

# Module 7 LO5

## Types of Movements at Synovial Joints

Dr. Lisa Brinn

[lbrinn@fiu.edu](mailto:lbrinn@fiu.edu)

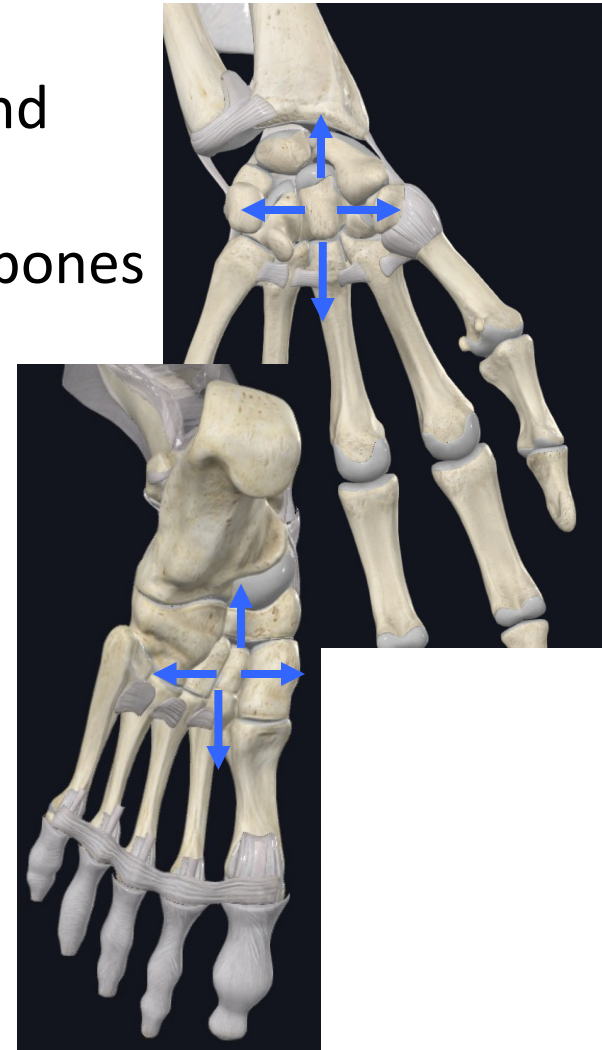
[Video Recording Link](#)

## 5. Types of Movements at Synovial Joints

- Specific terminology to designate movements that can occur at synovial joints
- Terms:
  - Form of motion
  - Direction of movement
  - Relationship of one body part to another during movement
- Four main categories:
  - A. Gliding
  - B. Angular movements
  - C. Rotation
  - D. Special movements

# A. Gliding Movements

- Simple movement
- Flat bone surfaces move from side-to-side and back-and forth with respect to one another
- No significance alteration of angle between bones
- Movements are limited in range due to:
  - Structure of articular capsule
  - Associated ligaments and bones
- Can be combined with rotation
- Examples
  - Intercarpal joints
  - Intertarsal joints

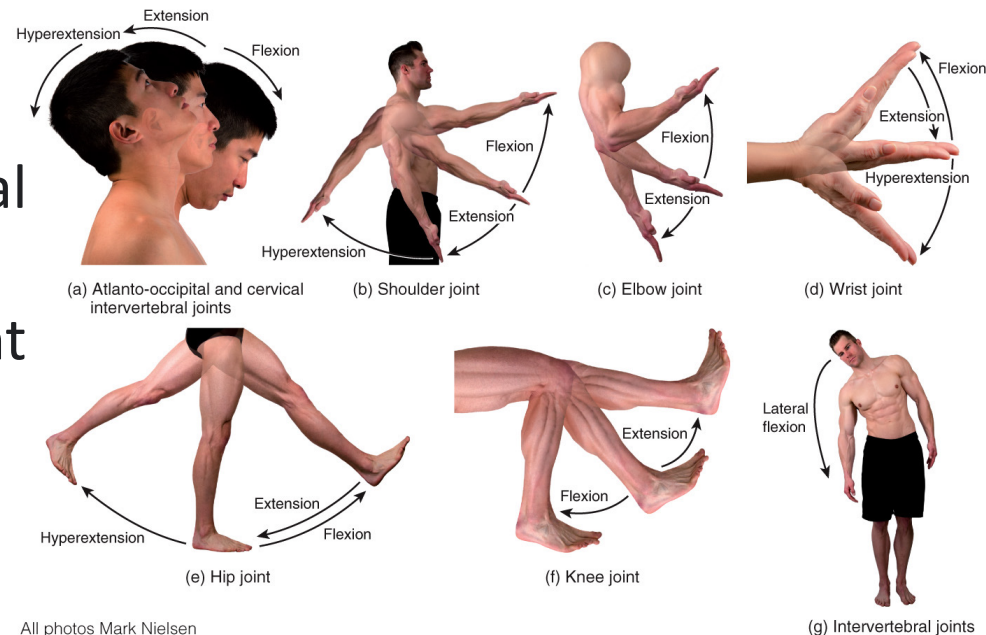


## B. Angular Movements

- Increase or decrease in angle between articulating bones
- Major angular movements
  - a. Flexion
  - b. Extension
  - c. Hyperextension
  - d. Lateral flexion
  - e. Abduction
  - f. Adduction
  - g. Circumduction

## a-d) Flexion, Extension, Hyperextension and Lateral Flexion

- Flexion and extension are opposite movements
  - Flexion – decreases the angle
  - Extension – increases the angle
    - Both movements usually occur in sagittal plane
- Hyperextension - movement where extension is performed at any joint beyond its normal range of motion
- Lateral flexion – movement of body part to the side

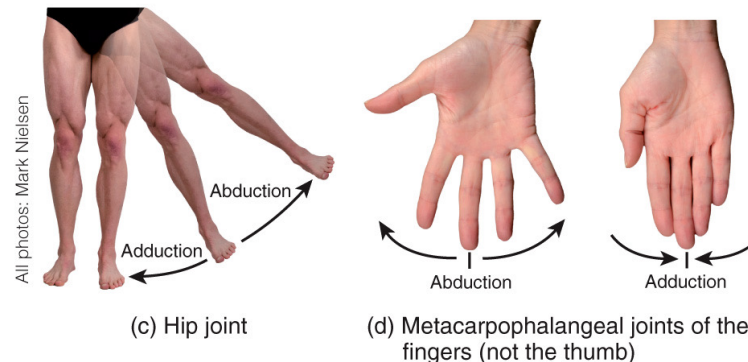
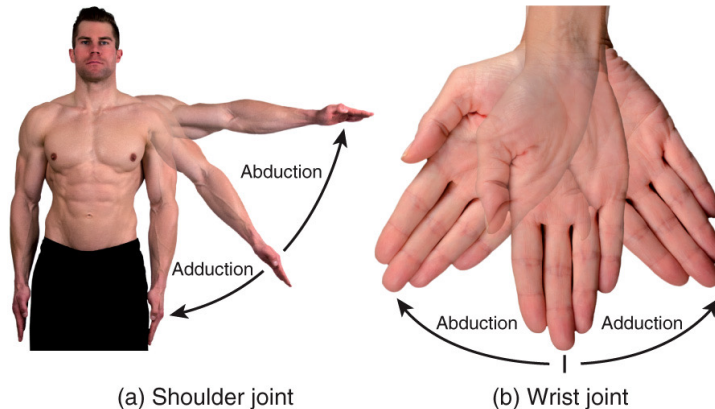


All photos Mark Nielsen

(g) Intervertebral joints

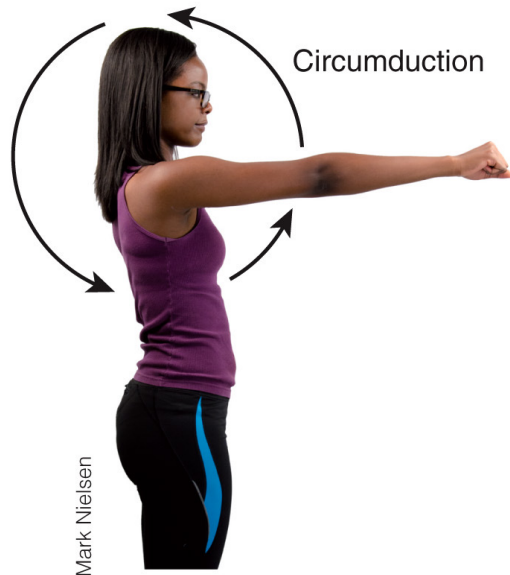
## e-f) Abduction and Adduction

- Abduction – movement of bone away from midline
- Adduction – movement of bone toward midline
  - Both occur along the frontal plane

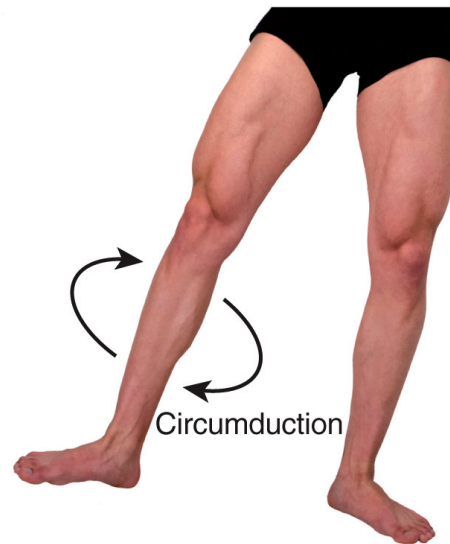


## g) Circumduction

- Movement of distal end of body part in a circle
  - Not a movement by itself but a continuous sequence of flexion, abduction, extension, adduction and rotation of joint



(a) Shoulder joint

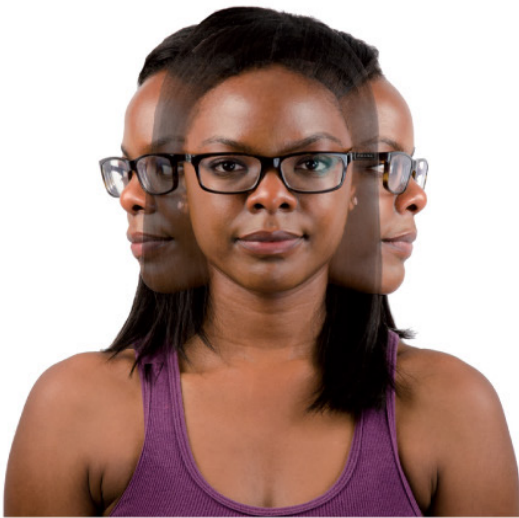


(b) Hip joint

## C. Rotation at Synovial Joints

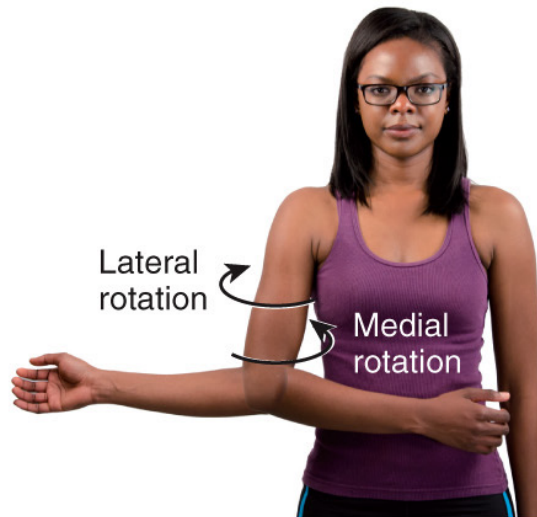
- When a bone revolves around its own longitudinal axis
- Types of rotation in limbs defined relative to midline
  - Medial rotation – anterior surface limb bone turns toward the midline
  - Lateral rotation – anterior surface limb bone turns away from midline

Rotation

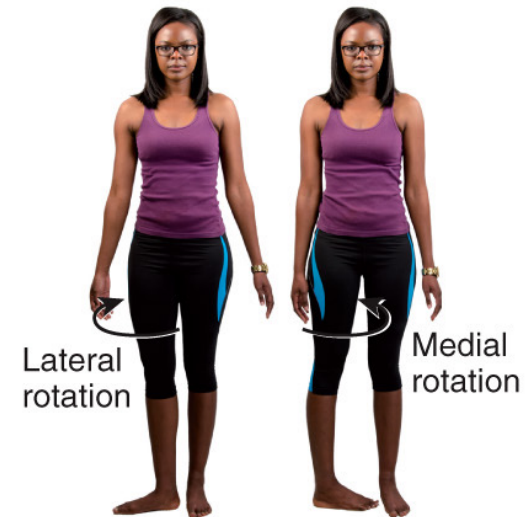


All photos: Mark Nielsen

(a) Atlanto-axial joints



(b) Shoulder joint



(c) Hip joint

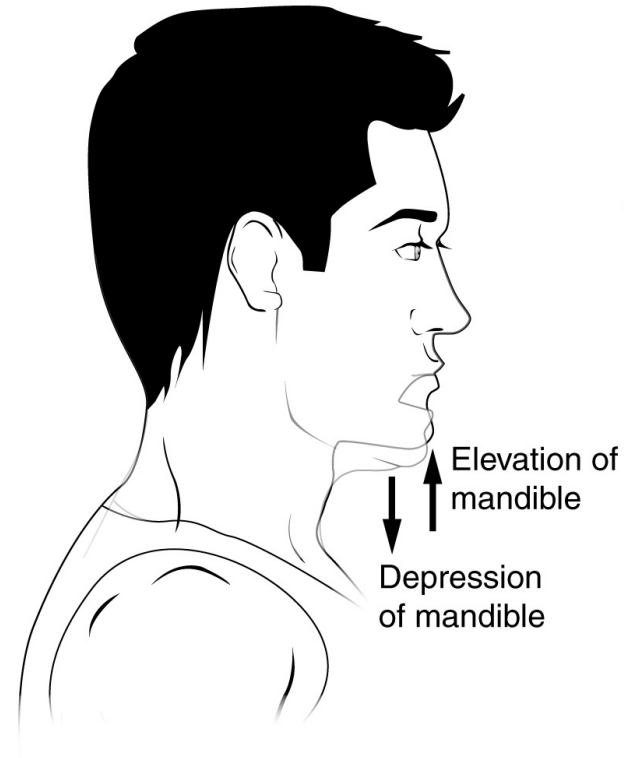
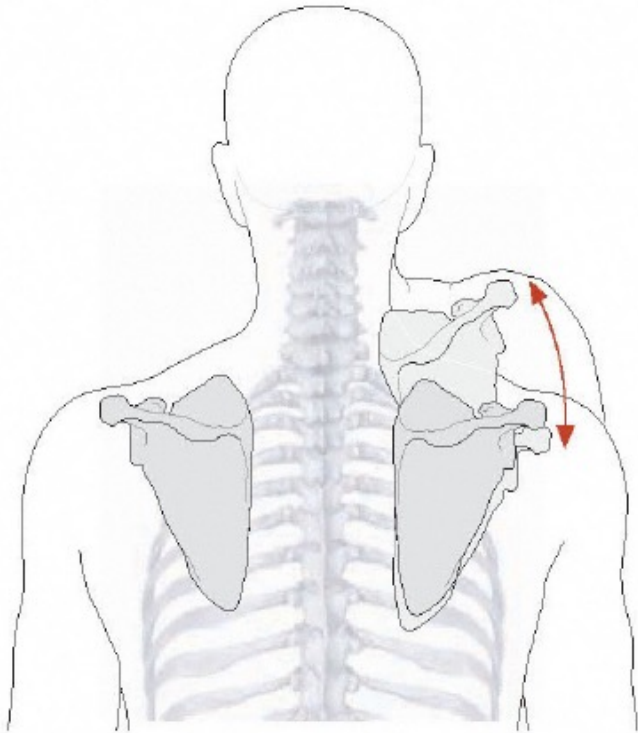


## D. Special Movements at Synovial Joints

- Occur only at certain joints
  - a. Elevation and depression
  - b. Protraction and retraction
  - c. Inversion and eversion
  - d. Dorsiflexion and plantar flexion
  - e. Supination and pronation
  - f. Opposition and reposition

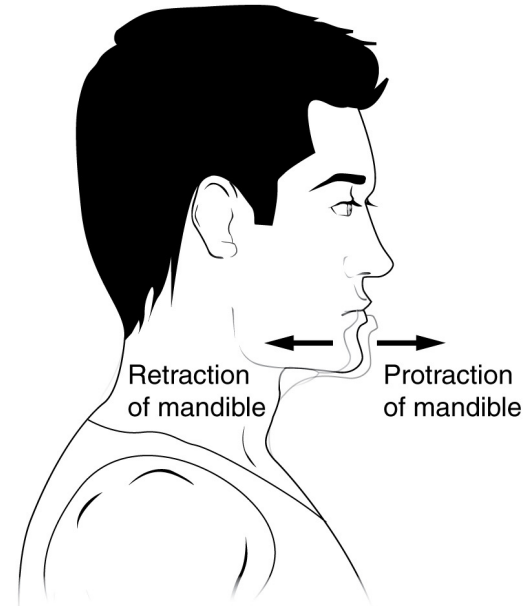
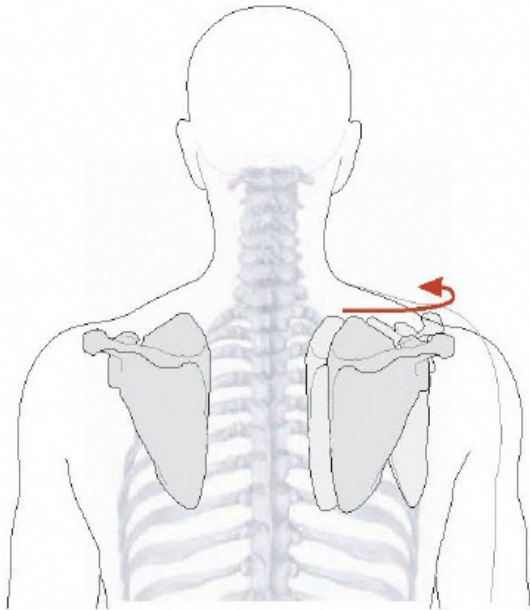
## a. Elevation – Depression

- Elevation – superior movement of body part
- Depression – inferior movement of body part



## b. Protraction – Retraction

- Protraction - movement of a part of the body anteriorly in the transverse plane
- Retraction - movement of a protracted part of the body back to the anatomical position



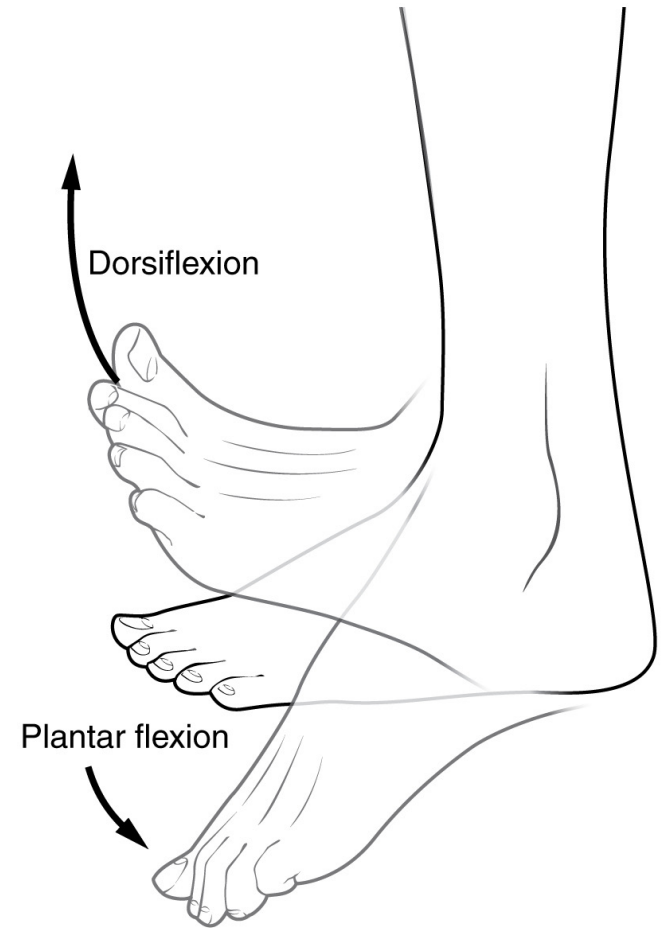
## c. Inversion – Eversion

- Inversion - movement of sole medially at intertarsal joints
- Eversion - movement of sole laterally



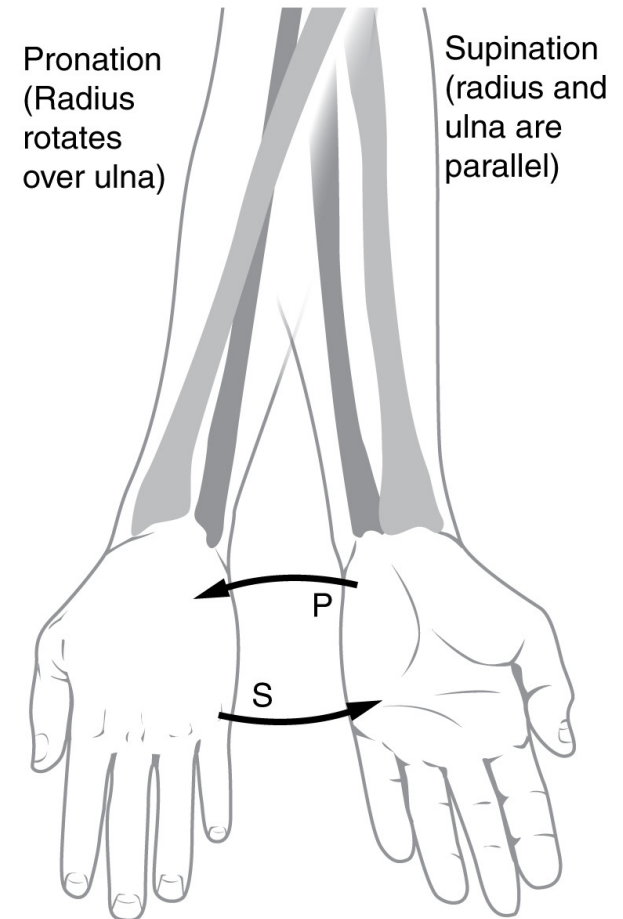
## d. Dorsiflexion – Plantar Flexion

- Dorsiflexion – bending of foot at ankle in direction of dorsum
- Plantarflexion - bending of foot at ankle joint in direction of plantar



## e. Supination – Pronation

- Supination – movement of forearm at proximal and distal radioulnar joints in which palm is turned anteriorly
- Pronation – movement of forearm at proximal and distal radioulnar joints in which distal end of radius crosses over distal end of ulna and palm is turned posteriorly



## f. Opposition - Reposition

- movement of thumb in which thumb moves across palm to touch tips of fingers on same hand

