



# Anatomy I Lab. 3

(UOMU013033)

1st term

The anatomical terminology of the Human Body

Al-Mustaqbal University College of Engineering  
Department of prosthetics and orthotics engineering

Second Stage

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# Lecture objectives

Anatomical position

Anatomical planes

Directional terms

Movements

Anatomical regions



# The anatomical position

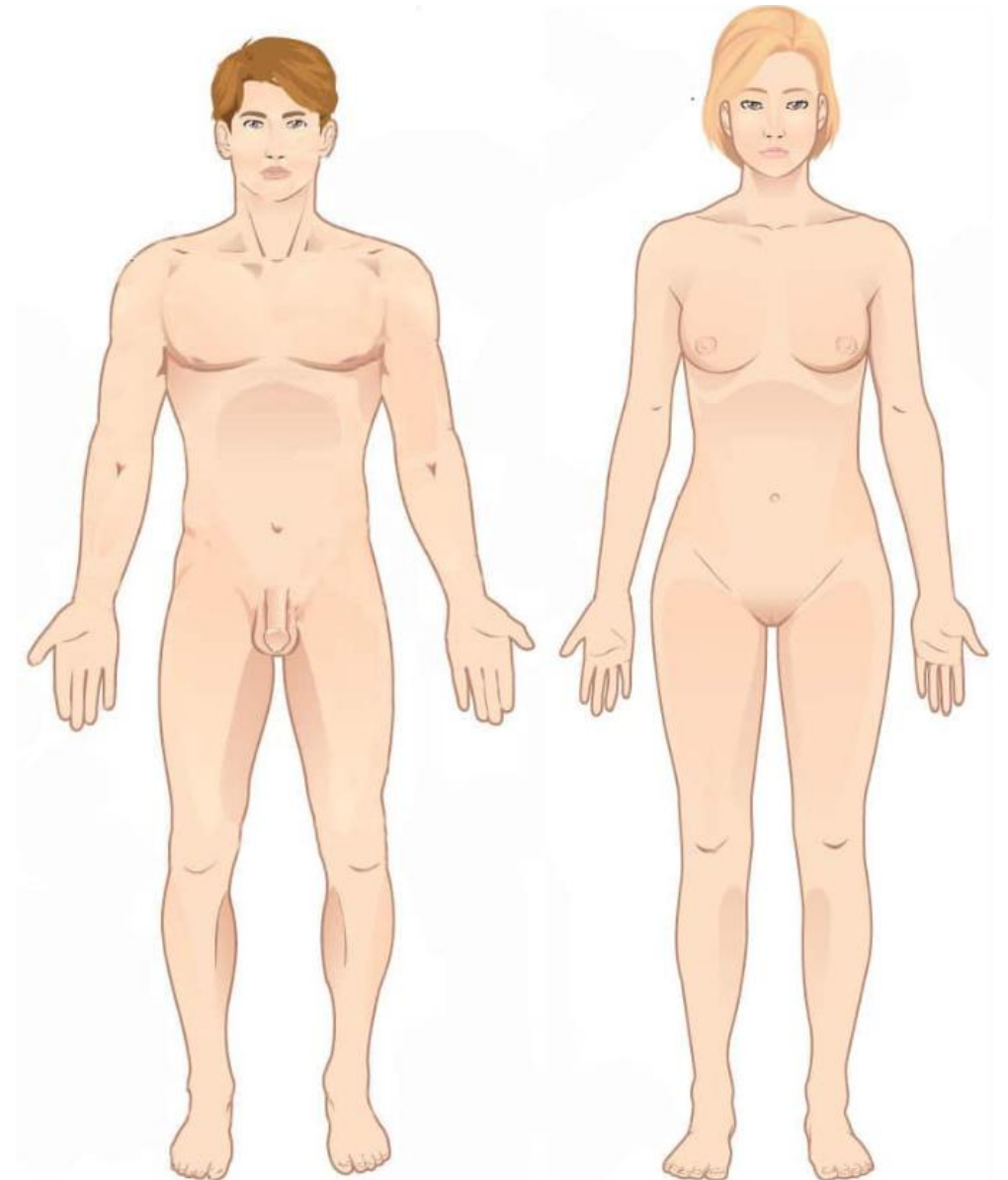
The anatomical position is the standard reference orientation of the human body.

It is used to provide a clear and consistent mechanism for describing the location of structures.

## Description of the Anatomical Position

The standard anatomical position is described as a person in the following orientation:

1. Standing upright and facing forward.
2. Mouth closed with a neutral facial expression.
3. Arms straight, hands held by the hips with palms facing forward.
4. Feet together and parallel, toes pointing forward.



# What are the 4 main anatomical positions?

The term "anatomical position" refers to a standard posture used to describe anatomical structures or movement directions.

In this position, the body stands upright and faces forward, with arms at the sides and palms facing outward. The thumbs point away from the body, while the feet are slightly apart with toes directed forward.

In clinical and anatomical descriptions, several other reference positions are frequently utilized:

- **Supine position**: Lying flat on the back with the face and palms facing upward.
- **Prone position**: Lying flat on the stomach with the face and palms downward.
- **Lateral positions (right and left)**: The body lying on either the left side (left lateral) or right side (right lateral).



**Supine**



**Prone**



**Right Lateral Recumbent**

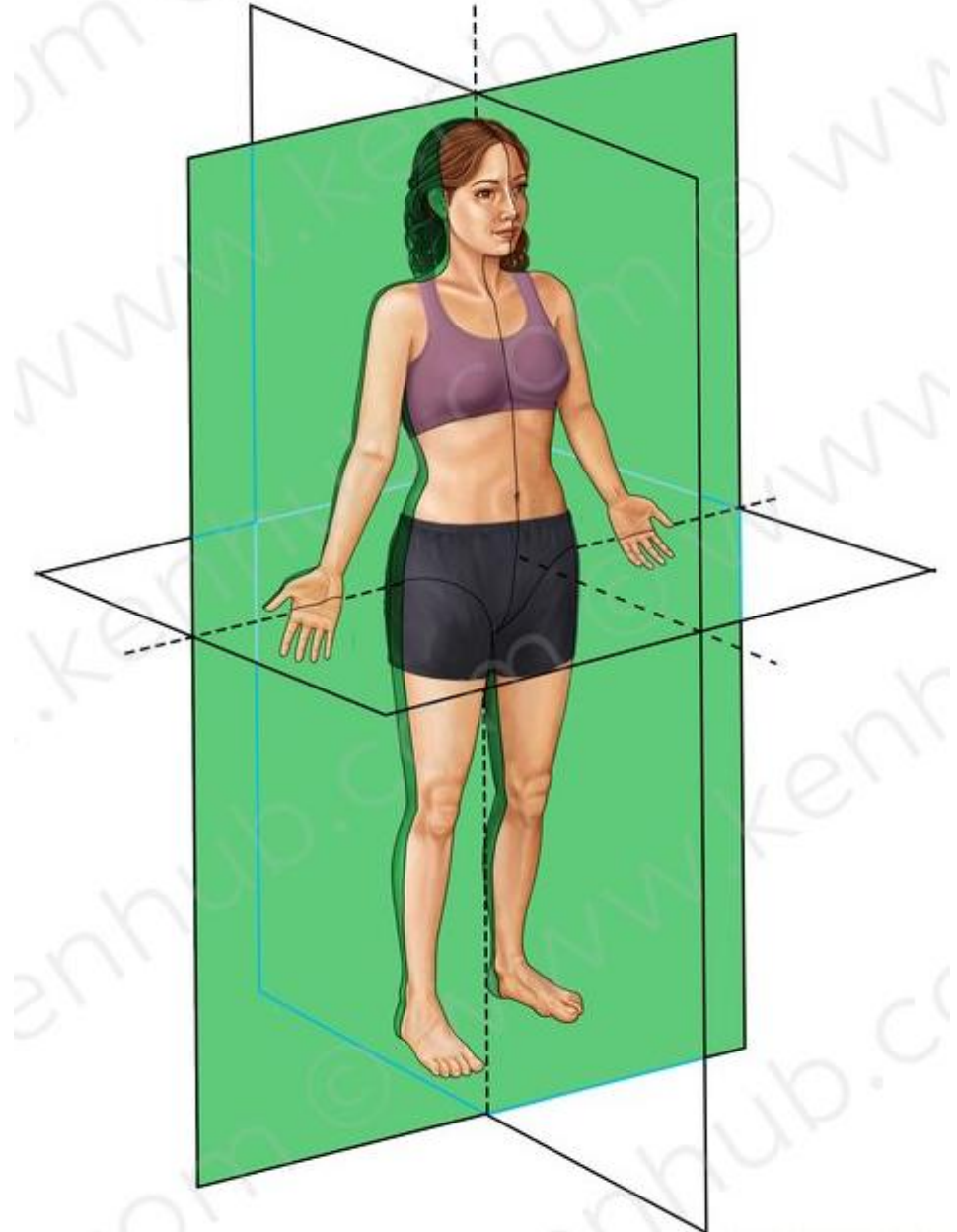


**Left Lateral Recumbent**

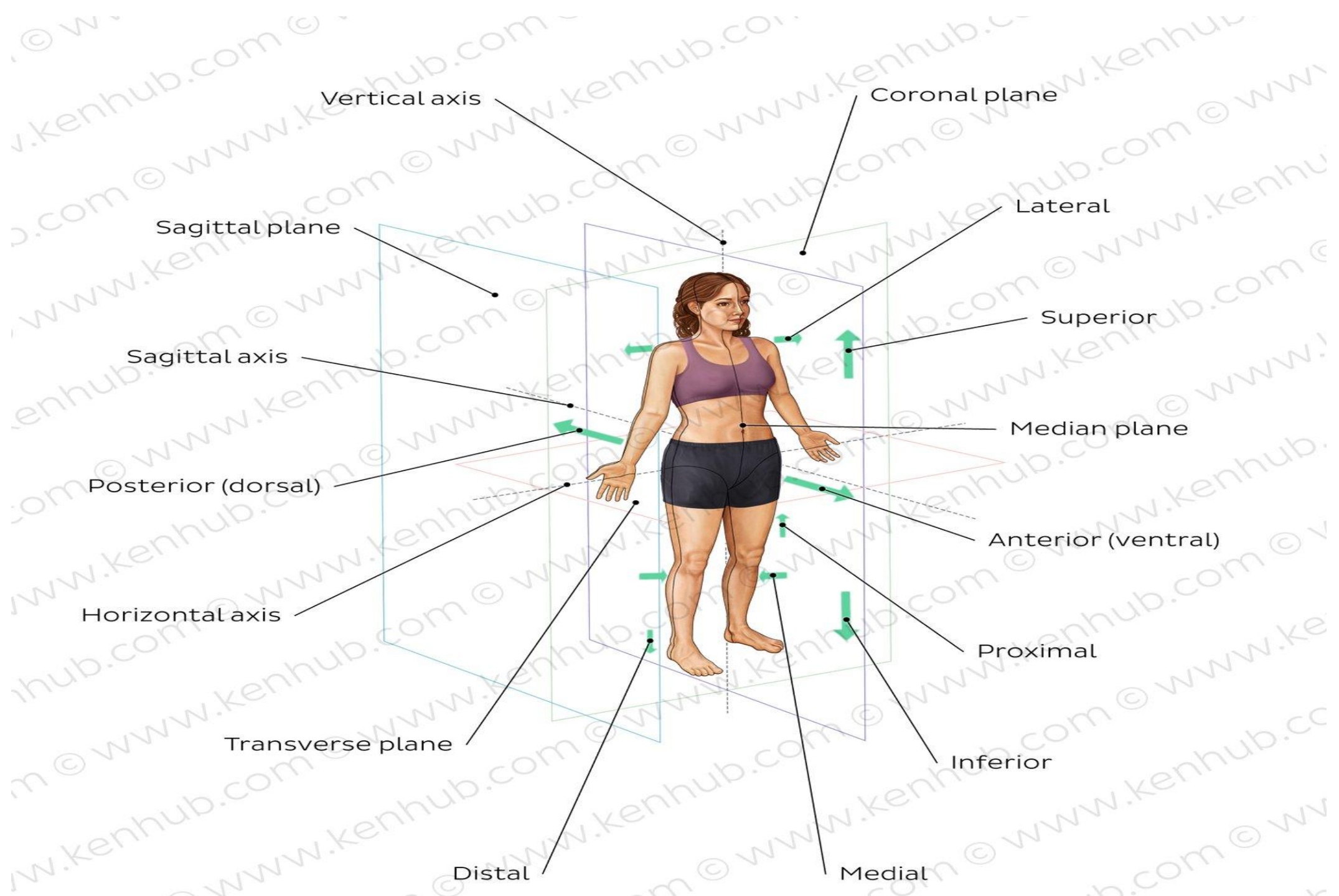
# anatomical planes

anatomical planes, these are imaginary planes that intersect the body, creating various cuts or slices of various organs and structures. There are **four major planes** of the body:

- **Mid-sagittal/median - vertical plane** passing through the center of the body (midline) that cuts it longitudinally into right and left halves.
- **Sagittal** – an arbitrary vertical plane passing through the body parallel to the midline, slicing it longitudinally into right and left parts. To aid your understanding, imagine that you are cutting an apple - each slice is a sagittal plane.
- **Frontal (coronal) - vertical plane** at right angle to the sagittal plane that divides the body into anterior (front) and posterior (back) portions.
- **Transverse (axial) - horizontal plane** at right angles to the sagittal and frontal planes, slicing the body into a superior (upper) and inferior (lower) portions. The obtained cuts are transverse or axial views.







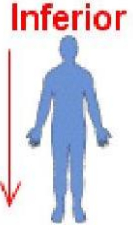
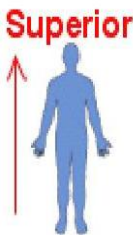
# Directional terms

These adjectives compare the position of two structures relative to one another in the anatomical position.

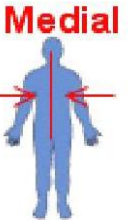
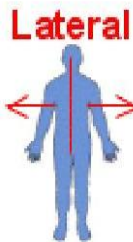
Directional terms and relations	
Anterior	In front of or front
Posterior	In behind of or behind
Ventral	Towards the front of the body
Dorsal	Towards the back of the body
Distal	Away or farthest away from the trunk or the point of origin of the body part
Proximal	Closer or towards the trunk or the point of origin of the body part
Median	Midline of the body
Medial	Towards the median
Lateral	Away from median
Superior	Towards the top of the head

## Directional Terms

Usually written with the opposing direction.  
For example:



**Superior / Inferior**

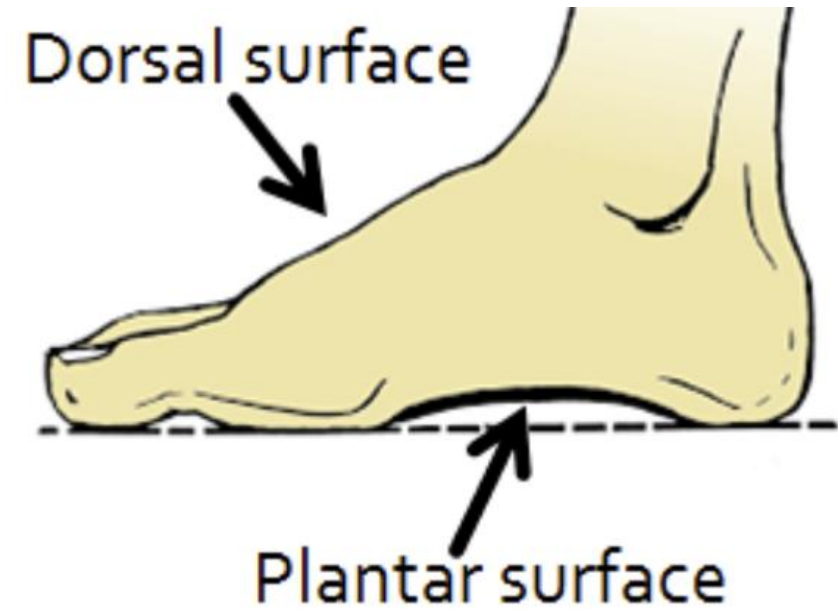


**Lateral / Medial**



**Proximal / Distal**

Inferior	Towards the feet
Cranial	Towards the head
External	Towards the surface, superficial
Internal	Away from the surface, deep
Superficial	Nearer to the surface
Deep	Farther from the surface
Palmar	Anterior hand or palm of hand (palmar)
Dorsal (of hand)	Posterior surface of hand (dorsum)
Plantar	Inferior surface of foot (sole)
Dorsal (of foot)	Superior surface of foot (dorsum)





# Anatomical Terms of Movement

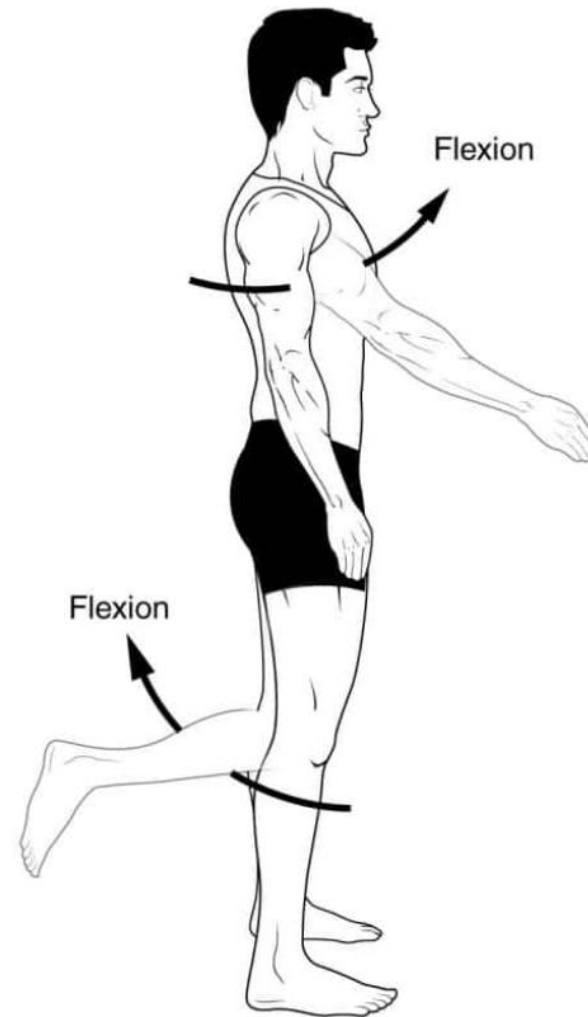
Anatomical terms of movement are used to **describe** the actions of muscles upon the skeleton.

## ❖ Flexion & Extension

Flexion and extension are movements that occur in the **sagittal plane**. They refer to increasing and decreasing the angle between two body parts

**Flexion** refers to a movement that decreases the angle between two body parts

**Extension** refers to a movement that increases the angle between two body parts.



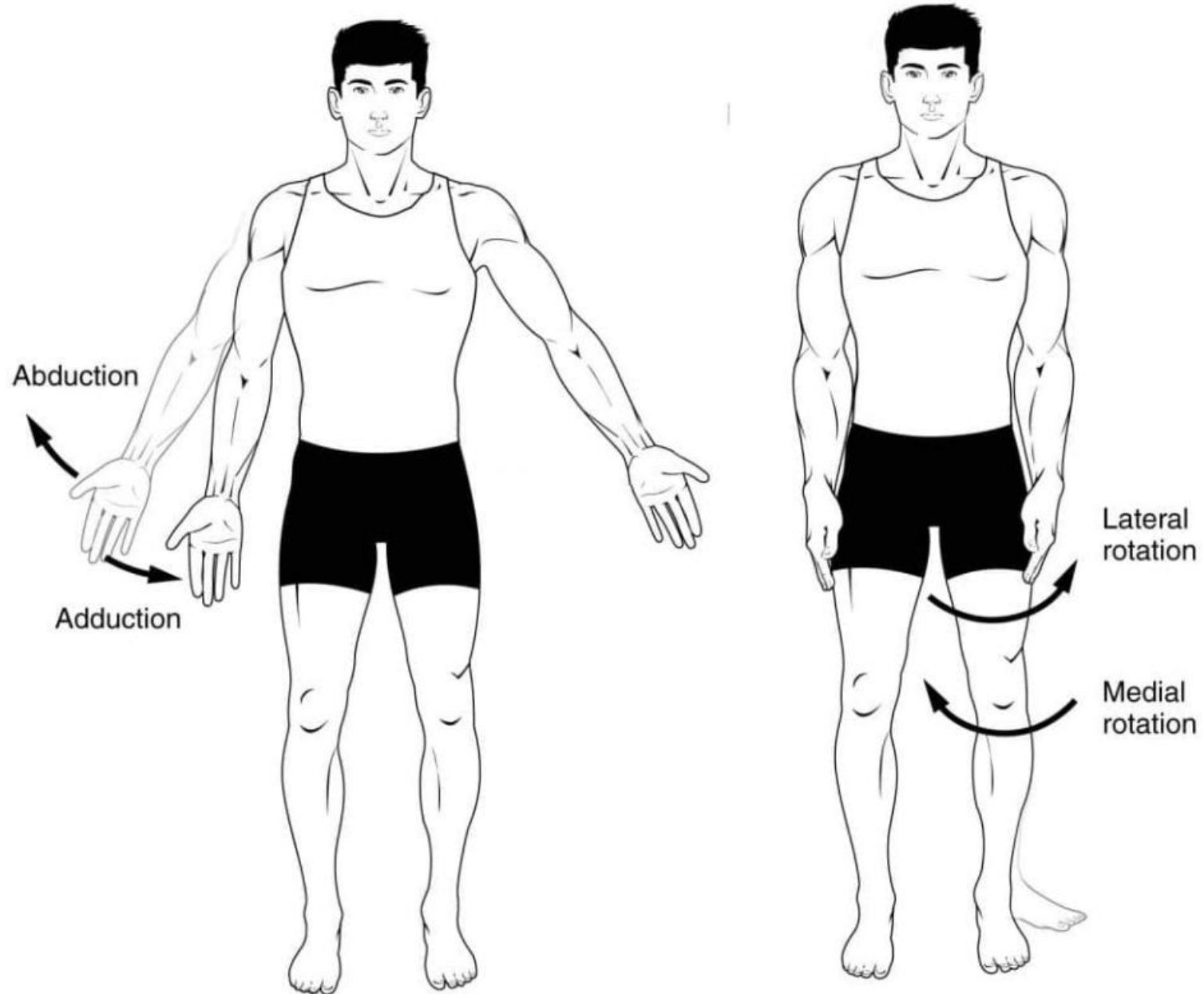
## ❖ Abduction & Adduction

Abduction and adduction are two terms that are used to **describe** movements towards or away from the midline of the body.

**Abduction** is a movement **away** from the midline, just as abducting someone is to take them away.

For example, abduction of the shoulder raises the arms out to the sides of the body.

**Adduction** is a movement **towards** the midline. Adduction of the hip squeezes the legs together.

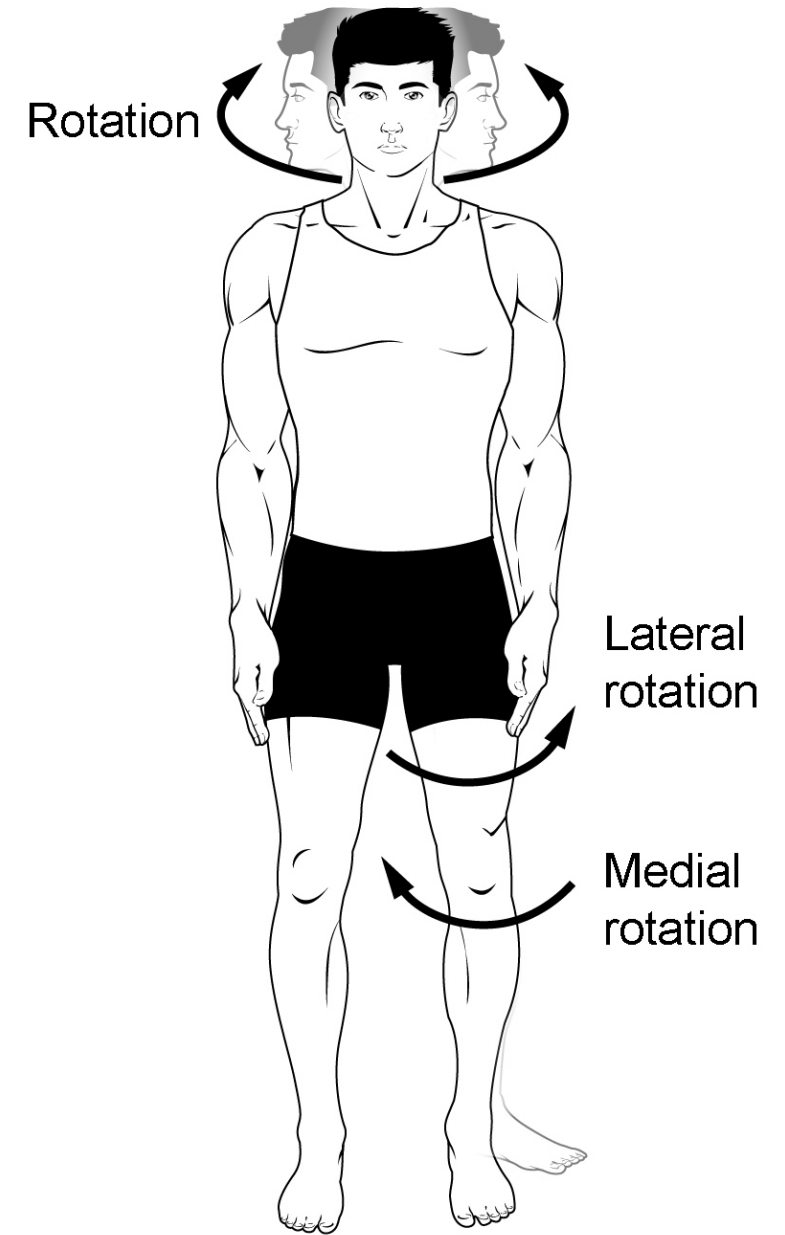


## ❖ Medial & Lateral Rotation

Medial and lateral rotation **describe** the movement of the limbs around their long axis:

**Medial rotation** is a rotational movement towards the midline. It is sometimes referred to as internal rotation.

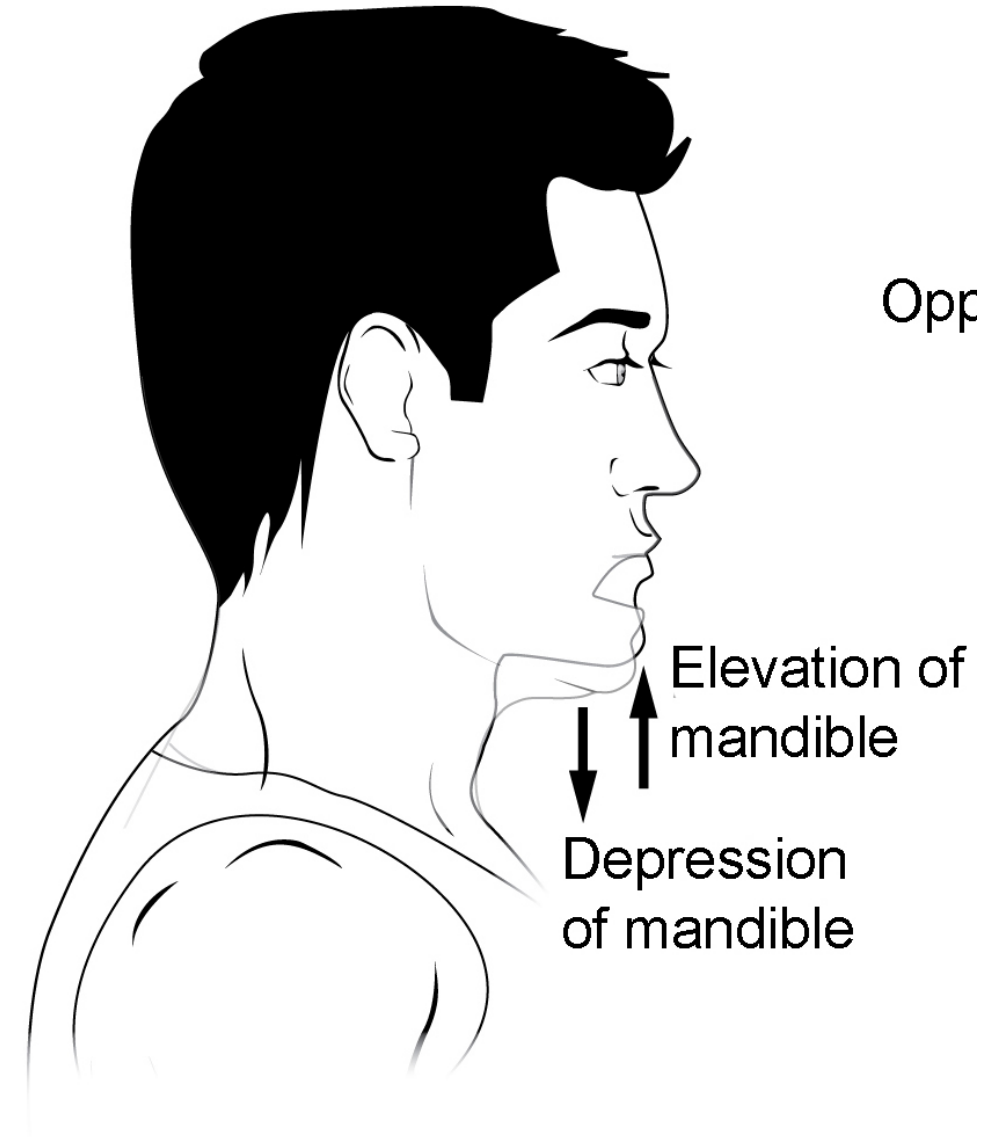
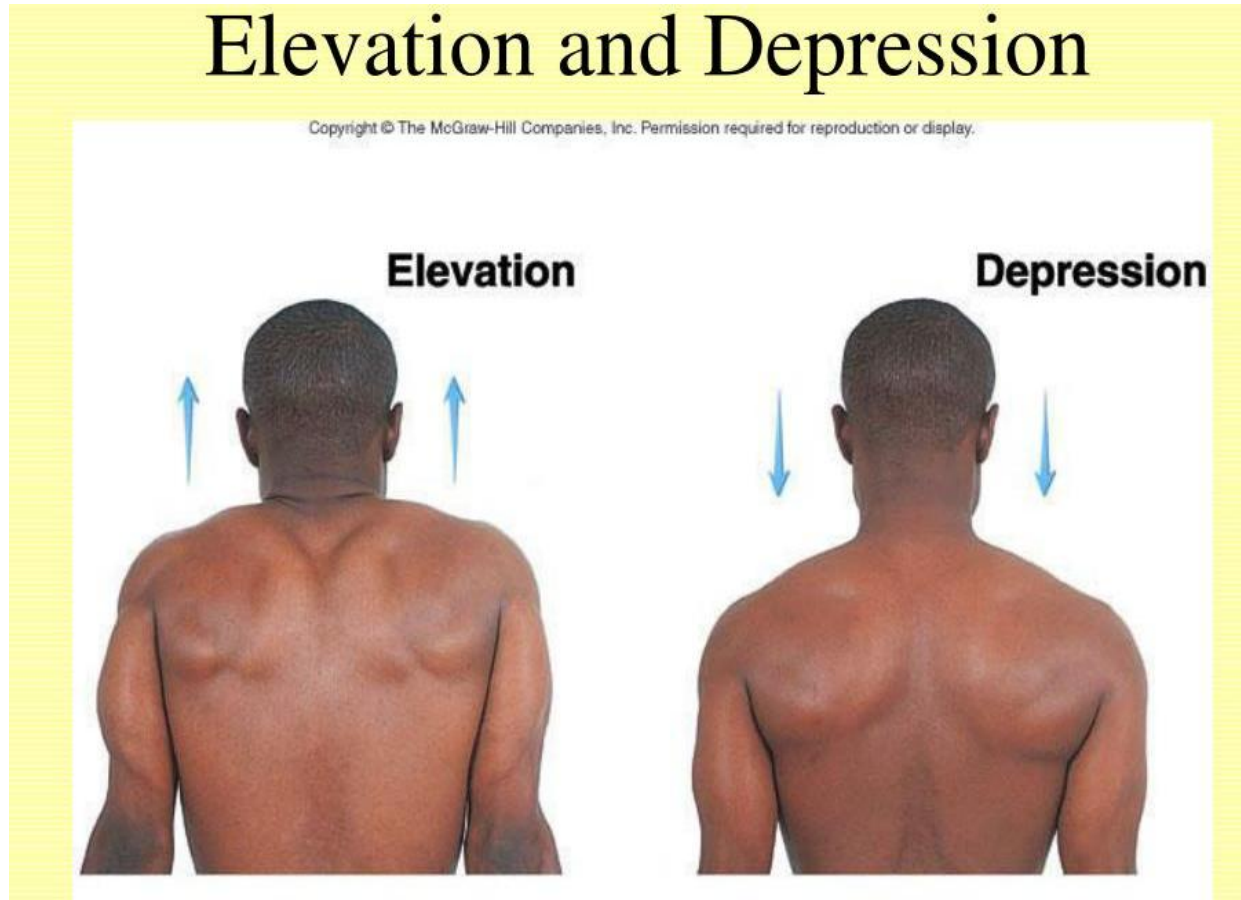
**Lateral rotation** is a rotating movement away from the midline.



Rotation of the head,  
neck, and lower limb

## ❖ Elevation & Depression

**Elevation** refers to movement in a superior direction (e.g., shoulder shrug),  
And **depression** refers to movement in an inferior direction.



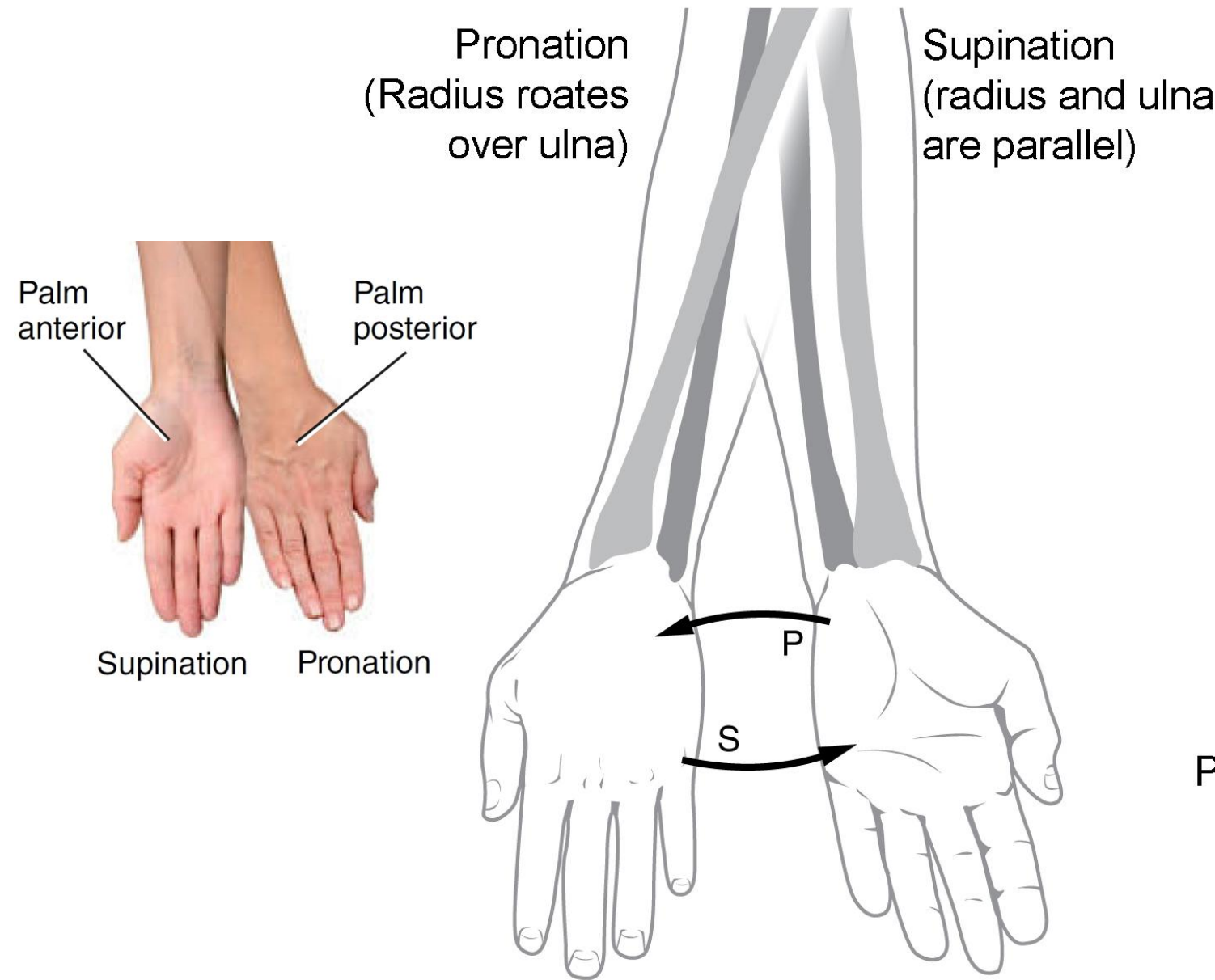
(a) Elevation and depression

## ❖ Pronation & Supination

This is easily confused with medial and lateral rotation, but the difference is subtle. (With your hand resting on a table in front of you, and keeping your shoulder and elbow still, turn your hand onto its back, palm up. This is the supine position, and so this movement is **supination**).

Again, keeping the elbow and shoulder still, flip your hand onto its front, palm down. This is the **pronation** position, and so this movement is named pronation.

These terms also apply to the whole body – when lying flat on the back, the body is supine. When lying flat on the front, the body is prone.



(a) Pronation (P)  
and supination (S)

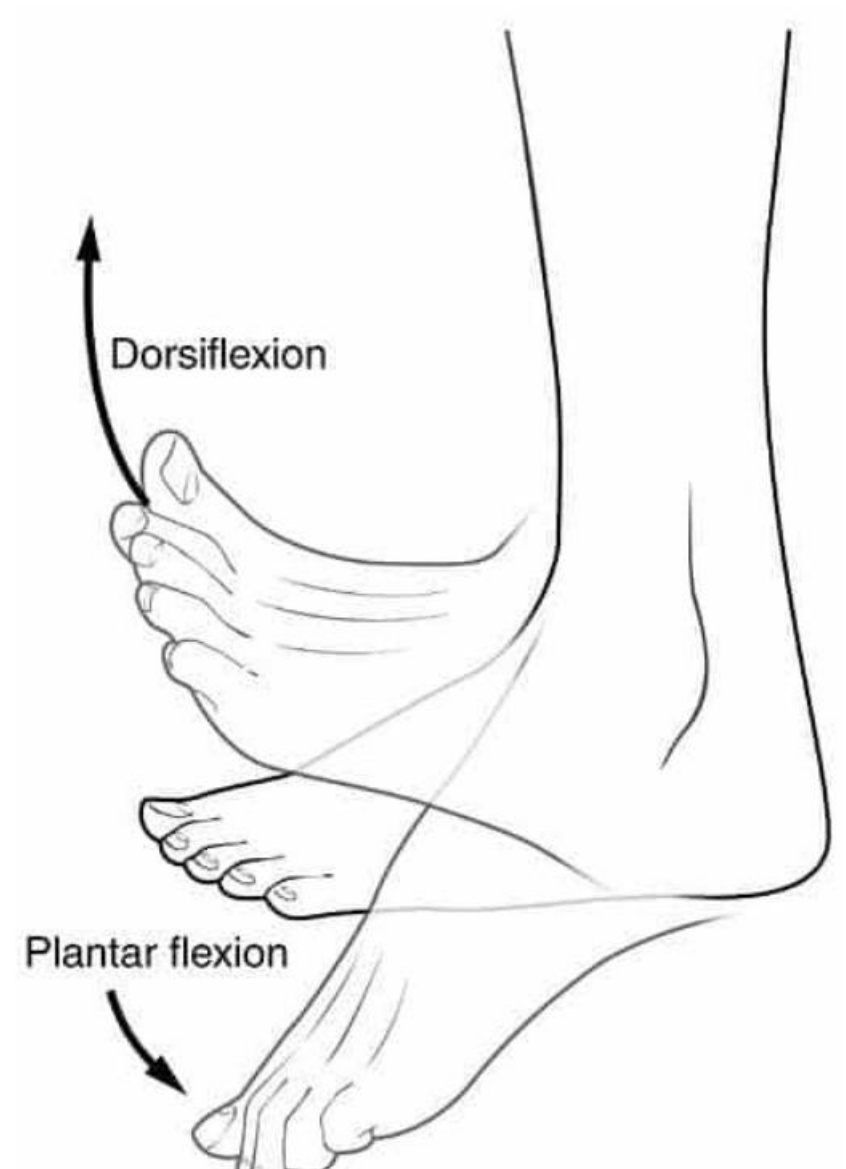


## ❖ Dorsiflexion & Plantarflexion

Dorsiflexion and plantarflexion are terms used to **describe** movements at the **ankle**.

**Dorsiflexion** refers to flexion at the ankle, so that the foot points more superiorly.

**Plantarflexion** refers to extension at the ankle, so that the foot points inferiorly.



## ❖ Inversion & Eversion

Inversion and eversion are used to **describe** the rotation of a structure towards or away from a central axis or surface.

**Inversion** involves turning the sole towards the midline of the body, so that it faces in a medial direction.

**Eversion** involves turning the sole away from the midline, so that it faces in a lateral direction.



(a) Inversion and eversion

## ❖ Opposition & Reposition

These terms apply to the **additional movements** that the hand and thumb can perform in these species.

**Opposition** brings the thumb and little finger together.

**Reposition** is a movement that moves the thumb and the little finger away from each other, effectively reversing opposition.

Opposition



Reposition



(b) Opposition

Anatomical regions

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