



**Centurion**  
**UNIVERSITY**

*Shaping Lives...*  
*Empowering Communities...*



**Centurion**  
**UNIVERSITY**

*Shaping Lives...*  
*Empowering Communities...*

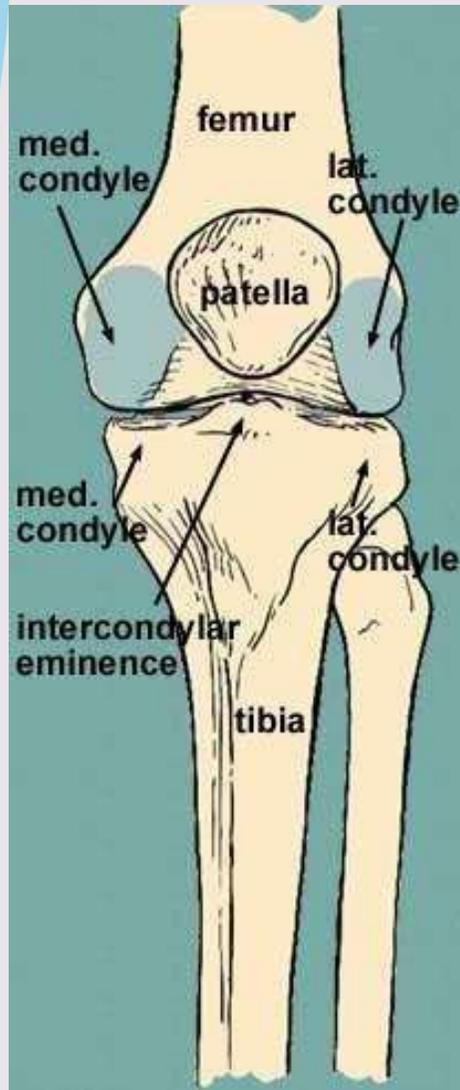
# Joints



**Centurion**  
**UNIVERSITY**

*Shaping Lives...  
Empowering Communities...*

# Introduction of Joints



**Joint (or articulation)-**  
the junction  
between two or more  
bones.

With the exception of the  
hyoid bone, every bone in  
the  
body is connected to or forms a  
joint.

There are 230 joints in the body



**Centurion**  
**UNIVERSITY**

*Shaping Lives...  
Empowering Communities...*

# Joint Functions

1. Hold the skeletal bones together
2. Allow the skeleton some flexibility so gross movement can occur
3. Make bone growth possible



Centurion  
UNIVERSITY

Shaping Lives...  
Empowering Communities...

# Joint Classification

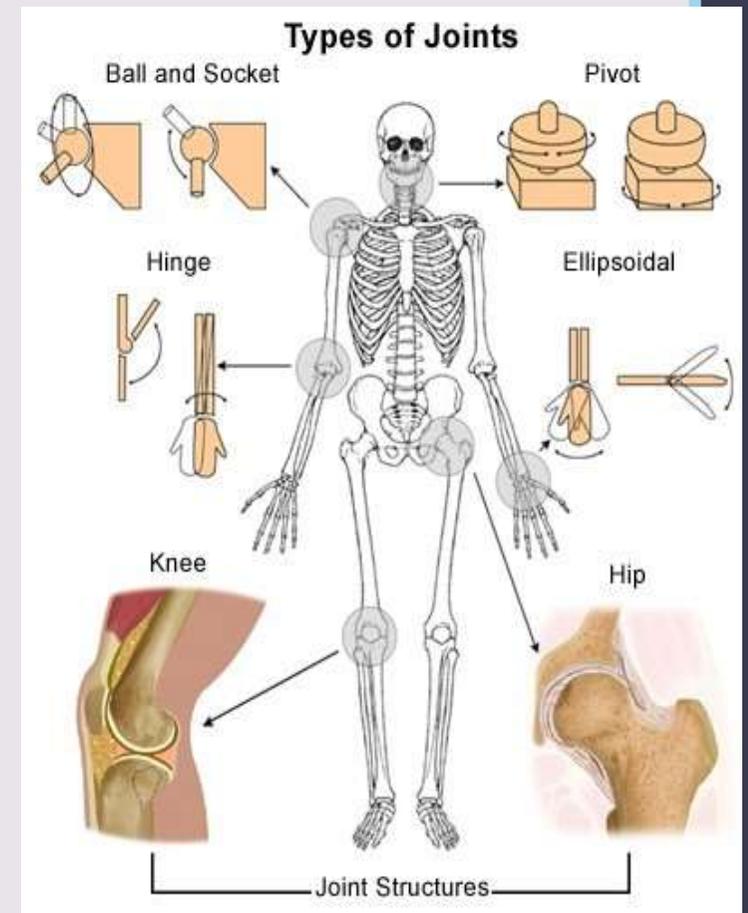
Joints are classified by:  
movement or tissue  
type

Movement

4. Immovable
5. Slightly Movable
6. Freely Movable

Tissue (more common)

1. Fibrous
2. Cartilaginous
3. Synovial





**Centurion**  
**UNIVERSITY**

*Shaping Lives...  
Empowering Communities...*

# Three General Groups of Joints

- Fibrous: classified by Sutures, Syndesmosis, and Gomphosis.
- Cartilaginous: Connected entirely by cartilage
- Synovial: Most common and most movable joint.

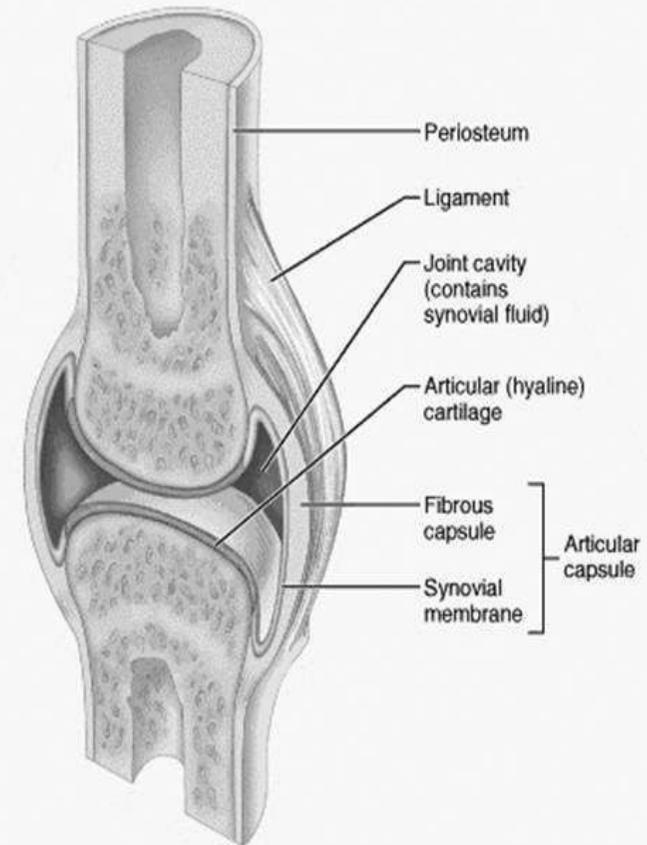


**Centurion**  
**UNIVERSITY**

*Shaping Lives...  
Empowering Communities...*

# Synovial Joints

- Articular ends covered in hyaline cartilage and held together by dense connective tissue
- Joint capsules made up of ligaments (outer layer) and synovial membranes (inner layer)
- Some synovial joints have shock-absorbing pads called menisci and fluid filled sacs called bursae.





**Centurion**  
**UNIVERSITY**

*Shaping Lives...  
Empowering Communities...*

# There are six types of synovial joints...

- Ball-and-Socket Joint
- Condyloid Joint
- Gliding Joint
- Hinge Joint
- Pivot Joint
- Saddle Joint

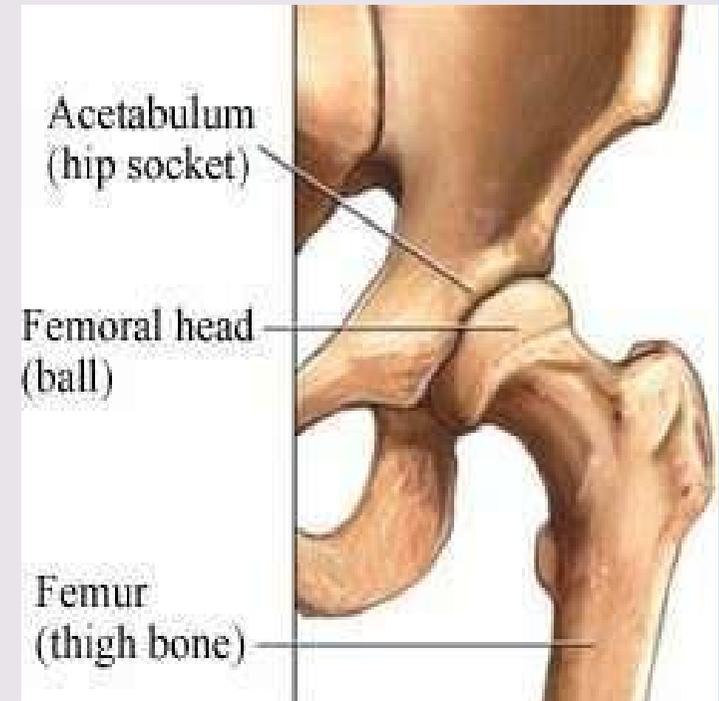


**Centurion**  
**UNIVERSITY**

*Shaping Lives...  
Empowering Communities...*

# Ball-and-Socket Joint

- **Ball-and-Socket Joint:** consists of a bone with a ball-shaped head that attaches with the cup-shaped cavity of another bone. This type of joint allows for a wider range of motion than any other kind. It permits movement in all planes, and a rotational movement around a central axis. Two examples of this type of joint would be the hip and shoulder joints.





**Centurion**  
**UNIVERSITY**

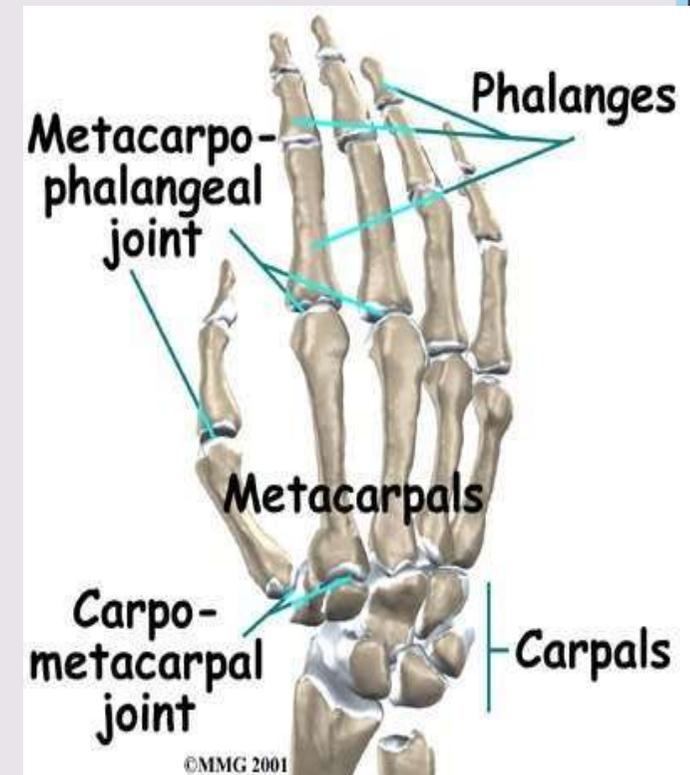
*Shaping Lives...  
Empowering Communities...*

# Condlyoid Joint

- **Condlyoid Joint:** an oval-shaped condyle of one bone fits into an elliptical cavity of another bone. This type of joint permits a variety of movements in different planes.

It however, does not permit rotational movement.

Examples of this type of joint would be the joints between the metacarpals and the phalanges.



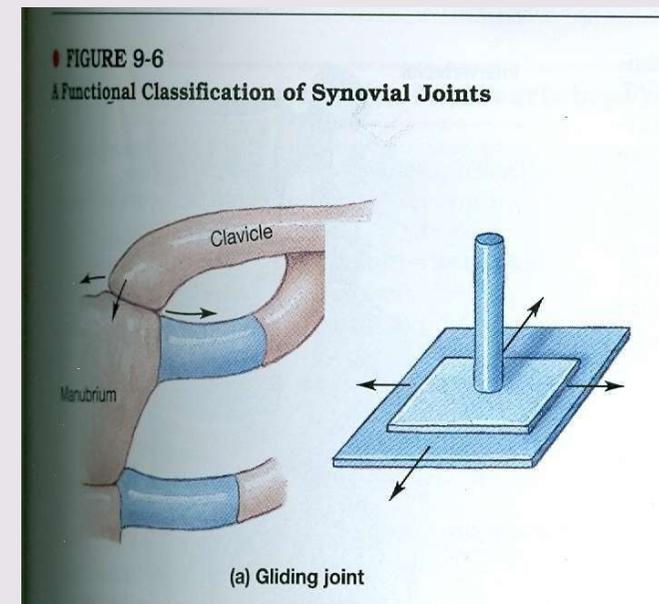


**Centurion**  
**UNIVERSITY**

*Shaping Lives...  
Empowering Communities...*

# Gliding Joint

- **Gliding Joint:** has nearly flat or slightly curved articulating surfaces. This type of joint allows sliding and twisting movements. Some examples of this type of joint include, the joints within the wrists and the ankles, the joints between the articular processes of adjacent vertebrae, the sacroiliac joints, and the joints formed by ribs (2-7) connecting with the sternum.



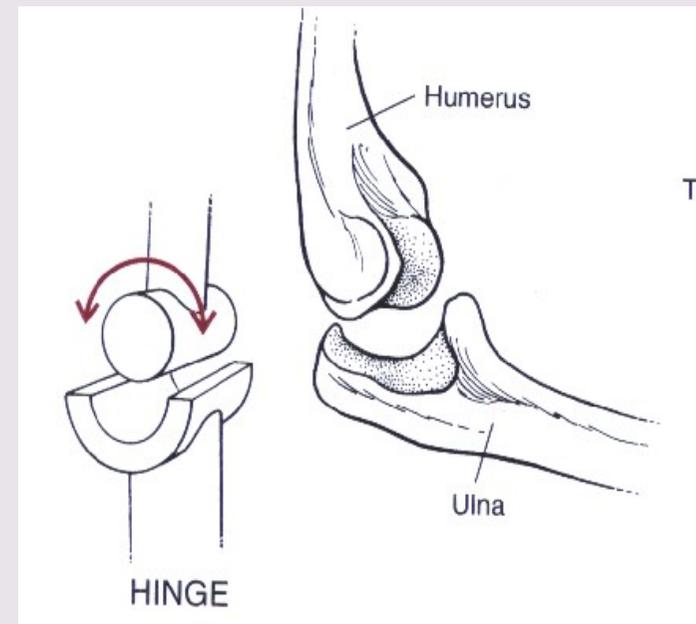


**Centurion**  
**UNIVERSITY**

*Shaping Lives...  
Empowering Communities...*

# Hinge Joint

- Hinge Joint: the convex surface of one bone fits into the concave surface of another. This type of joint permits movement in one plane only. This movement consists of flexion and extension. Two examples are the elbow and the phalanges.



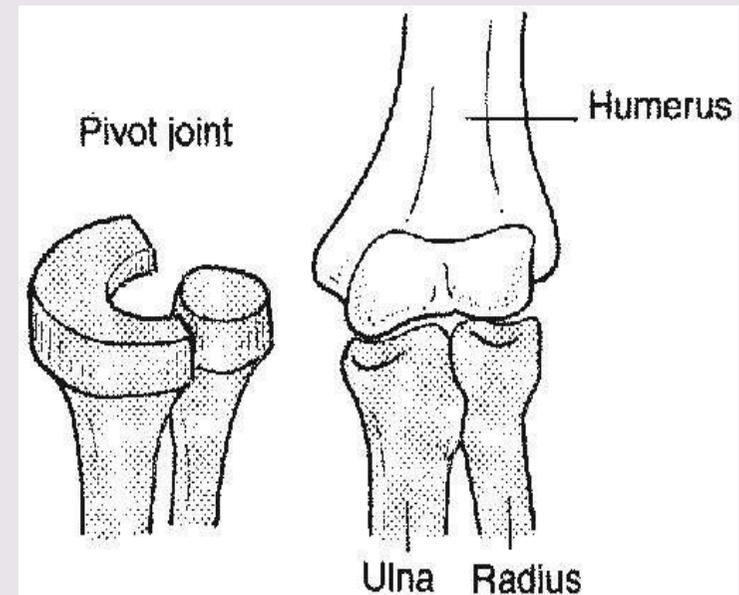


**Centurion**  
**UNIVERSITY**

*Shaping Lives...  
Empowering Communities...*

# Pivot Joint

- Pivot Joint: the cylindrical surface of one bone rotates within a ring formed of bone and ligament. Movement is limited to the rotation around a central axis. Examples of this type of joint are the joints between the proximal ends of the radius and ulna.



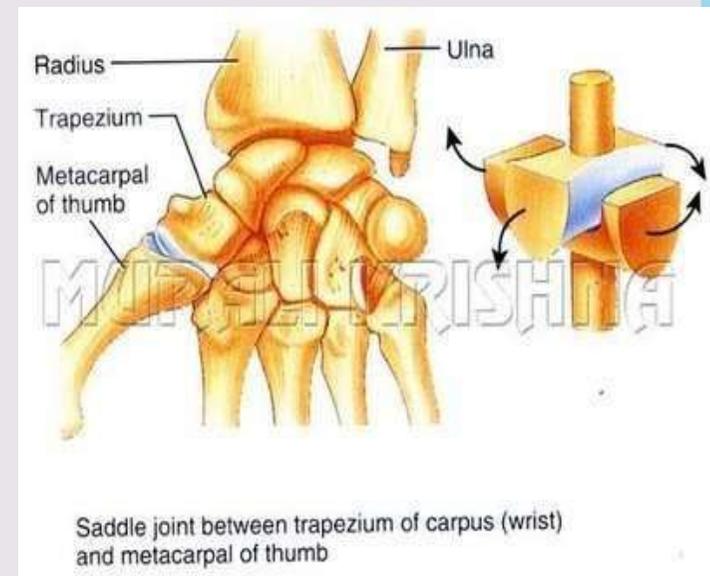


**Centurion**  
**UNIVERSITY**

*Shaping Lives...  
Empowering Communities...*

# Saddle Joint

- Saddle Joint: forms between bones whose articulating surfaces have both concave and convex regions. The surface of one bone fits the complementary surface of the other bone. This type of joint permits a variety of movements. An example would be the joint between the trapezium and the metacarpal bones of the thumb.





**Centurion**  
**UNIVERSITY**

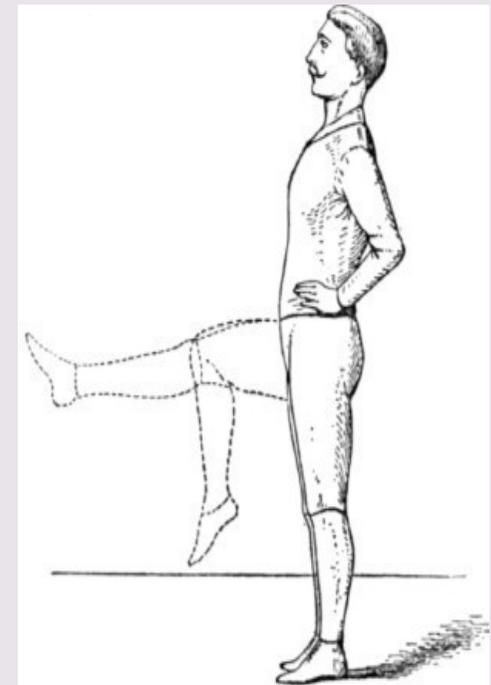
*Shaping Lives...  
Empowering Communities...*

# Joint Movements

- **Flexion:** Bending parts at the joint so that the angle between them decrease

and the parts come closer together

- Example: bending lower limb at knee
- **Extension:** Straightening parts at the joint so that the angle between them increase and the parts move farther apart
- Example: straightening the lower limb at the knee

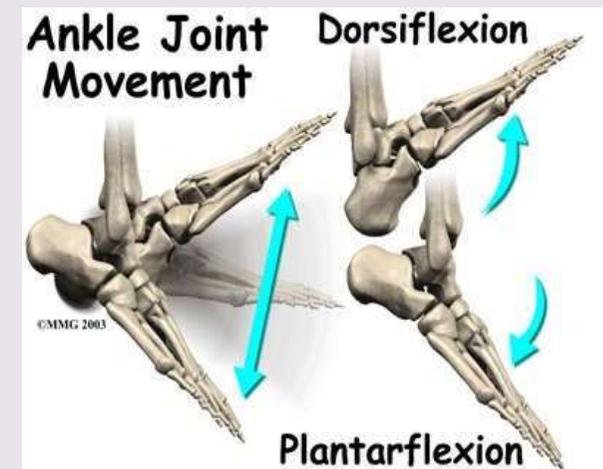




**Centurion**  
**UNIVERSITY**

*Shaping Lives...  
Empowering Communities...*

- **Hyperextension:** Excess extension of the parts at a joint beyond the anatomical position
- Example: bending the head back beyond the upright position
- **Dorsiflexion:** Bending the foot at the ankle toward the shin
- Example: bending the foot upward
- **Plantar Flexion:** Bending the foot at the ankle toward the sole
- Example: bending the foot downward

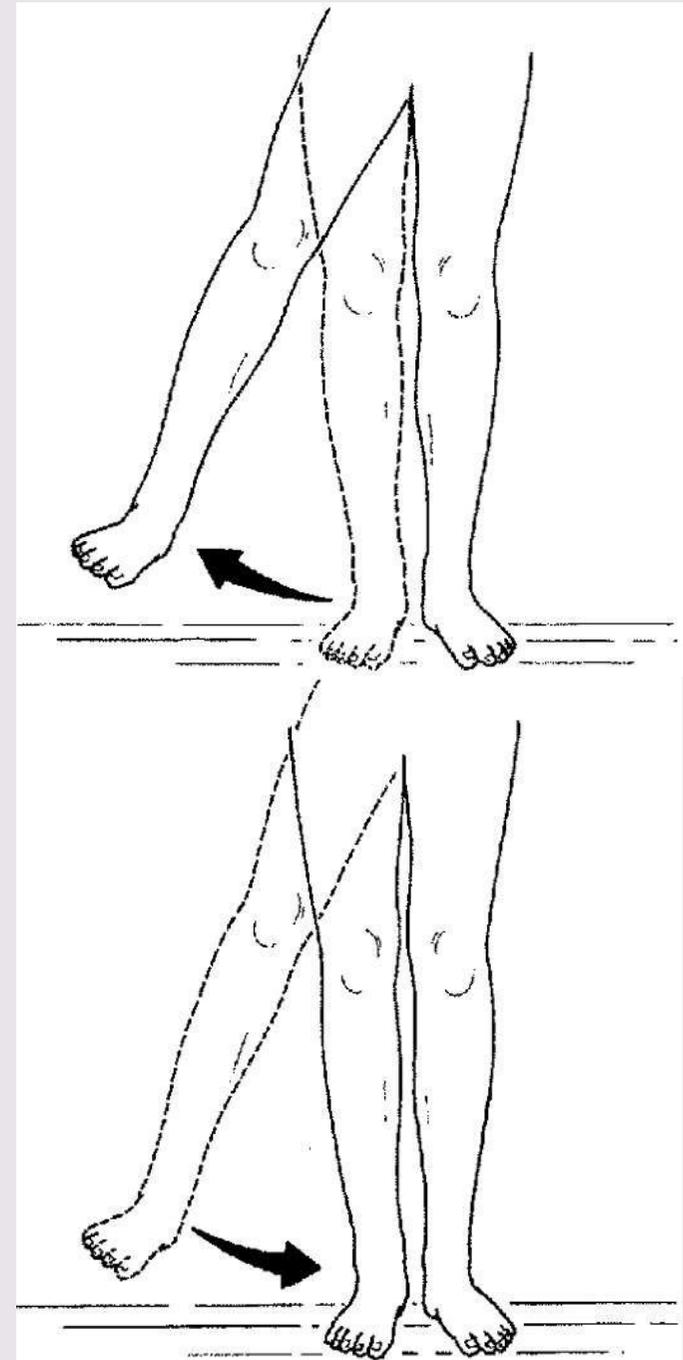




**Centurion**  
**UNIVERSITY**

*Shaping Lives...  
Empowering Communities...*

- **Abduction:** Moving a part away from the midline
- **Example:** lifting the upper limb horizontally to form a right angle with the side of the body
- **Adduction:** Moving a part toward the midline
- **Example:** returning the upper limb from a horizontal position to the side of the body

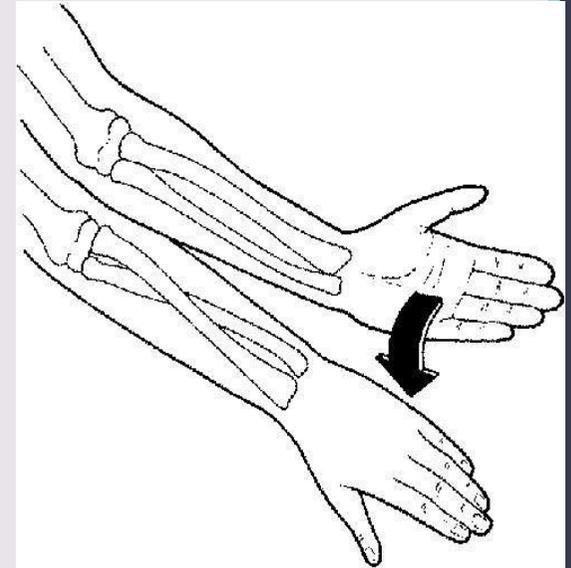




Centurion  
UNIVERSITY

Shaping Lives...  
Empowering Communities...

- **Rotation:** Moving a part around an axis
- Example: twisting the head from side to side
- **Circumduction:** Moving a part so that its end follows a circular path
- Example: moving the finger in a circular motion without moving the hand
- **Supination:** Turning the hand so that the palm is upward or facing anteriorly (in the anatomical position)
- **Pronation:** Turning the hand so the palm is downward or facing posteriorly (in the anatomical position)





Centurion  
UNIVERSITY

Shaping Lives...  
Empowering Communities...

- **Eversion:** Turning the foot so that the sole faces laterally
- **Inversion:** Turning the foot so that the sole faces medially
- **Protraction:** Moving a part forward
- Example: thrusting the chin forward
- **Retraction:** Moving a part backward
- Example: pulling the chin backward
- **Elevation:** Raising a part
- Example: shrugging the shoulders
- **Depression:** Lowering a part
- Example: drooping the shoulders

