

Overview and introduction to anatomy

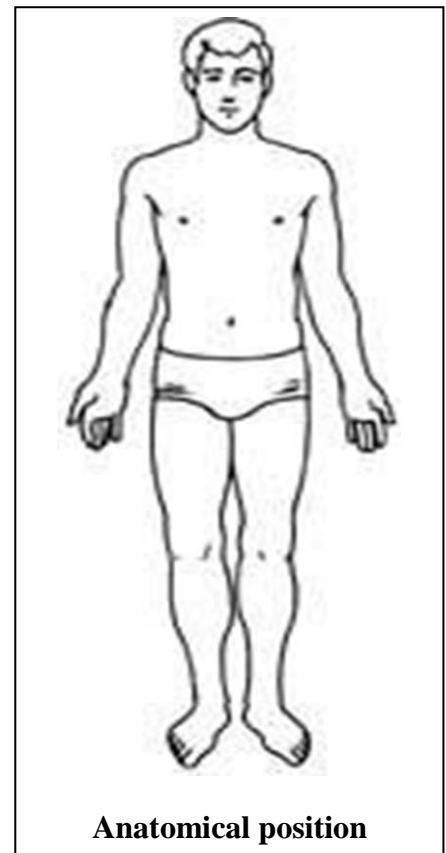
Learning objectives:

- 1-know the anatomical position and term.
- 2-know the different types of movements.
- 3-Describe in simple terms the normal structure of tissues , organs and systems.
- 4-Apply knowledge to understand the function of human body

Anatomy is the study of the structure of the body, the Latin word anatomy (ana= through, tom = cut) means to dissect or to cut a part.

• THE ANATOMICAL POSITION

- This position is used as a standard reference throughout the medical profession.
- This is true regardless of what position the body is actually in. The anatomical position is described as follows:
 - a- The body stands erect, with heels together.
 - b- Upper limbs are along the sides, with the palms of the hands facing forward.
 - c- The head faces forward.



Anatomical position

METHODS OF STUDYING ANATOMY

Human anatomy can be studied by two methods:

(1)**Systematic anatomy:** The various structures may be separately considered.

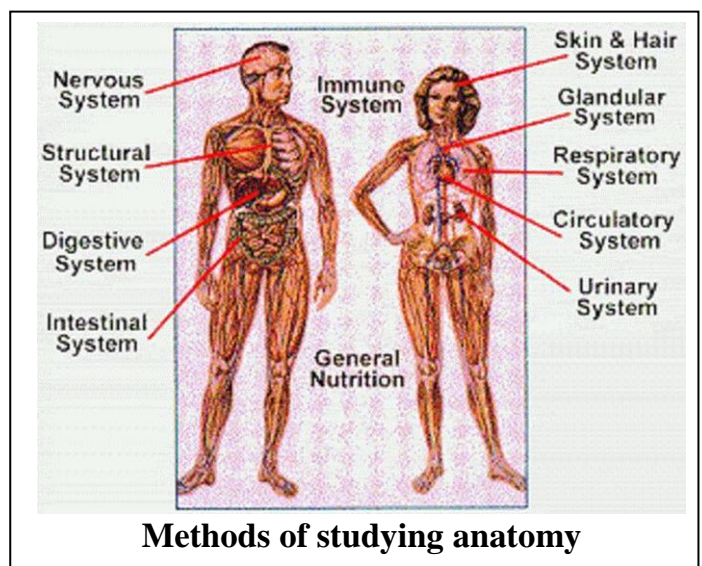
(2)**Topographical or regional anatomy:**

The organs and tissues may be studied in relation to one another.

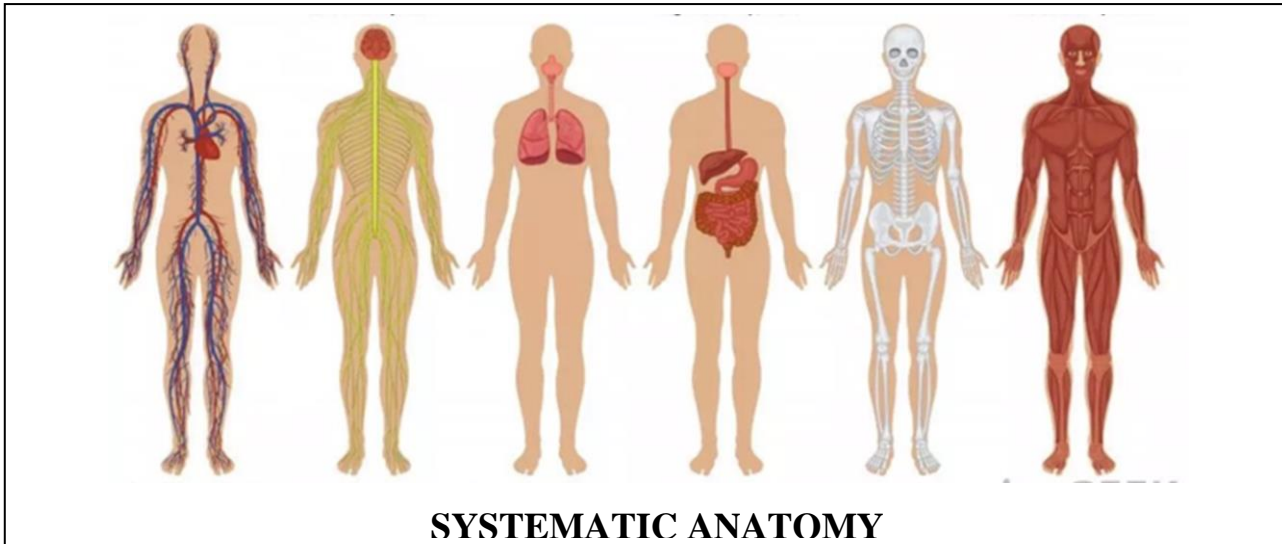
SYSTEMATIC ANATOMY

It includes the following branches

- **Osteology:** The bony system or skeleton.
- **Syndesmology:** The articulations or joints.



Methods of studying anatomy



- **Myology:** The muscles.
- **Angiology:** The vascular system, comprising the heart, blood vessels, lymphatic vessels, and lymph glands.
- **Neurology:** The nervous system. The organs of sense may be included in this system.
- **Splanchnology:** The visceral system. Topographically the viscera form two groups, viz., the thoracic viscera and the abdomino-pelvic viscera. The heart, a thoracic viscera, is best considered with the vascular system.

The rest of the viscera may be grouped according to their functions

- (a) **The respiratory apparatus;**
- (b) **The digestive apparatus; and**
- (c) **The urogenital apparatus.**

REGIONAL ANATOMY

REGIONS OF THE HUMAN BODY

The human body is a single, total composite. Everything works together. Each part acts in association with ALL other parts. Yet, it is also a series of regions. Each region is responsible for certain body activities.

These regions are:

- a. **The trunk.** includes the thorax (chest) and abdomen. At the lower end of the trunk is **the pelvis**. The perineum is the portion of the floor of the pelvis. The lungs, the heart, and the digestive system are found in the trunk.
- b. **Head and Neck.** The brain, eyes, ears, mouth, pharynx, and larynx are found in this region.

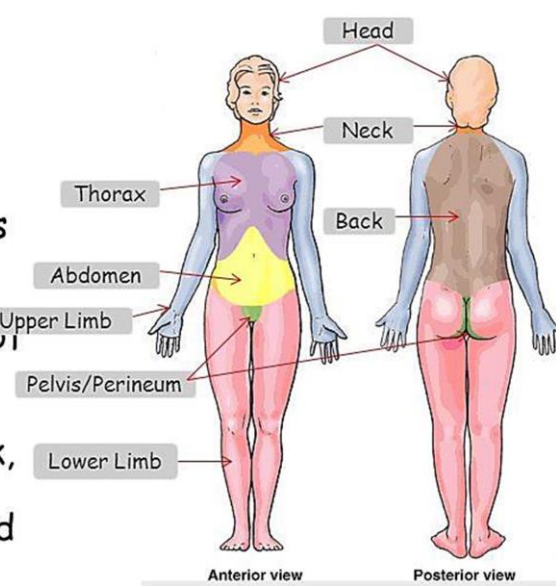
c. Limbs:

1. Each **upper limb** includes a shoulder, arm, forearm, wrist, and hand.
2. Each **lower limb** includes a hip, thigh, leg, ankle, and foot.

Approaches to Studying Anatomy

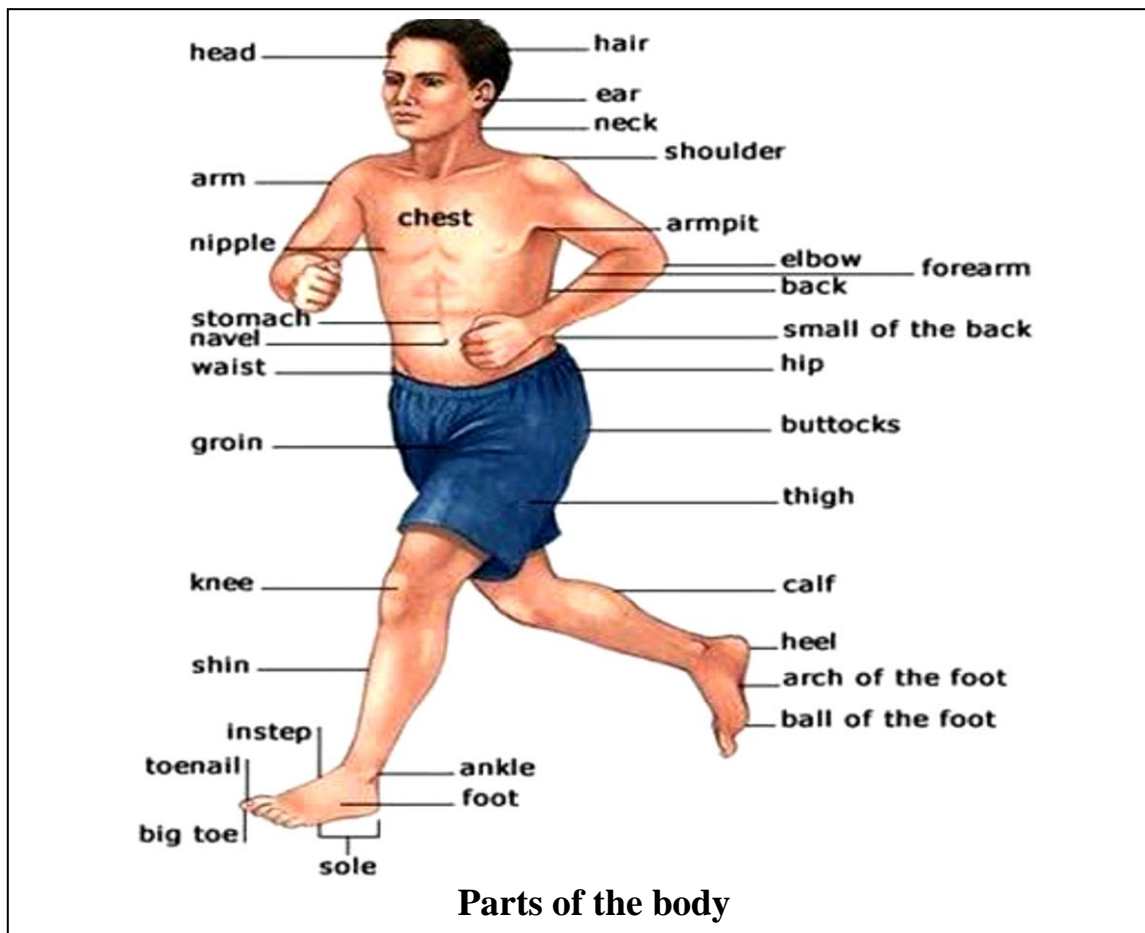
1. Regional Anatomy

- Regional anatomy (topographical anatomy) considers the organization of the human body as segments or major parts based on form and mass
- a main body, consisting of
 - the head, neck,
 - trunk (subdivided into thorax, abdomen, back, and pelvis/perineum),
 - paired upper limbs and lower limbs.



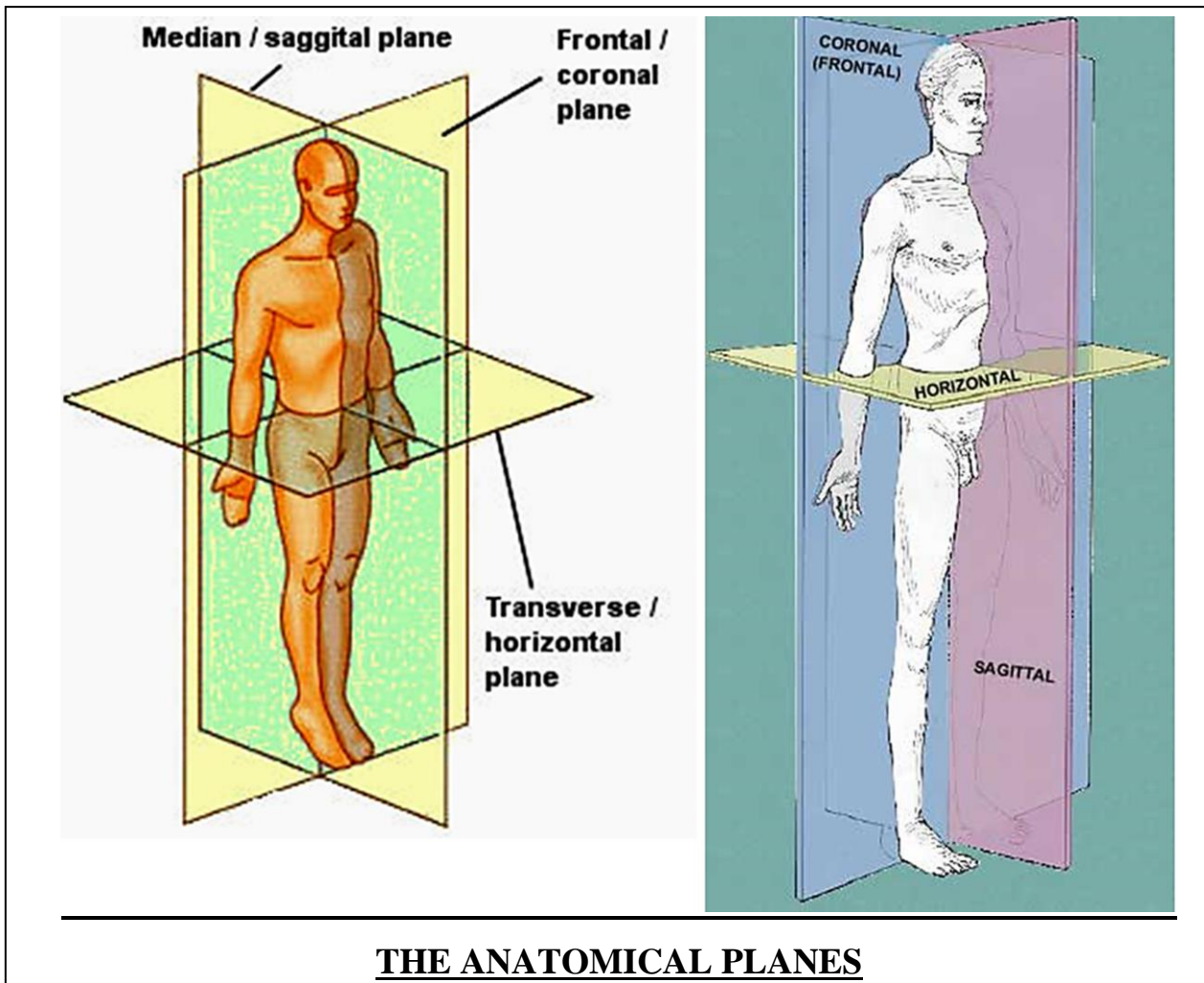
Anterior view Posterior view

REGIONAL ANATOMY



THE ANATOMICAL PLANES

- a. **Sagittal planes** are vertical planes that pass through the body from front to back. The median or midsagittal plane is the vertical plane that divides the body into right and left halves.
- b. **Horizontal (transverse) planes** are parallel to the floor that divides the body into upper and lower parts. They are perpendicular to both the sagittal and frontal planes.
- c. **Frontal (coronal) planes** are vertical planes which pass through the body from side to side and divides the body into anterior and posterior parts. They are perpendicular to the sagittal plane.



TERMS OF POSITION

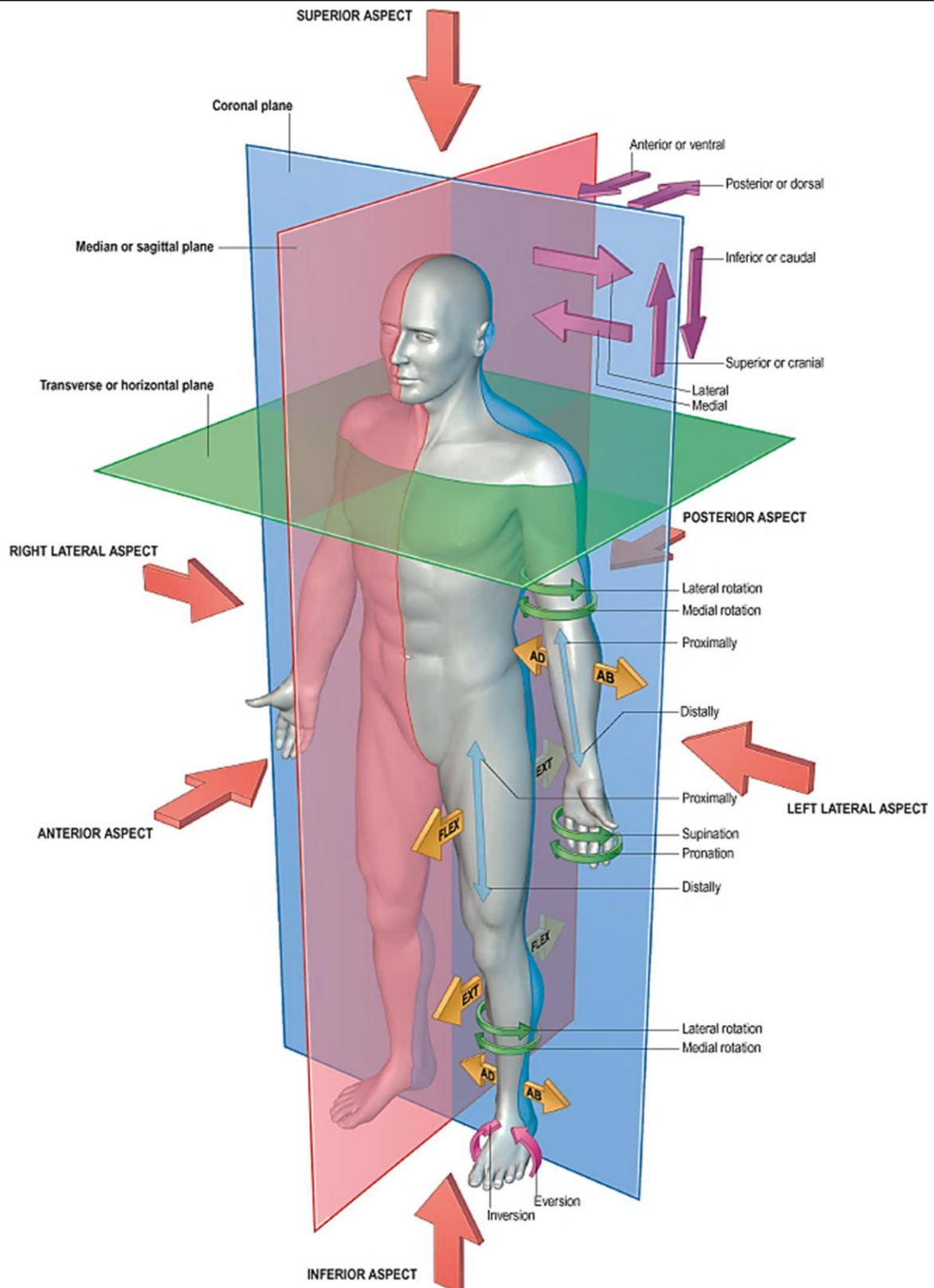
- A) **Superior, Inferior:**
- Superior means nearer to the head.
 - Inferior means farer from the head or nearer to the feet.

B) Anterior, Posterior: • Anterior (or ventral) means nearer to the front of the body.

• Posterior (or dorsal) means nearer to the back of the body.

C) Medial, Lateral: • Medial means toward or nearer the midline of the body.

• Lateral means away from the midline of the body.



Anatomical planes, terms of position and terms of movements

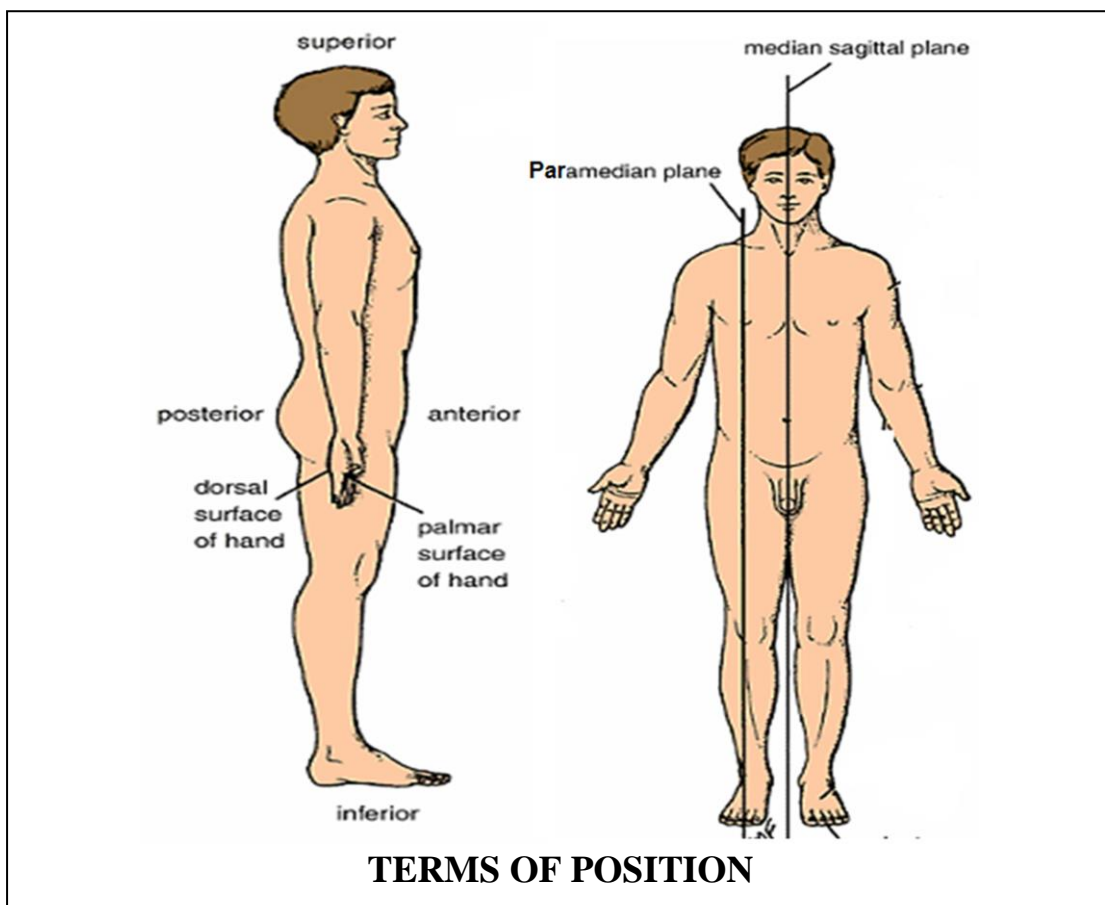
D) **Superficial, Deep:** • Superficial means closer to the surface of the body.

- Deep means toward the center of the body or body part.

E) **Proximal, Distal:** Proximal and distal are terms applied specifically to the limbs.

- Proximal means nearer to the shoulder joint or the hip joint.
- Distal means further away from the shoulder joint or the hip joint.

Sometimes proximal and distal are used to identify the "beginning" and "end" of the gut tract—that portion closer to the stomach being proximal while that further away being distal.

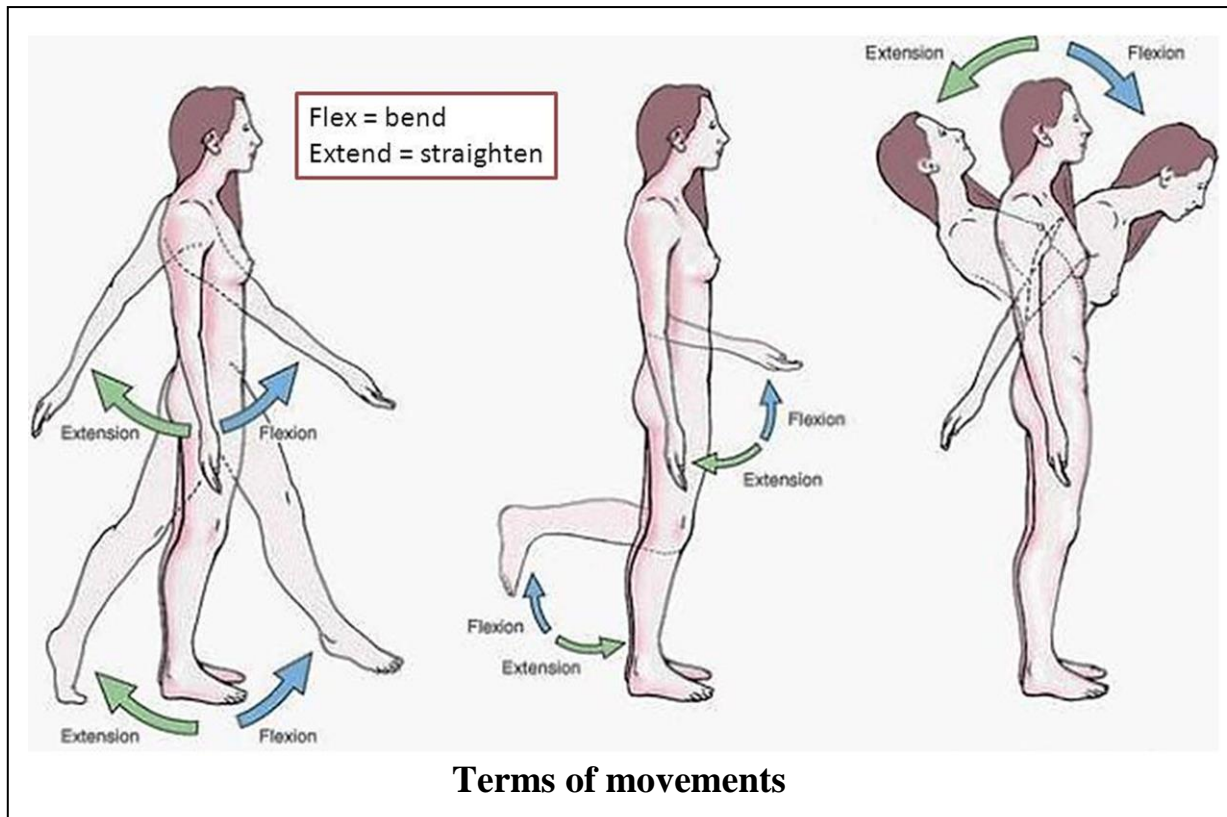


TERMS OF MOVEMENT

Movements of the trunk in the sagittal plane are known as **flexion** (bending anteriorly) and **extension** (straightening or bending posteriorly).

In the limbs, flexion is the movement which carry the limb anteriorly and fold it while **extension** is the movement which carry it posteriorly and straightens it.

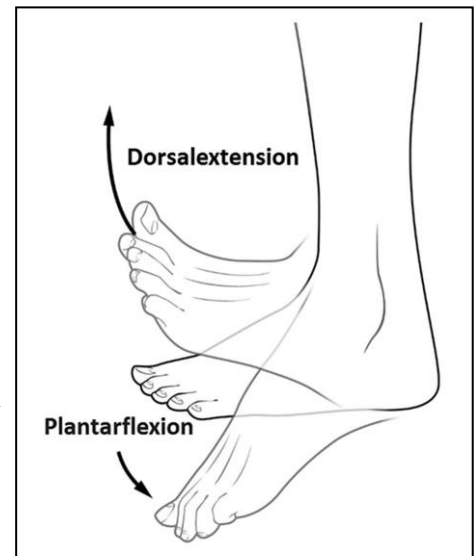
Flexion generally involves movement in an anterior direction; however, flexion at the knee joint involves posterior movement.



Dorsiflexion describes flexion at the ankle joint, as occurs when walking uphill or lifting the toes off the ground.

Plantar flexion turns the foot or toes toward the plantar surface (e.g., when standing on your toes).

Movement of the trunk in the coronal plane are known as **lateral flexion** while in the limbs they are called **abduction** (movement away from the median plane) and **adduction** (movement toward the median plane).



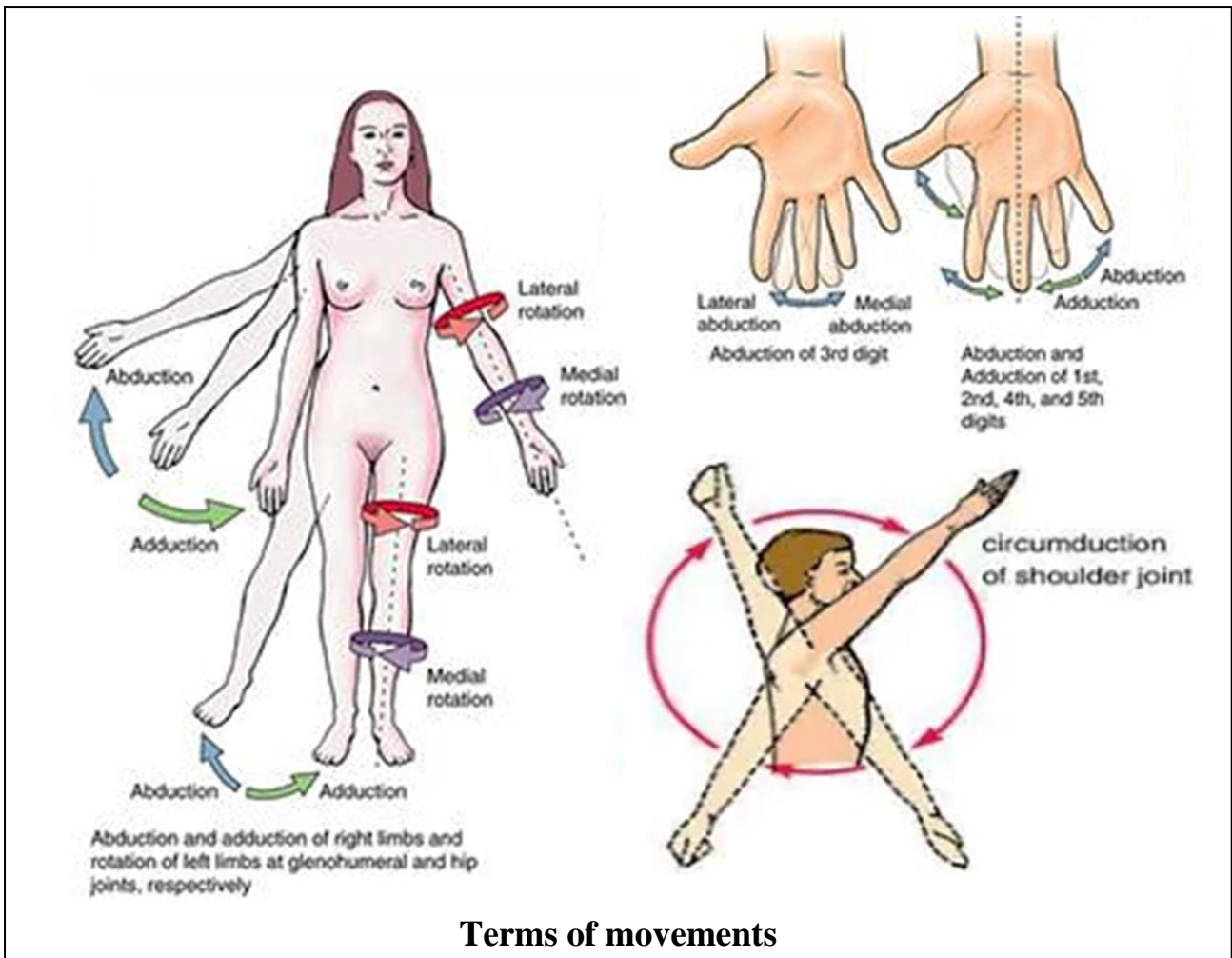
In the fingers and toes, adduction is applied to the spreading and adduction is applied to drawing together of these structures. In the hand this movement is away from or toward the line of the middle finger, in the foot it is away from or toward the line of the second toe.

Circumduction is a circular movement that is a combination of flexion, extension, abduction, and adduction occurring in such a way that the distal end of the part moves in circle. Circumduction can occur at any joint at which all the above-mentioned movements are possible (e.g., Shoulder and hip joints).

Rotation involves turning or revolving a part of the body around its longitudinal axis, such as turning one's head to face sideways.

Medial rotation (internal rotation) brings the anterior surface of a limb closer to the median plane, whereas

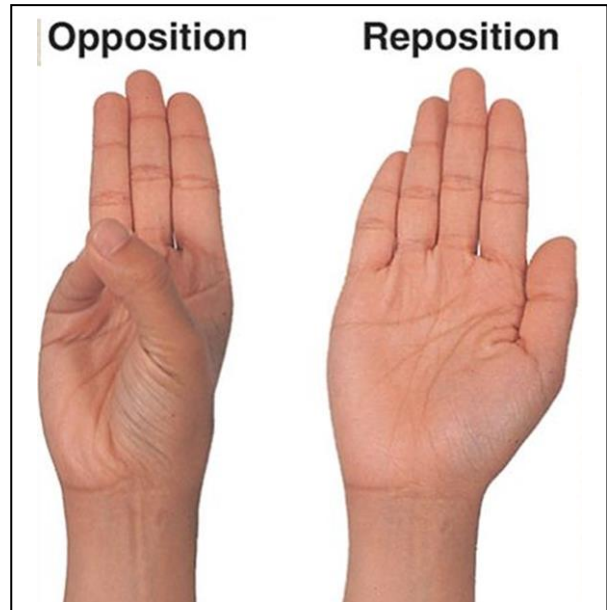
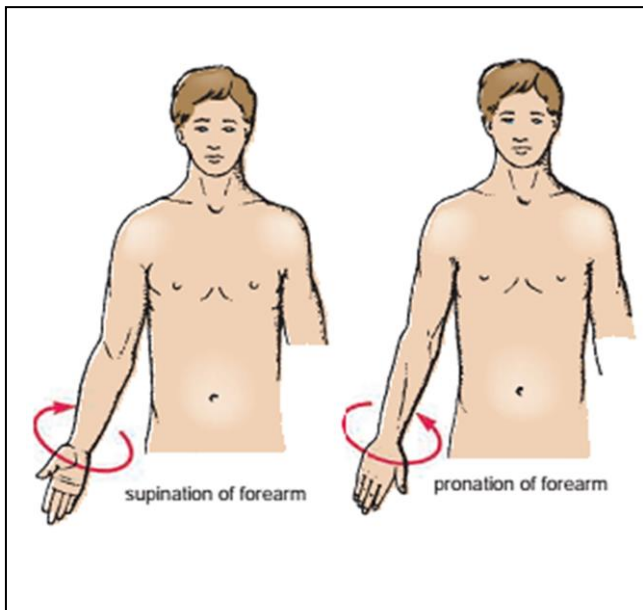
Lateral rotation (external rotation) takes the anterior surface away from the median plane.



Pronation is the rotational movement of the forearm and hand that swings the radius (the lateral long bone of the forearm) medially around its longitudinal axis so that the palm of the hand faces posteriorly and its dorsum faces anteriorly. When the elbow joint is flexed, pronation moves the hand so that the palm faces inferiorly (e.g., placing the palms flat on a table).

Supination is the rotational movement of the forearm and hand that swings the radius laterally around its longitudinal axis so that the dorsum of the hand faces posteriorly and

the palm faces anteriorly (i.e., moving them into the anatomical position). When the elbow joint is flexed, supination moves the hand so that the palm faces superiorly.

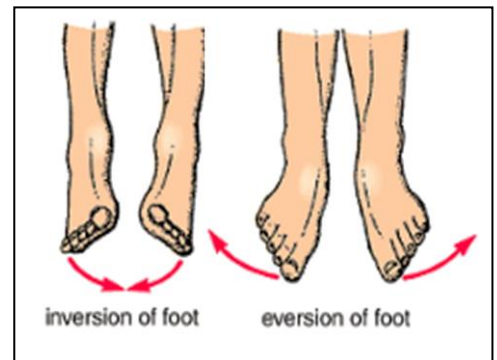


Opposition is the movement by which the pad of the 1st digit (thumb) is brought to another digit pad. This movement is used to pinch, button a shirt, and lift a teacup by the handle.

Reposition describes the movement of the 1st digit opposition back to its anatomical position.

Inversion: move the sole of the foot towards the midline.

Eversion: move the sole of the foot away from the midline.



Choose the correct answer

1-..... refers to the same side of the body

A) Contralateral.

B) Ipsilateral.

C) Lateral.

D) Medial.

E) Proximal.

2- is a structure situated nearer to the median plane of the body than another is said to be

A) Distal.

B) Lateral.

C) Medial.

D) Proximal.

E) Superior.

3- is any structure nearer to the back of the body.

A) Anterior.

B) Distal.

C) Posterior.

D) Proximal.

E) Superior.