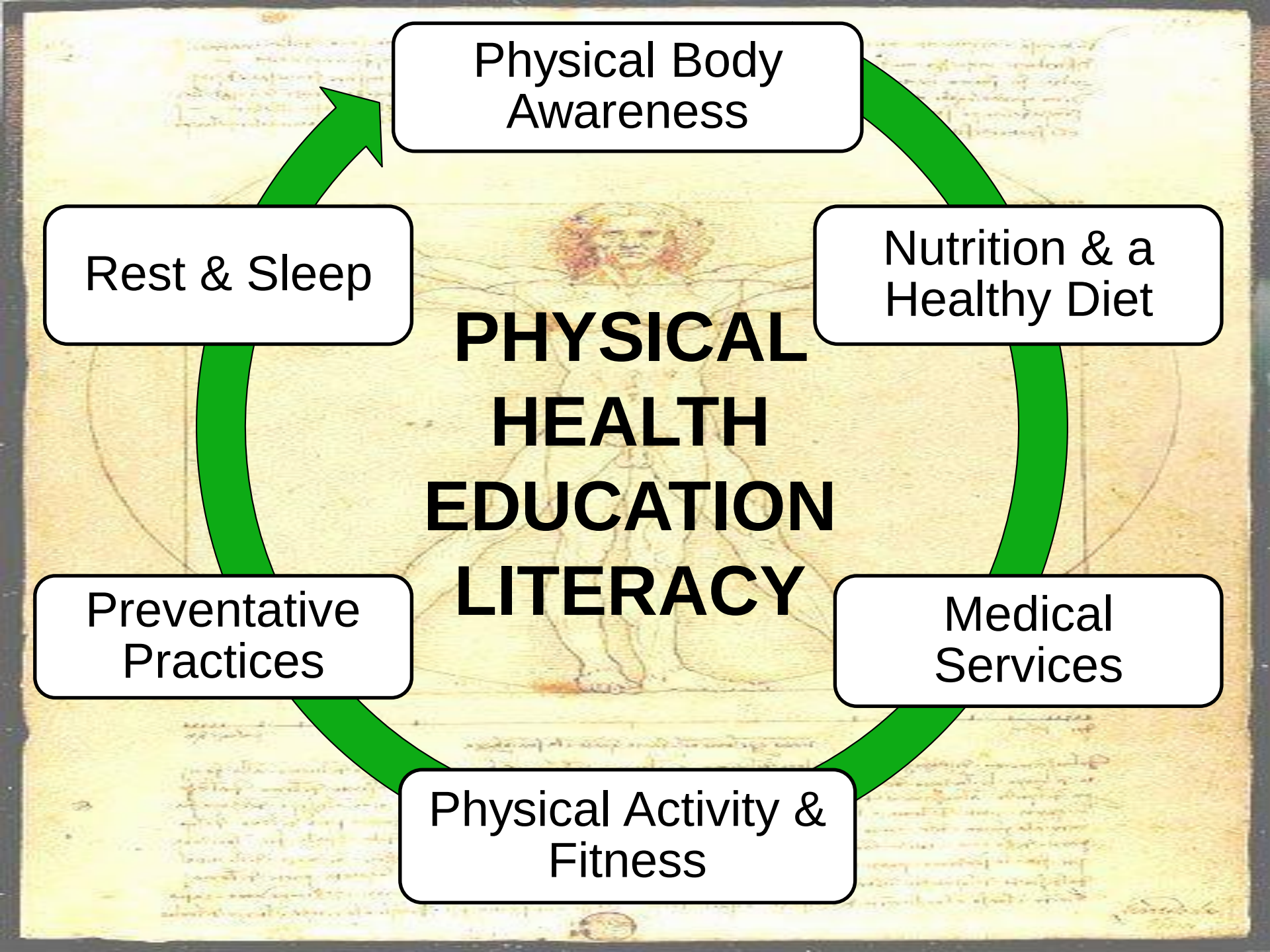

Physical Body Awareness
Nutrition & a Healthy Diet
Medical Services
Physical Activity & Fitness
Preventative Practices
Rest & Sleep
PHYSICAL HEALTH EDUCATION LITERACY

Fitness Components

Health-Related

- Muscular Strength
- Muscular Endurance
- Cardiovascular Endurance
- Flexibility
- Body Composition

Skill-Related

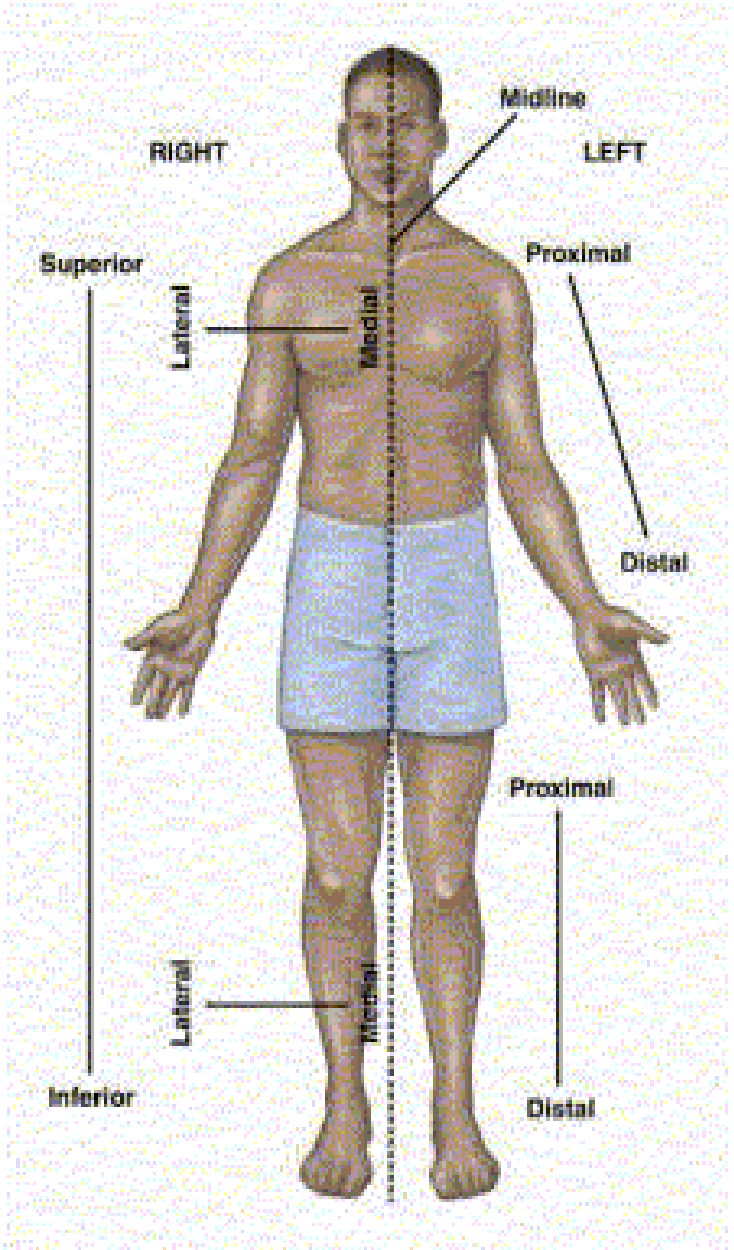
- Power
- Speed
- Agility
- Balance
- Reaction Time
- Coordination

An Overview of Course Theory

- **Biomechanics:** the study of body movement
- **Anatomy:** the study of the structure of the human body
- **Physiology:** the study of body function

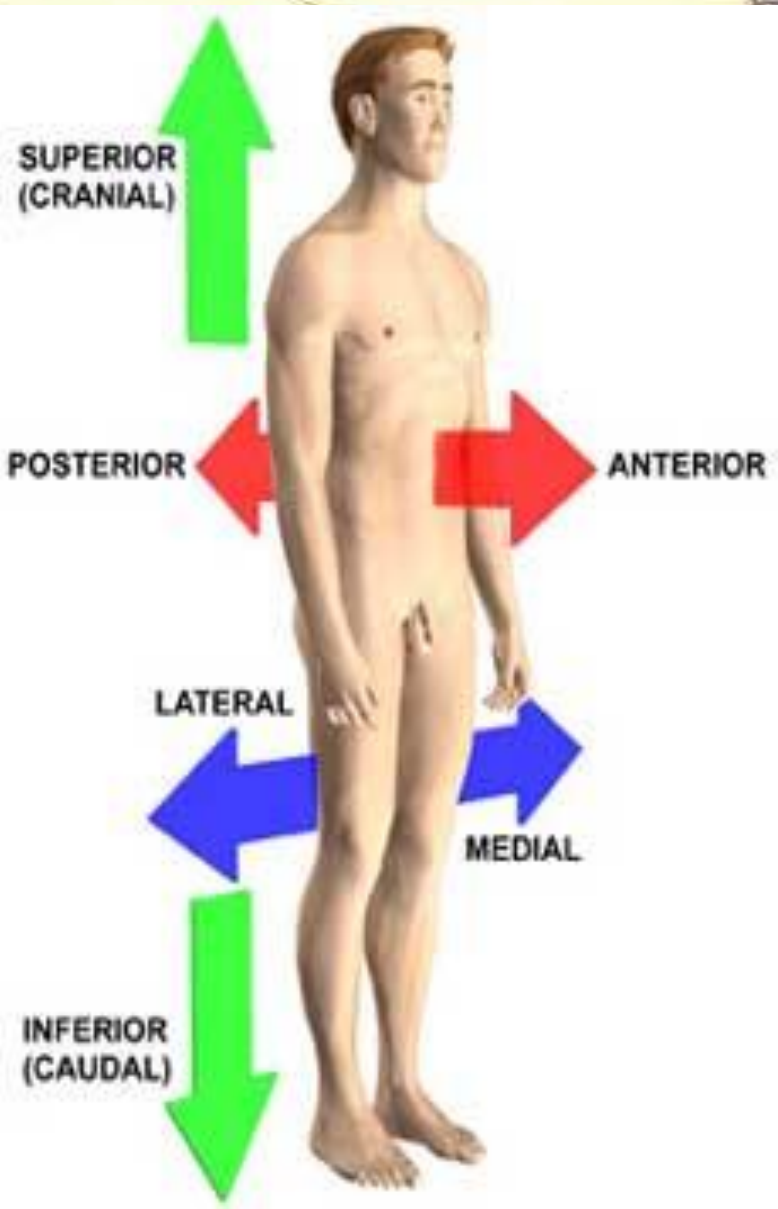
Anatomical Position

- Anatomical position is a common visual reference point for all movements which is:
  - The body erect with eyes facing forward.
  - The arms at the sides with the palms forward and fingers and thumbs extended.
  - The feet together.
- The anatomical position is of importance in anatomy because it is the position of reference for anatomical classification.

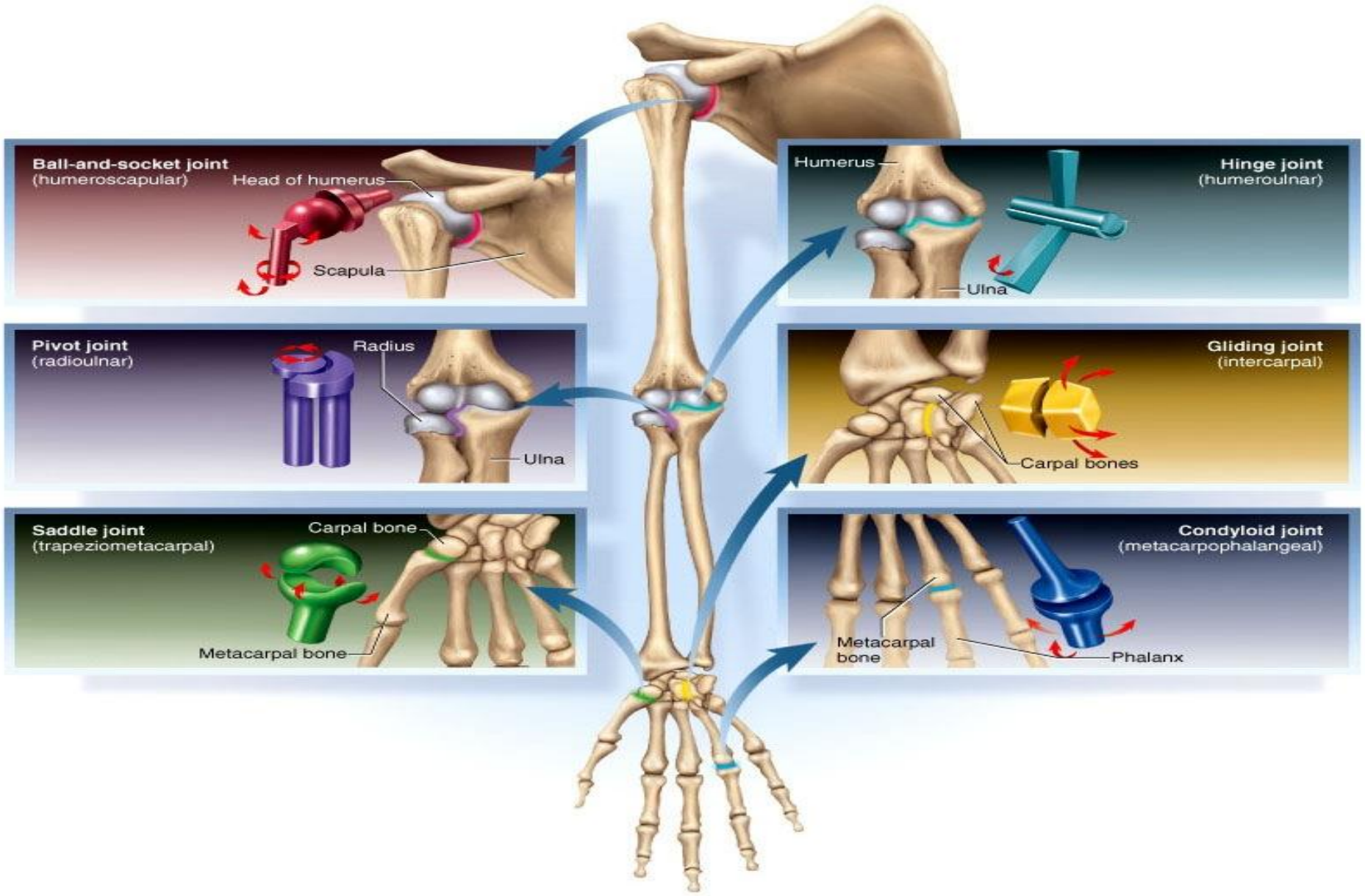


Anatomical Terms

- **Superior:** closer to the top of the body.
- **Inferior:** closer to the bottom of the body.
- **Anterior:** closer to the front of the body.
- **Posterior:** closer to the back of the body.
- **Lateral:** further from the midline of the body.
- **Medial:** closer to the midline of the body.
- **Proximal:** Closer to the origin of a body part of a limb to the body's trunk.
- **Distal:** Farther from the origin of a body part of a limb to the body's trunk.
- **Superficial (external):** Towards or at the body surface
- **Intermediate:** Between superficial & deep structure
- **Deep (internal):** Away from the body surface; more internal

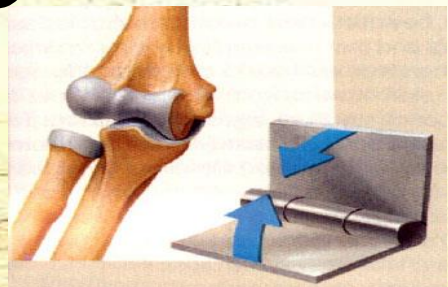


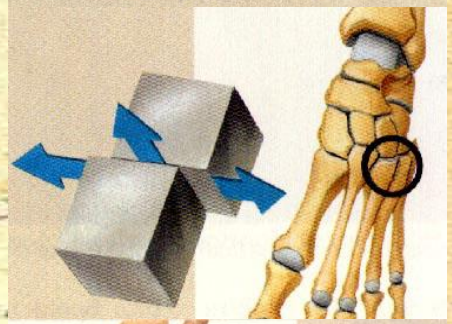
Types of Synovial Joints

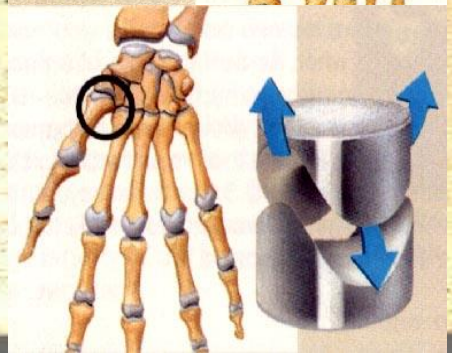


Types of Synovial Joints

- **Hinge:** allows flexion & extension
- **Ball & Socket:** allows for movement in almost any direction
- **Gliding:** bones slide past each other
- **Saddle:** two bones have both concave & convex shapes. (Thumb)





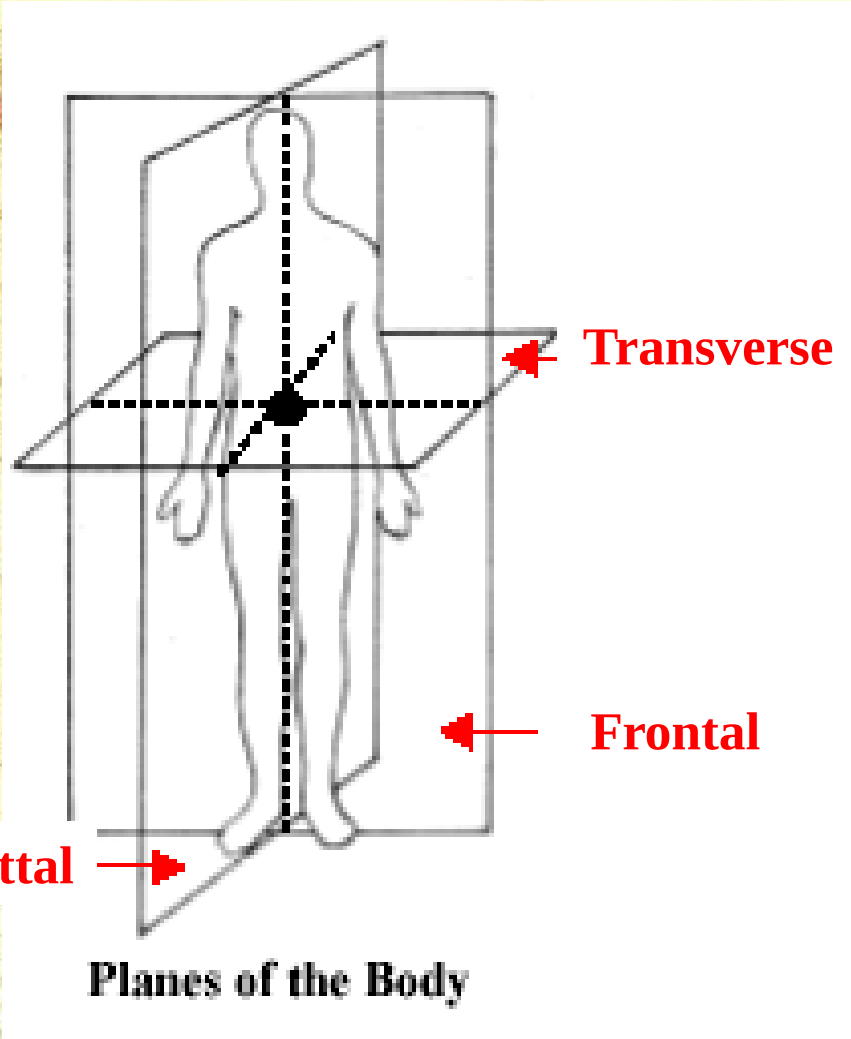


The 3 Anatomical Reference Planes

- **Sagittal Plane:**
  - Specific sagittal plane that lies vertically in the midline
- **Frontal Plane:**
  - Lies vertically and divides body into anterior and posterior parts
- **Transverse Plane:**
  - Runs horizontally – divides body into superior and inferior parts

Planes of the Body

- 3 basic planes of reference through the body:
  - Sagittal plane
  - Frontal plane
  - Transverse plane
- These planes are all at right angles or 90° to each other.



Joint Movement Terminology

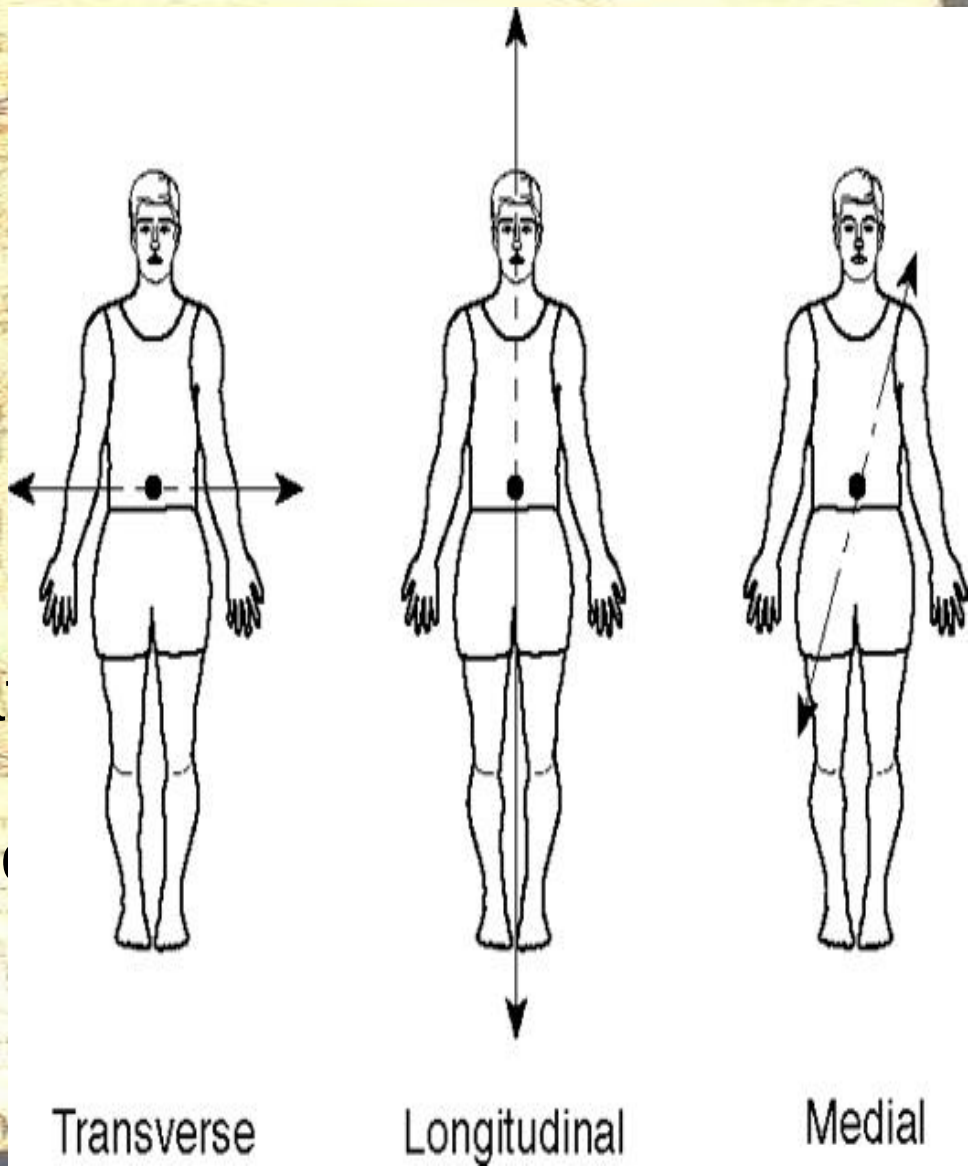
- In anatomical position, all body segments are considered to be positioned at zero degrees and movement occurs in any or all of the anatomical plans during any give movement. So any body may have:
  - Sagittal Plane Movements
  - Frontal Plane Movements
  - Transverse Plane Movements
  - Or a Combination of the above Movements

Anatomical Axis of Rotation

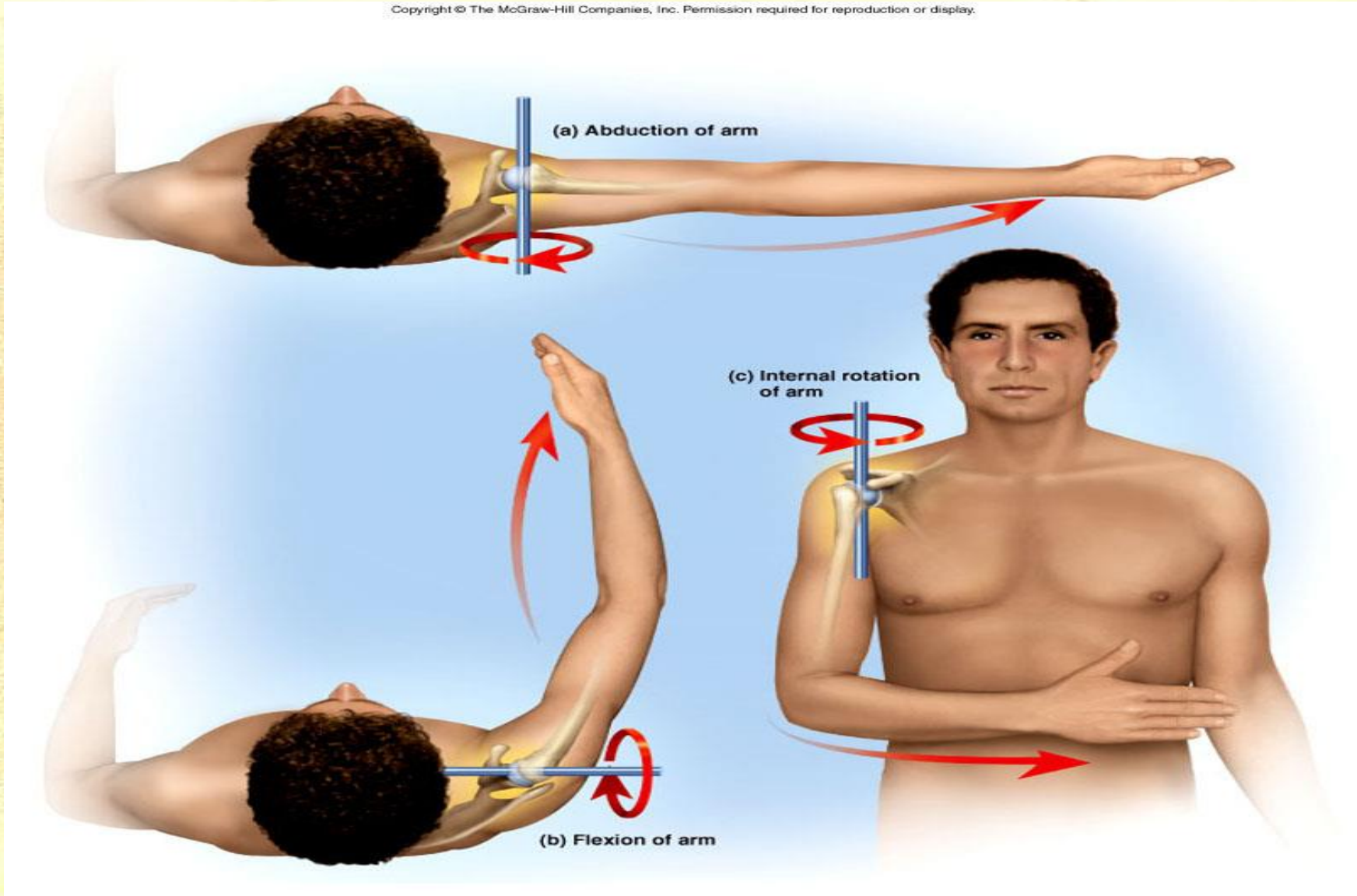
3 Axis of Rotation

- **Transverse Axis**
- **Longitudinal Axis**
- **Medial or Anterior-posterior Axis**

- **Axis:** imaginary lines tha passes through a joint perpendicular to the plan of movement

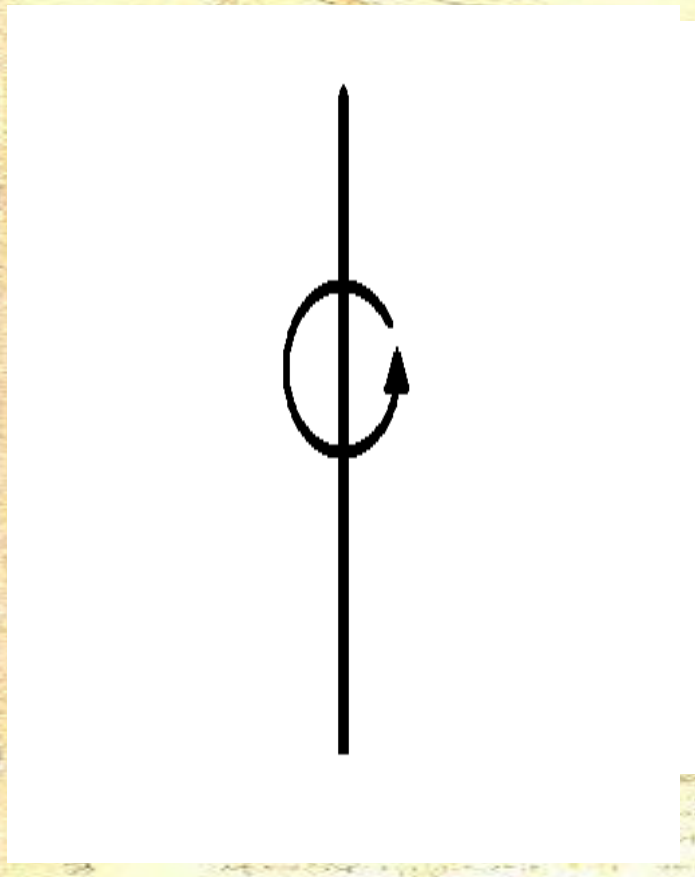


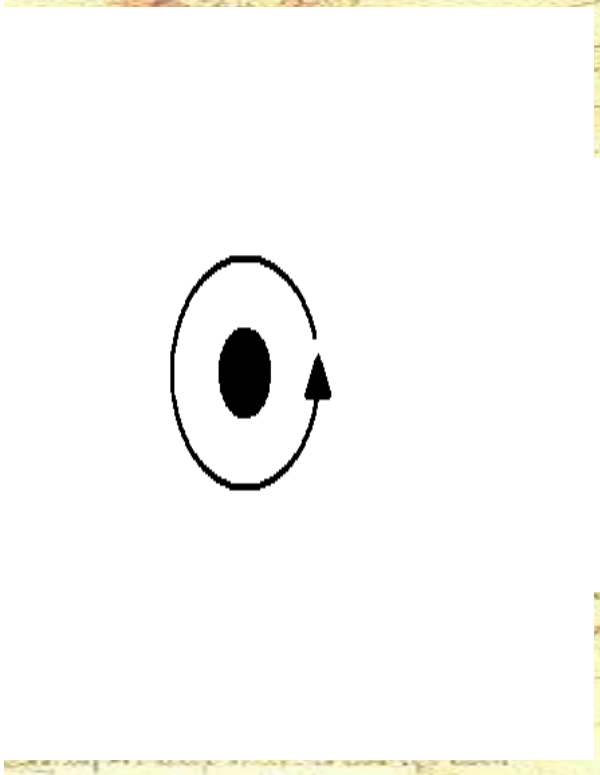
Axes of Rotation

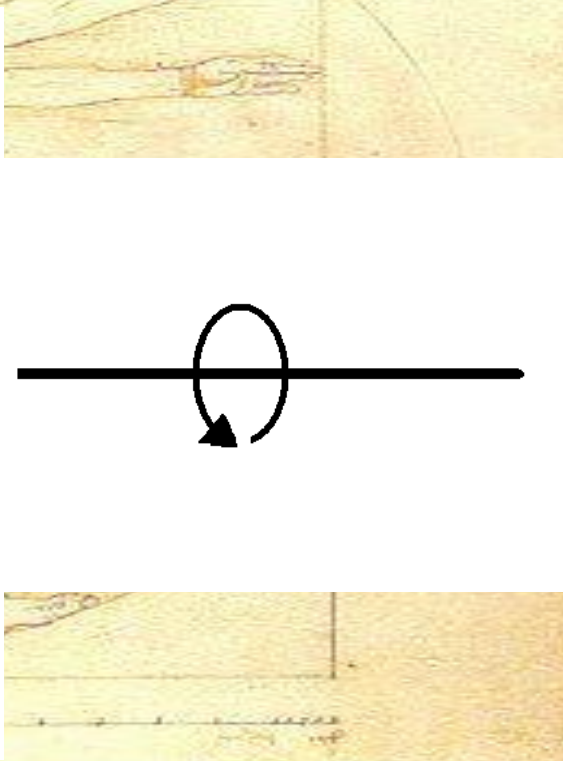


The 3 Anatomical Axis Pictures

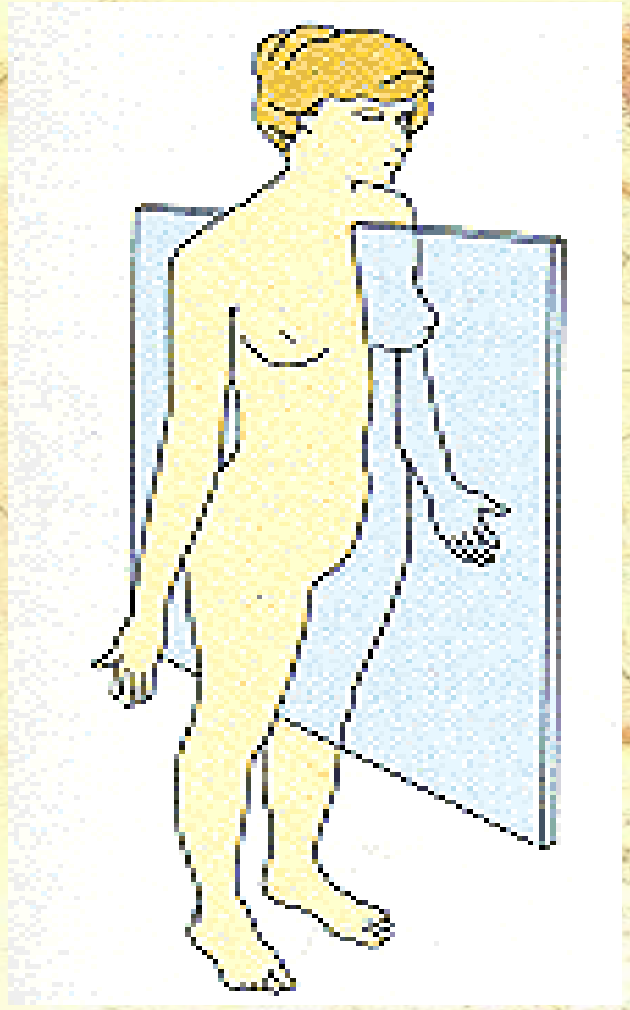
Longitudinal Axis **Medial Axis** **Transverse Axis**

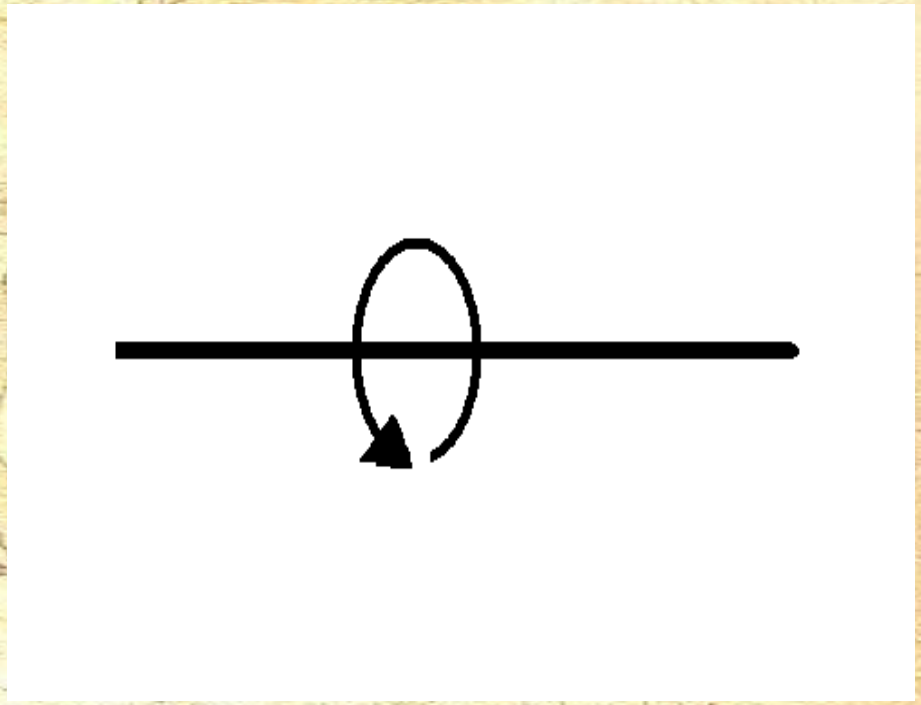






Sagittal Plane Movement

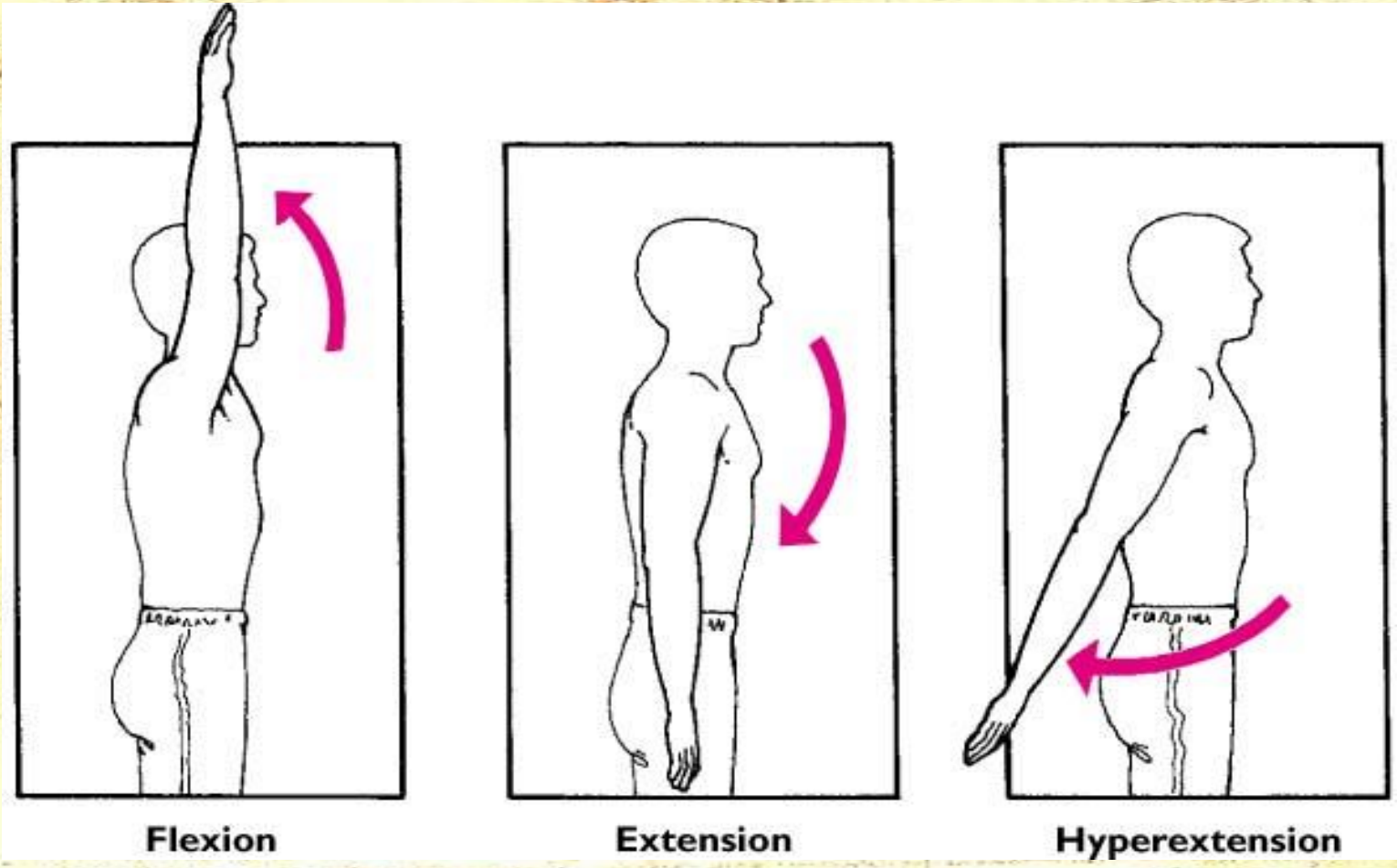




Sagittal Plane Movements

- **Flexion:** to reduce the angle at the joint or to bend a limb.
- **Extension:** to return from flexion, increase the angle at the joint, or to straighten a limb.
- **Dorsiflexion:** ankle flexes the foot superiorly
- **Plantar Flexion:** ankle flexes the foot inferiorly
- **Protraction:** scapula is pulled anteriorly in the Sagittal plane.
- **Retraction:** scapula is pulled posteriorly in the Sagittal plane.

Sagittal Plane Movements

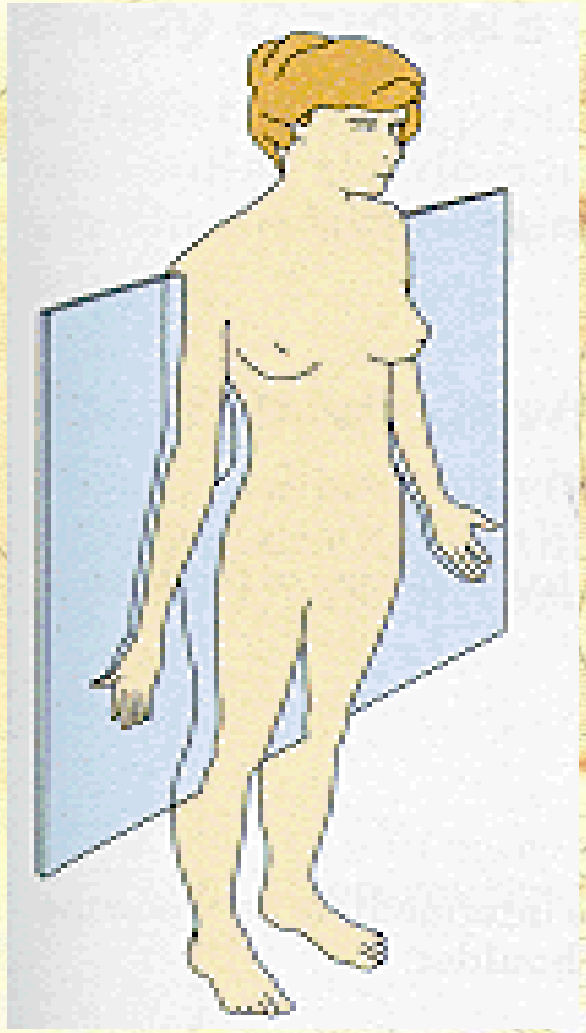


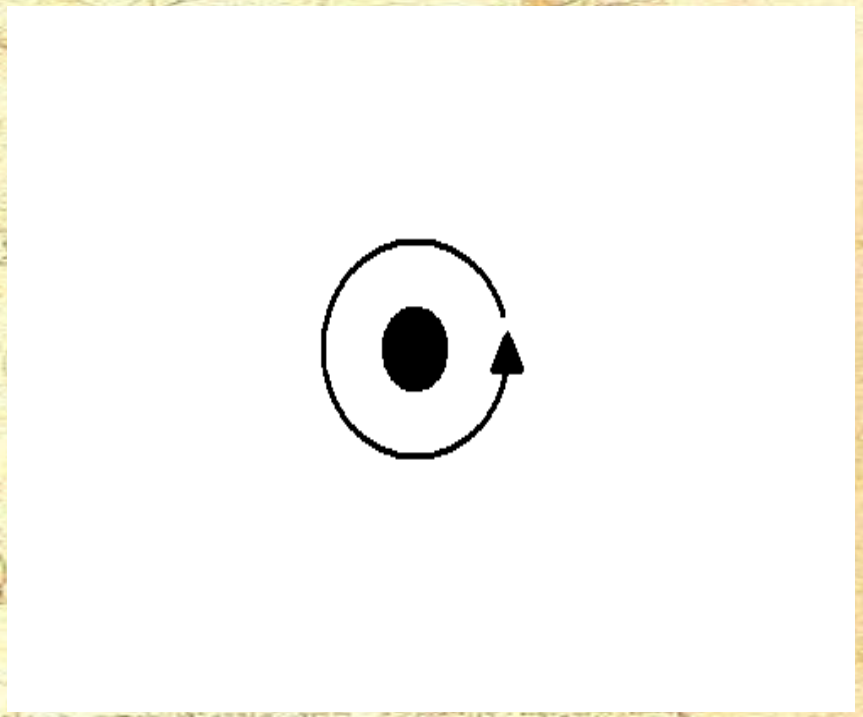
Regional Body Terms

LAB 1: Flexion & Extension

- Neck
- Shoulder
  - Protraction & Retraction
- Elbow
- Wrist
- Trunk
- Hip
- Knee
- Ankle
  - Dorsiflexion & Plantar Flexion

Frontal Plane

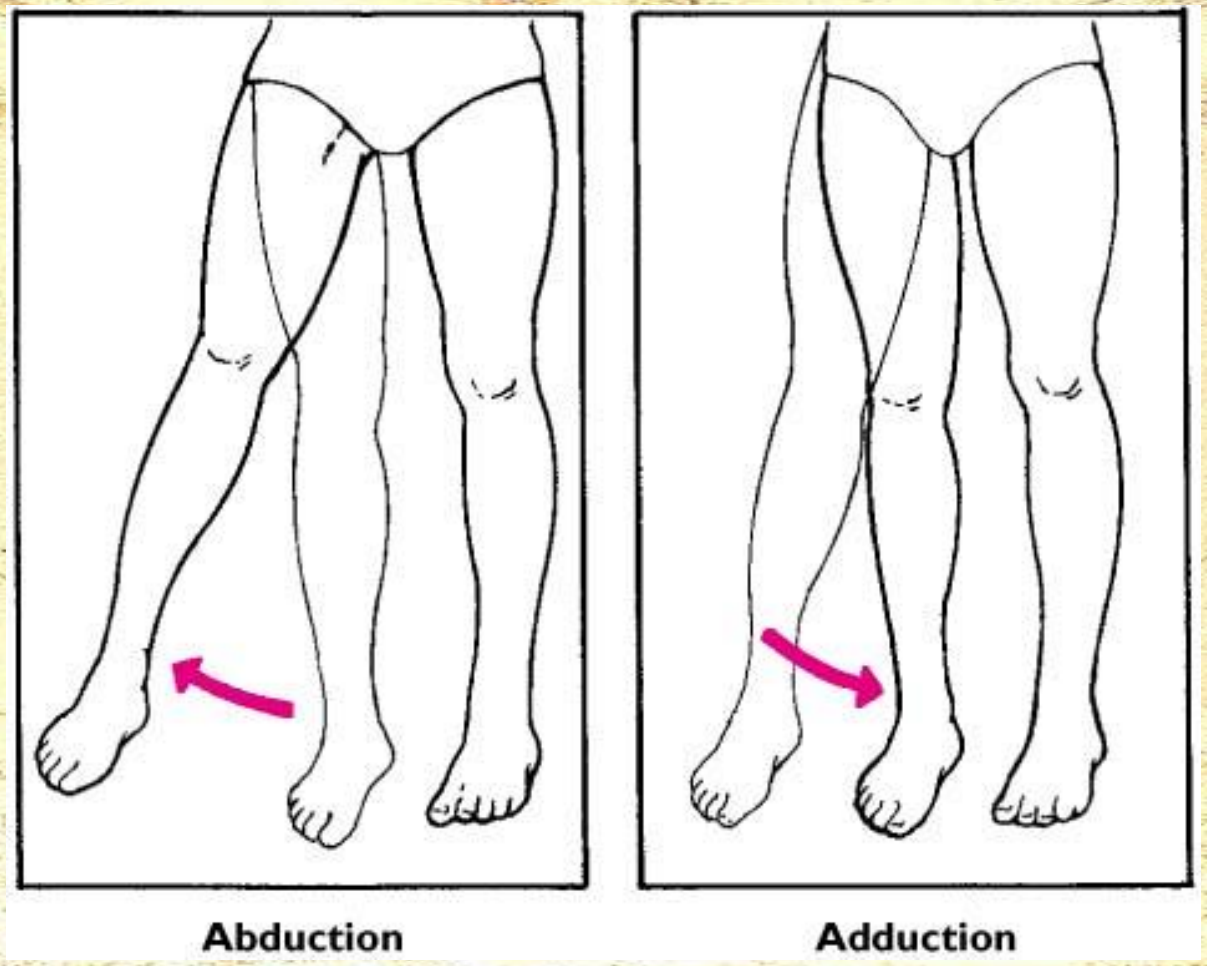




Frontal Plane Movements

- **Lateral Flexion:** to reduce the angle at the joint away from the midline of the body.
- **Abduction:** lateral movement away from the midline of the body.
- **Adduction:** medial movement towards the midline of the body.
- **Elevation:** shoulder or scapula moves superiorly .
- **Depression:** shoulder or scapula moves inferiorly.
- **Inversion:** foot moves medially towards the midline (adduction).
- **Eversion:** foot moves laterally away from the midline (abduction).

Frontal Plane Movements

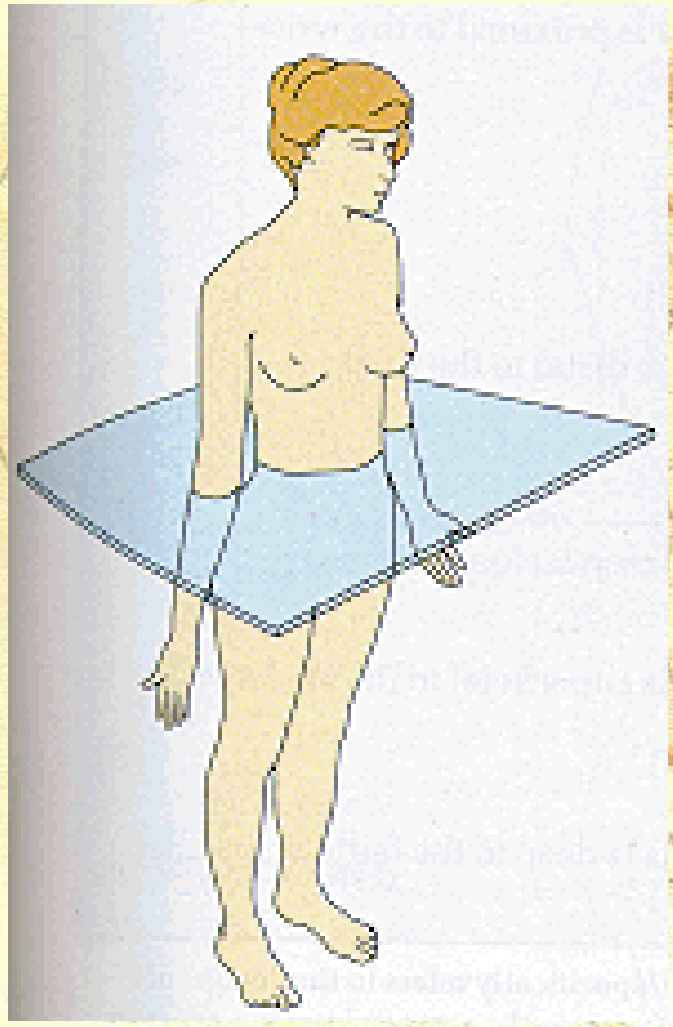


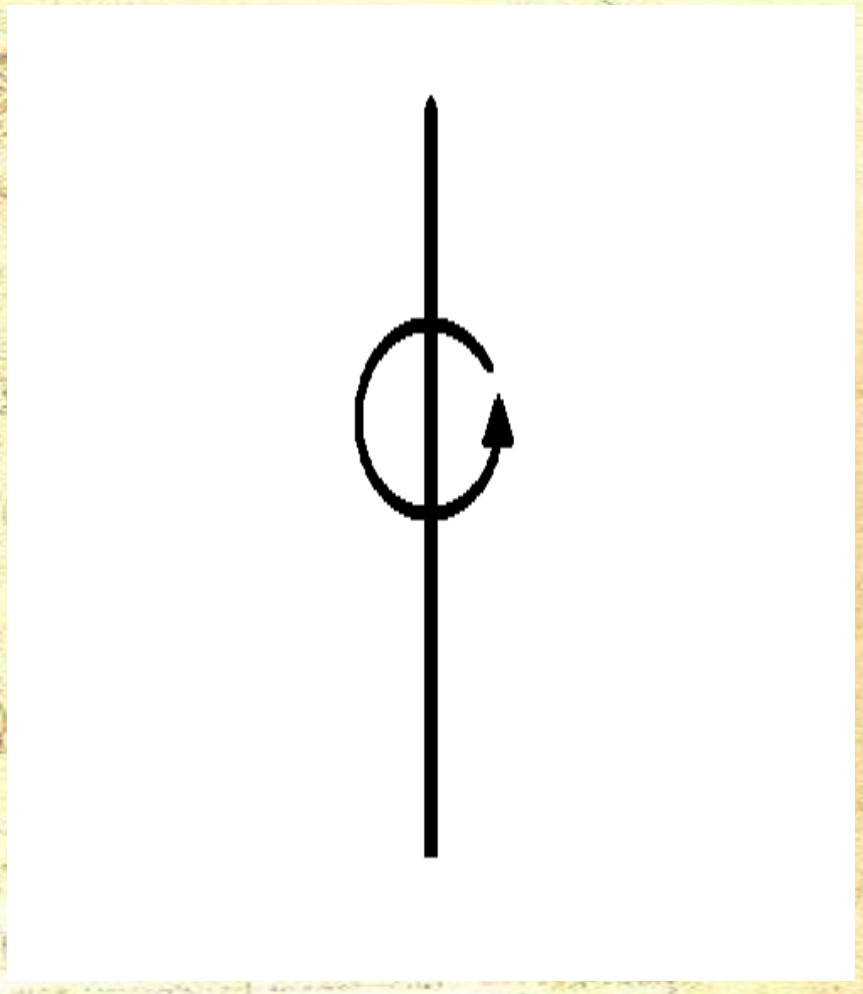
Regional Body Terms

LAB 2:

- Neck
  - Lateral Flexion
- Wrist
  - Radial (abduction) & Ulnar (adduction) Flexion
- Shoulder
  - Abduction & Adduction
  - Elevation & Depression
- Trunk
  - Lateral Flexion
- Hip
  - Abduction & Adduction
- Ankle
  - Inversion & Eversion

Transverse Plane

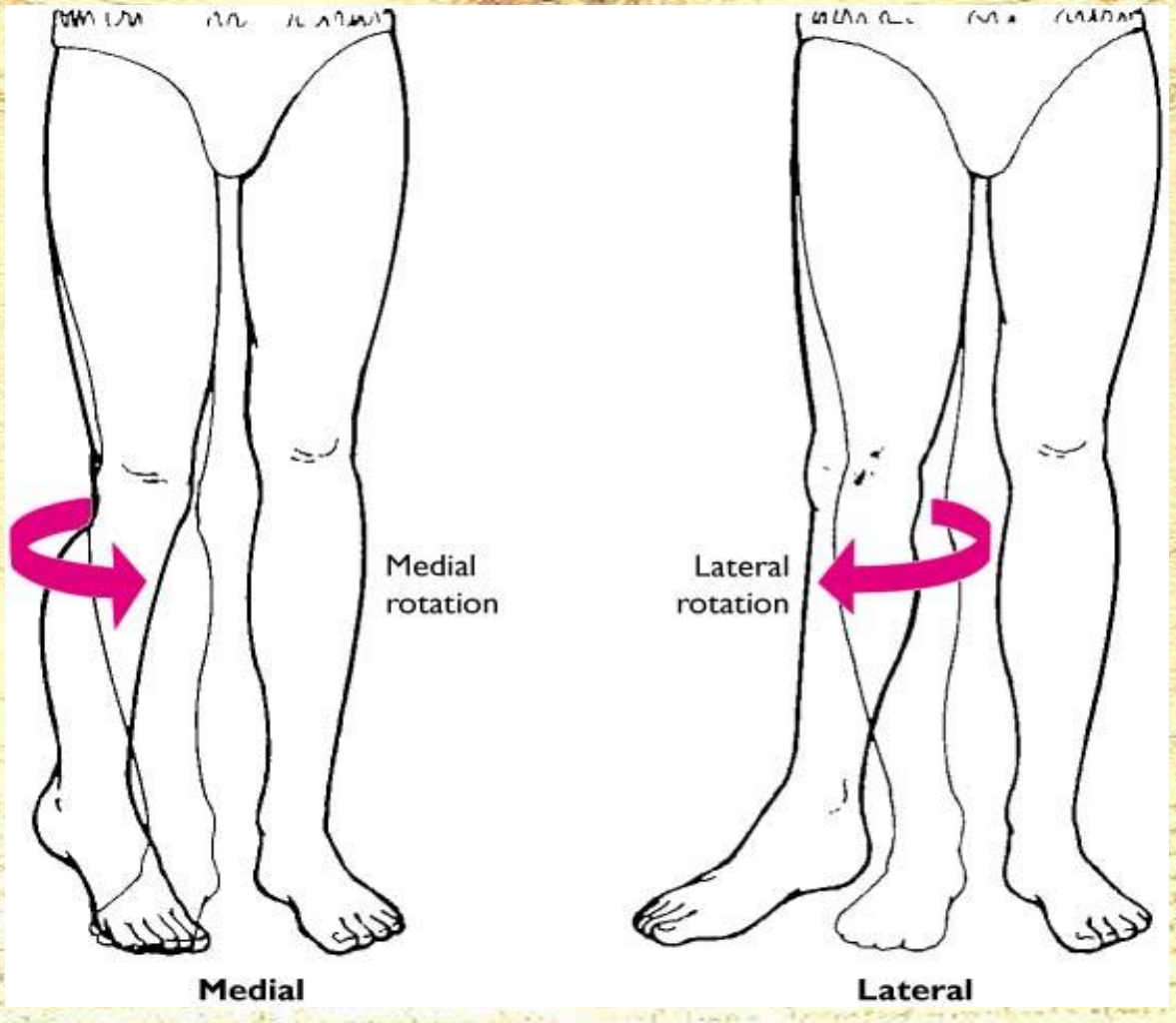




Transverse Plane Movements

- **Lateral Rotation:** to rotate the joint away from the from the midline of the body.
- **Medial Rotation:** to rotate the joint towards the midline of the body.
- **Abduction:** lateral movement away from the midline of the body.
- **Adduction:** medial movement towards the midline of the body.
- **Pronation:** forearm & palm rotates medially & than posteriorly.
- **Supination:** forearm & palm rotates laterally.

Transverse Plane Movements Lab



Regional Body Terms

LAB 3

- Neck
  - Lateral & Medial Rotation
- Wrist
  - Pronation & Supination
- Shoulder
  - Lateral & Medial Rotation
  - Abduction & Adduction
- Trunk
  - Lateral & Medial Rotation
- Hip
  - Lateral & Medial Rotation