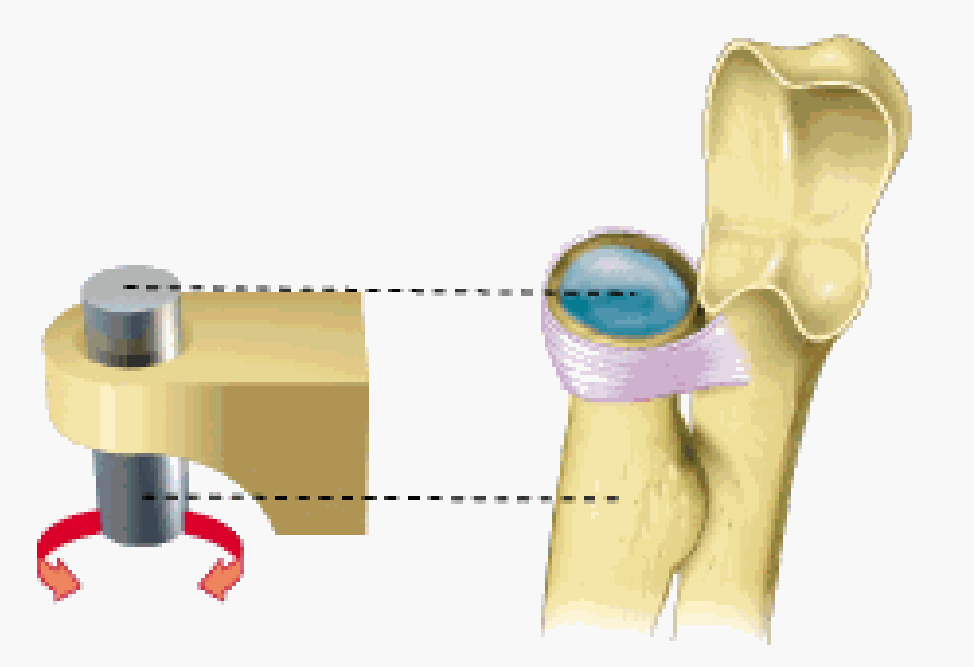


Movement Allowed

- Flexion
  - Bending movement that decreases the angle of the joint
  - Brings two articulating bones closer together
- Extension
  - Exact opposite!

Synovial Joints - Pivot

- Rounded or conical end of one bone protrudes into a "sleeve" or ring of bone of another
- Axis and Dens
- Radius and Ulna

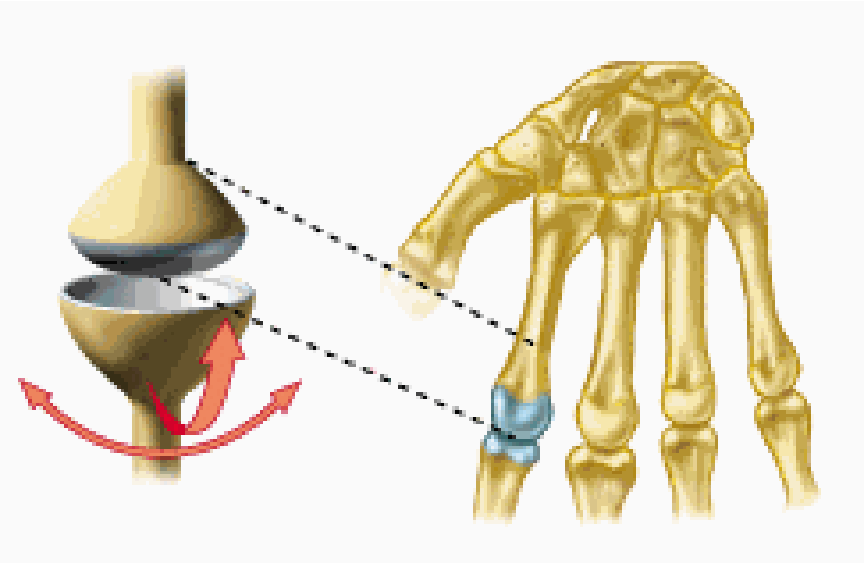


Movement Allowed

- **Rotation**
  - Turning of bone along it's own long axis
  - **Supination** – "turning backward"
    - Bones "back"!!
    - Palms forward and superior
  - **Pronation** – "turning forward"
    - Bones "forward"
    - Palms backwards

Synovial Joints - Condyloid

- Both articular surfaces are oval
- Very similar to hinge but allows more movement
- Wrist and knuckles

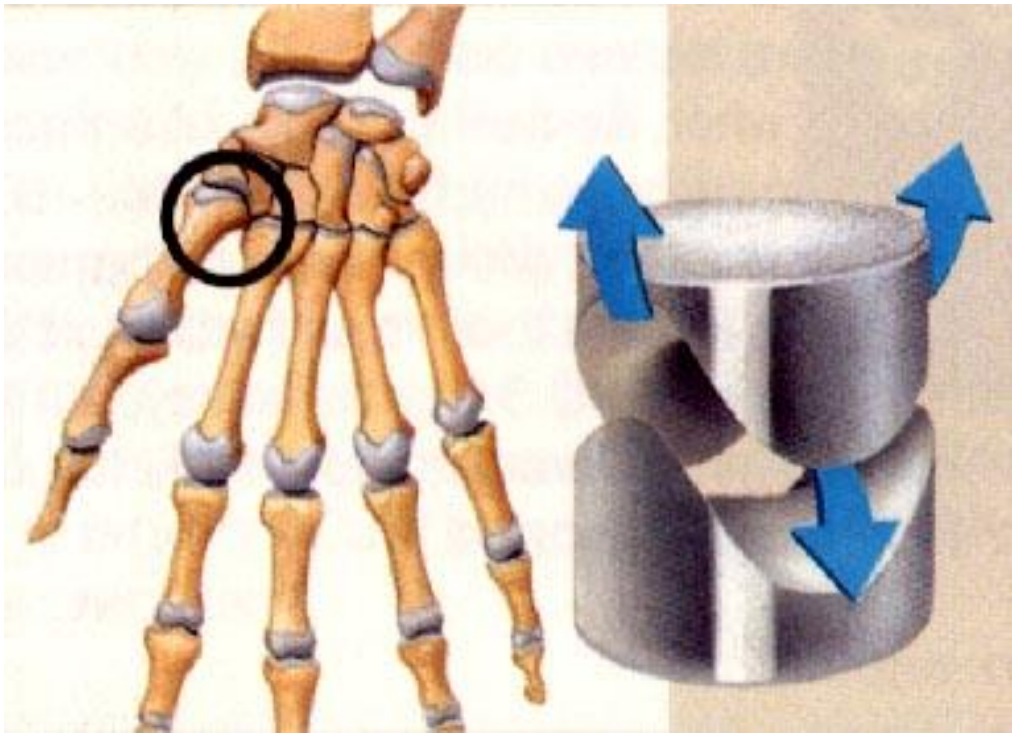


Movement Allowed

- Flexion & extension
- Abduction – "Moving away"
  - Movement of limb **away** from the midline
- Adduction – "Moving towards"
  - Movement of limb **towards** the midline
- Circumduction – "To draw a circle"
  - Distal end moves (circle) while proximal end is pretty much stationary

Synovial Joints - Saddle

- The articular surface is shaped like a saddle
- Thumb (carpo-metacarpal joint)

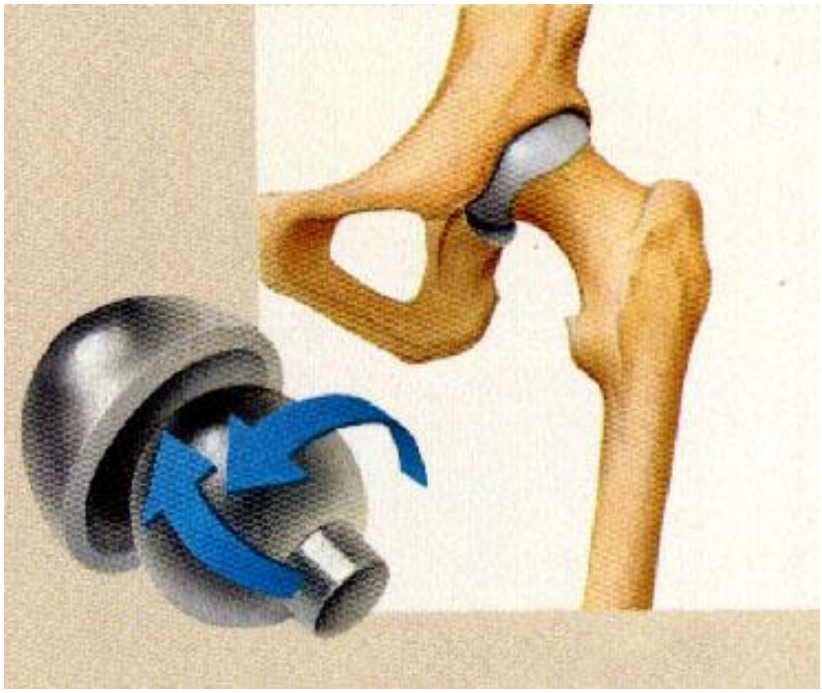


Movement Allowed

- Circumduction
- Opposition
  - Movement of thumb towards the palm
  - This is why you can pick stuff up! ☺

Synovial Joints – Ball and Socket

- Head of one bone (ball) fits into the socket of another
- The most freely moving
- Hip and Shoulder



Movement Allowed

- All combinations of angular movement
- Rotational movement including circumduction

- http://www.youtube.com/watch?v=LDTw2wlUf4Q
- http://www.youtube.com/watch?feature=endscreen&v=5YcNAPzDxDg&NR=1
- http://www.youtube.com/watch?feature=fvwp&NR=1&v=rUNK0uQBvc8