

Introduction Anatomy

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Important anatomical terms

The anatomical position

The anatomical position is the standard reference position of the body used to describe the location of structures

The body is in the anatomical position when:

Standing upright with feet together,

Hands by the side and face looking forward.

The palms of the hands face forward.

The toes point forward.

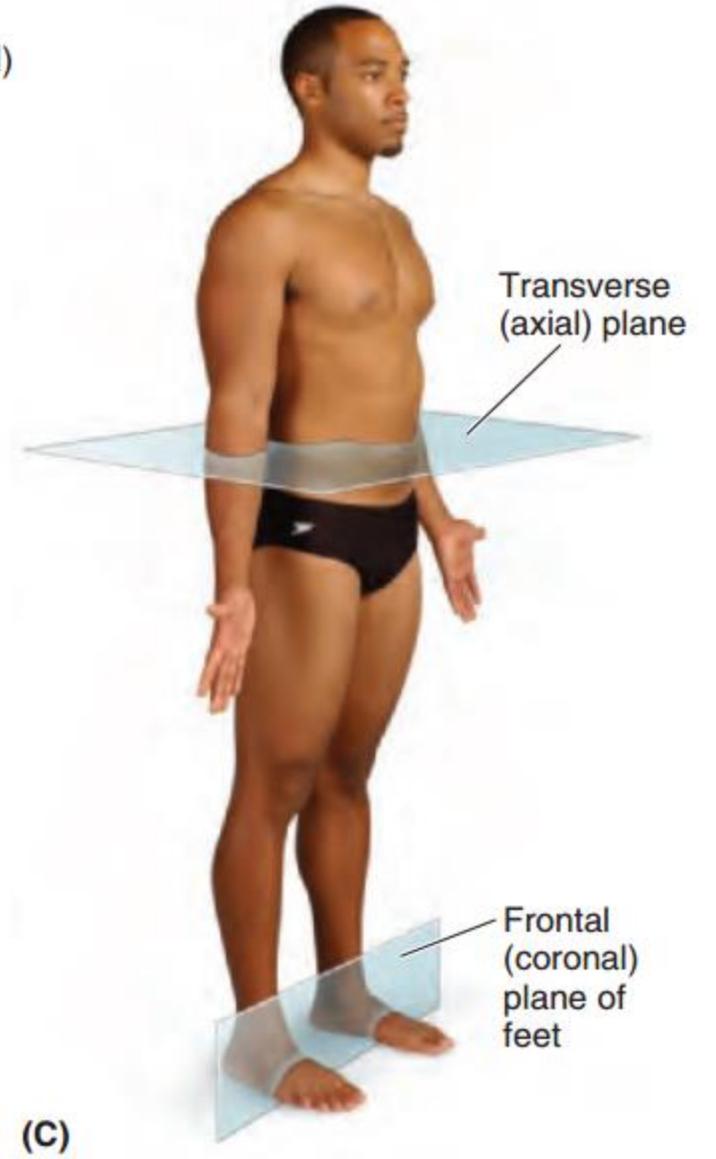
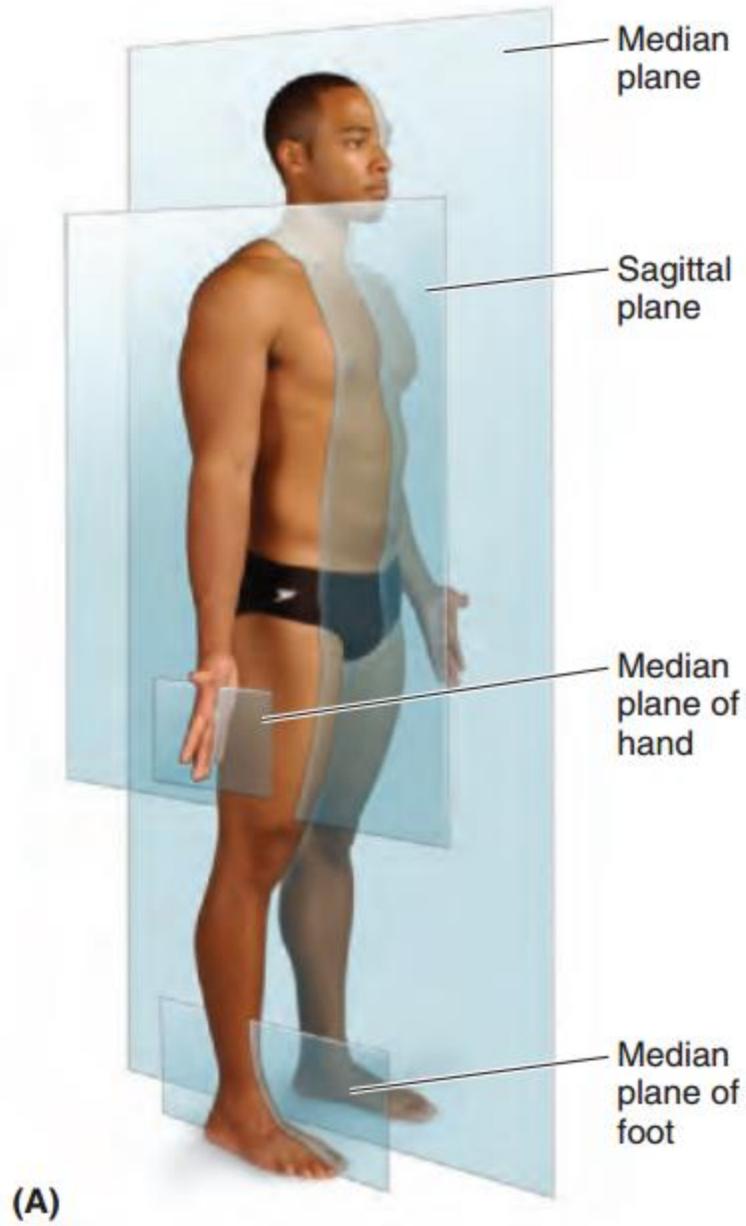
Anatomical planes

Three major groups of planes pass through the body in the anatomical position

- **Coronal planes** are oriented vertically and divide the body into **anterior** and **posterior** parts.
- **Sagittal planes** are also oriented vertically but are at right angles to the coronal planes and divide the body into **right** and **left** parts.

The plane that passes through the centre of the body, dividing it into equal right and left

- **Transverse, horizontal, or axial planes** divide the body into **superior** and **inferior** parts.



Terms to describe location

Anterior (ventral) and **posterior** (dorsal),

Medial and **lateral**,

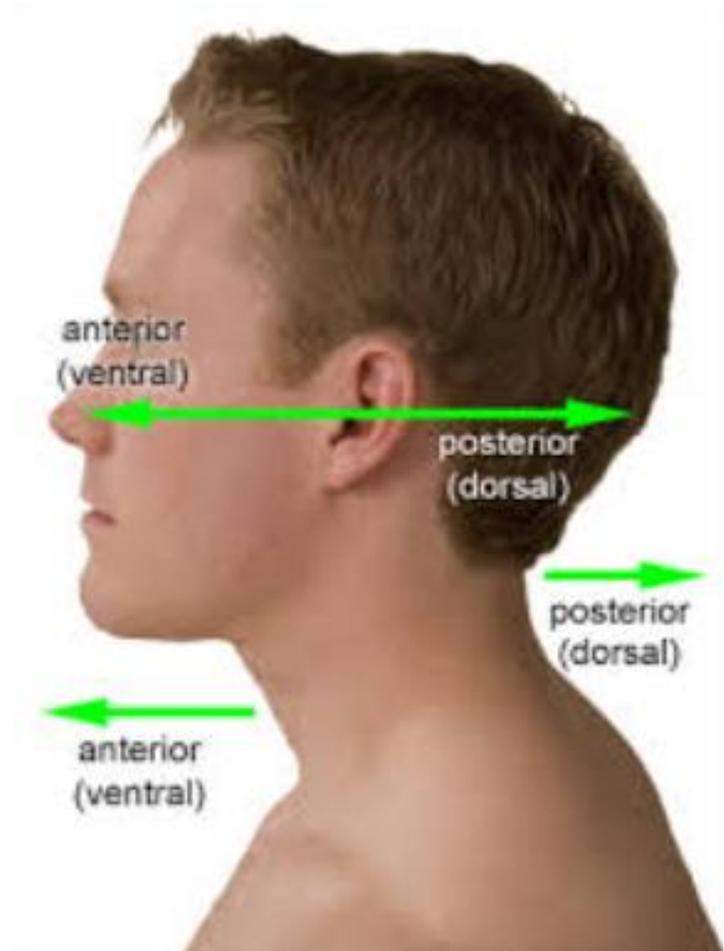
Superior and **inferior**

Three major pairs of terms are used to describe the location of structures relative to the body as a whole or to other structures

Anterior (or ventral) and posterior (or dorsal)

Describe the position of structures relative to the "front" and "back" of the body.

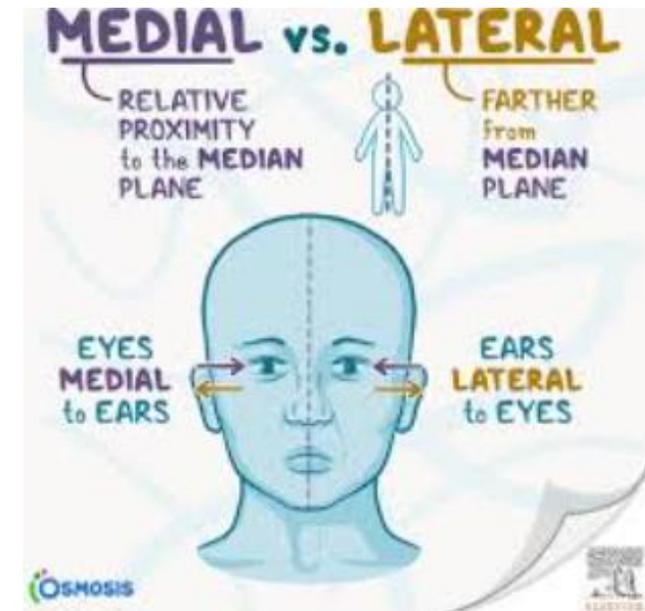
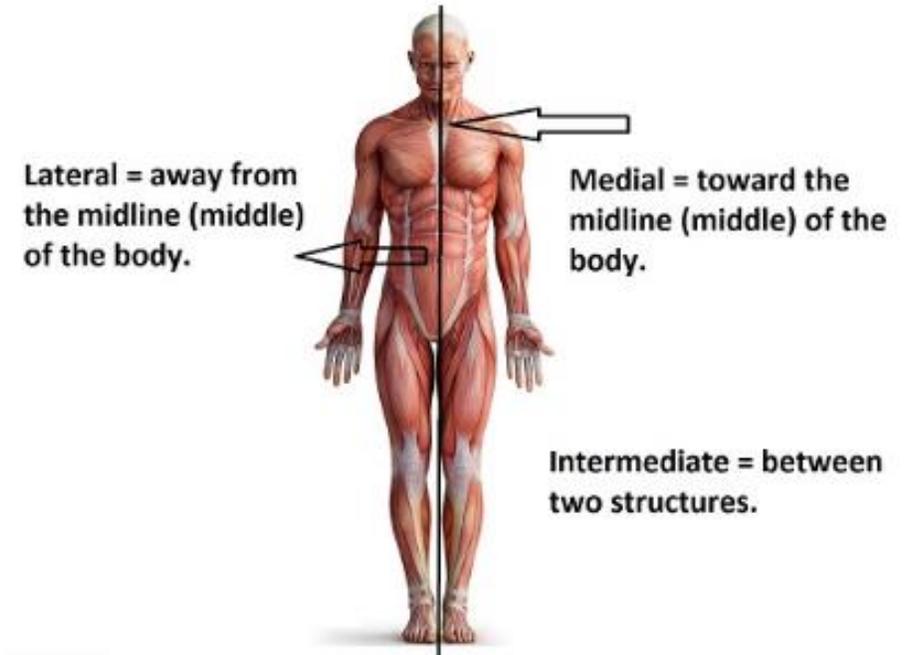
For example, the nose is an anterior (ventral) structure, whereas the vertebral column is a posterior (dorsal) structure. Also, the nose is anterior to the ears and the vertebral column is posterior to the sternum.



Medial and Lateral

Medial and lateral describe the position of structures relative to the median sagittal plane and the sides of the body.

For example, the thumb is lateral to the little finger. The nose is in the median sagittal plane and is medial to the eyes, which are in turn medial to the external ears.

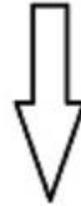


Superior and inferior

Superior and inferior describe structures in reference to the vertical axis of the body.

For example, the head is superior to the shoulders and the knee joint is inferior to the hip joint.

Inferior (or caudal) means just the opposite: "away from the head," or "lower/under."



Superior (or cranial) means "toward the head end of the body" or "higher/above."

Terms used to describe positions

Proximal and **Distal**,
Cranial and **Caudal**,
and **Rostral**

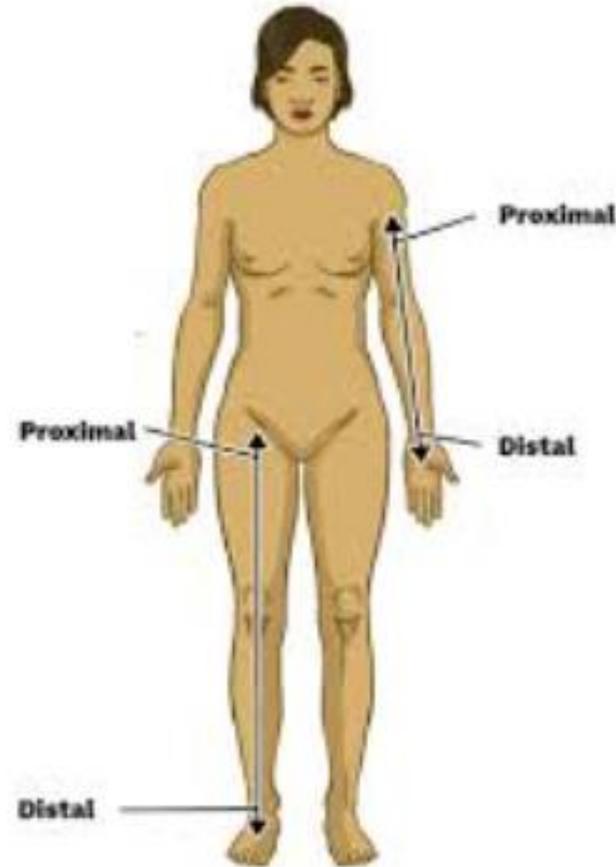
Proximal and distal

Proximal and distal are used with reference to being closer to or farther from a structure's origin, particularly in the limbs.

For example, the hand is distal to the elbow joint.

The glenohumeral joint is proximal to the elbow joint.

These terms are also used to describe the relative positions of branches along the course of linear structures, such as airways, vessels, and nerves.



Cranial and caudal

Cranial (toward the head) and caudal (toward the tail)

are sometimes used instead of superior and inferior, respectively.

Inferior (or caudal)
means just the
opposite: "away from
the head," or
"lower/under."

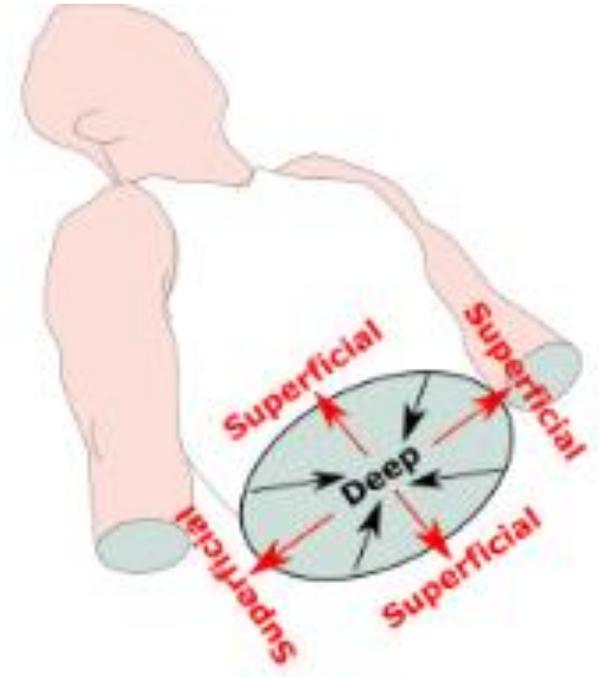


Superior (or cranial)
means "toward the head
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"higher/above."

Superficial and deep

Superficial and deep Two other terms used to describe the position of structures in the body are superficial and deep. These terms are used to describe the relative positions of two structures with respect to the surface of the body.

For example, the sternum is superficial to the heart, and the stomach is deep to the abdominal wall.



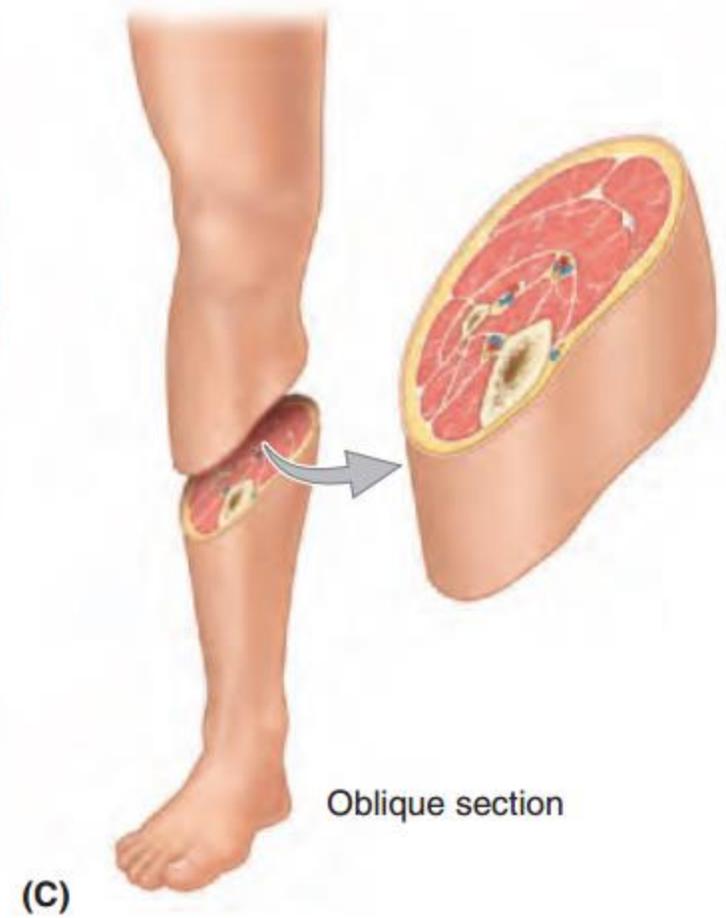
Sections

The main use of anatomical planes is to describe sections

Longitudinal sections run lengthwise or parallel to the long axis of the body or of any of its parts, and the term applies regardless of the position of the body.

Transverse sections, or cross sections, are slices of the body or its parts that are cut at right angles to the longitudinal axis of the body or of any of its parts.

Oblique sections are slices of the body or any of its parts that are not cut along the previously listed anatomical planes.



Palm and Sole

Dorsum usually refers to the superior aspect of any part that protrudes anteriorly from the body, used to describe the posterior surface of the hand, opposite **the Palm**

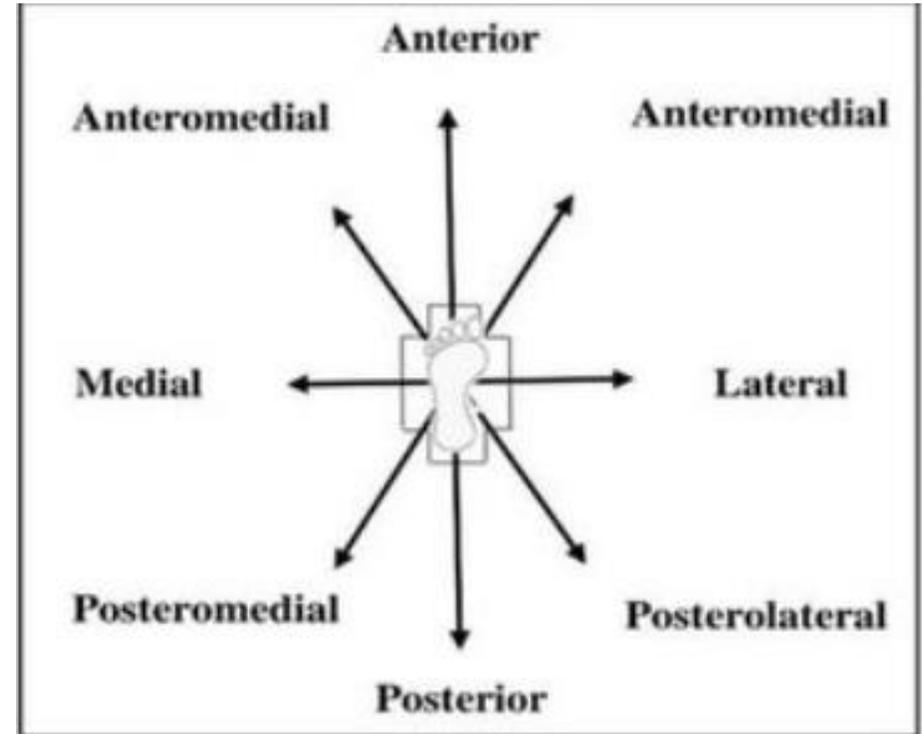
The sole (Planter) is the inferior aspect or bottom of the foot, opposite the dorsum, much of which is in contact with the ground when standing barefoot.



Combined terms

Combined terms describe intermediate positional arrangements: **inferomedial** means nearer to the feet and median plane

For example, the anterior parts of the ribs run **inferomedially**; **superolateral** means nearer to the head and farther from the median plane



Terms of Movement

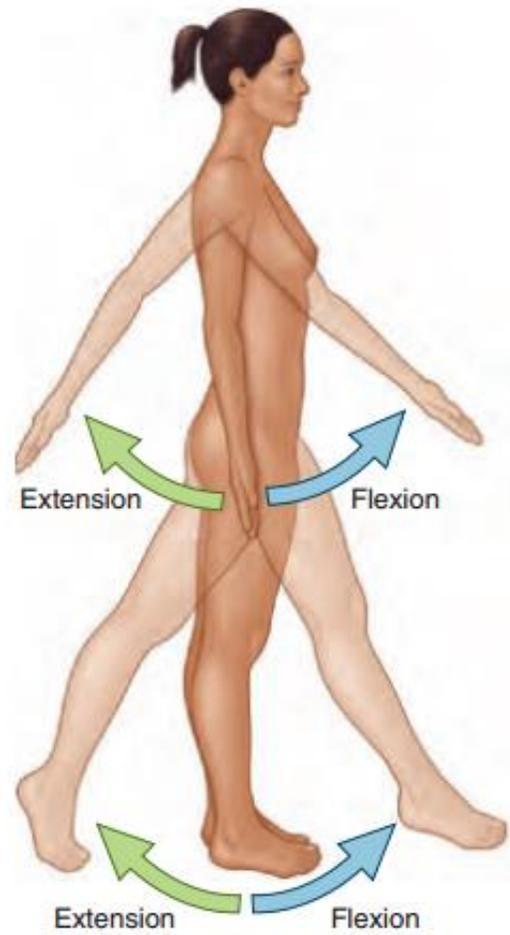
Various terms describe movements of the limbs and other parts of the body.

Flexion and extension

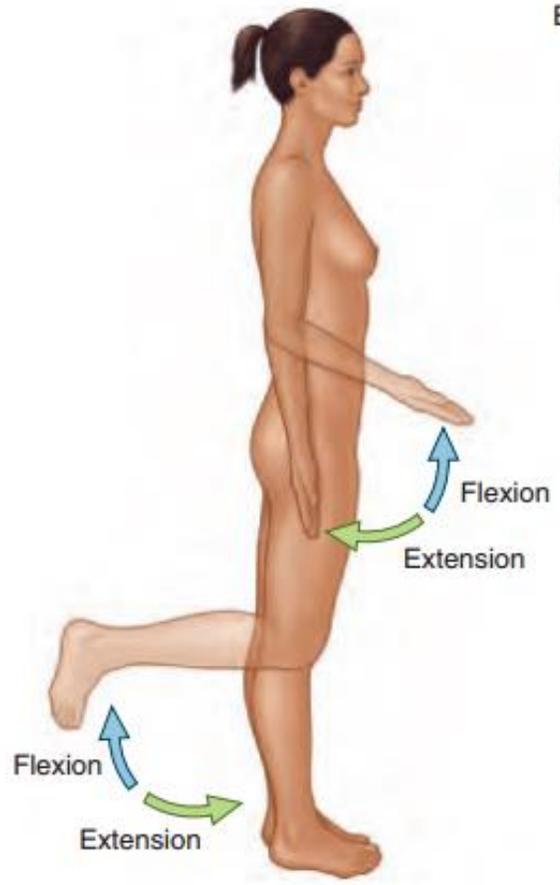
Flexion and extension movements generally occur in sagittal planes around a transverse axis

Flexion indicates bending or decreasing the angle between the bones or parts of the body. For most joints (e.g., elbow).

Extension indicates straightening or increasing the angle between the bones or parts of the body.



(A) Flexion and extension of upper limb at shoulder joint and lower limb at hip joint



Flexion and extension of forearm at elbow joint and of leg at knee joint



Flexion and extension of vertebral column at intervertebral joints

Dorsiflexion and Plantarflexion

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

Plantarflexion bends the foot and toes toward the ground, as when standing on your toes.



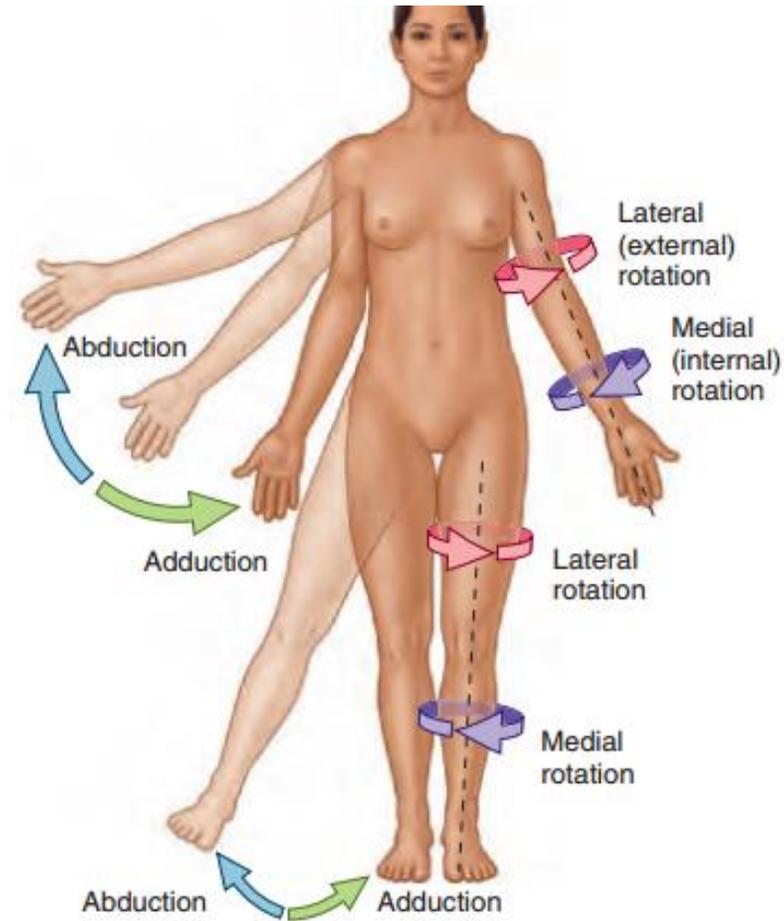
Dorsiflexion and plantarflexion of foot at ankle joint

Abduction and adduction

Abduction and adduction

movements generally occur in a frontal plane around an anteroposterior axis. Except for the digits, abduction means moving away from the median plane

(e.g., when moving an upper limb laterally away from the side of the body) and adduction means moving toward it



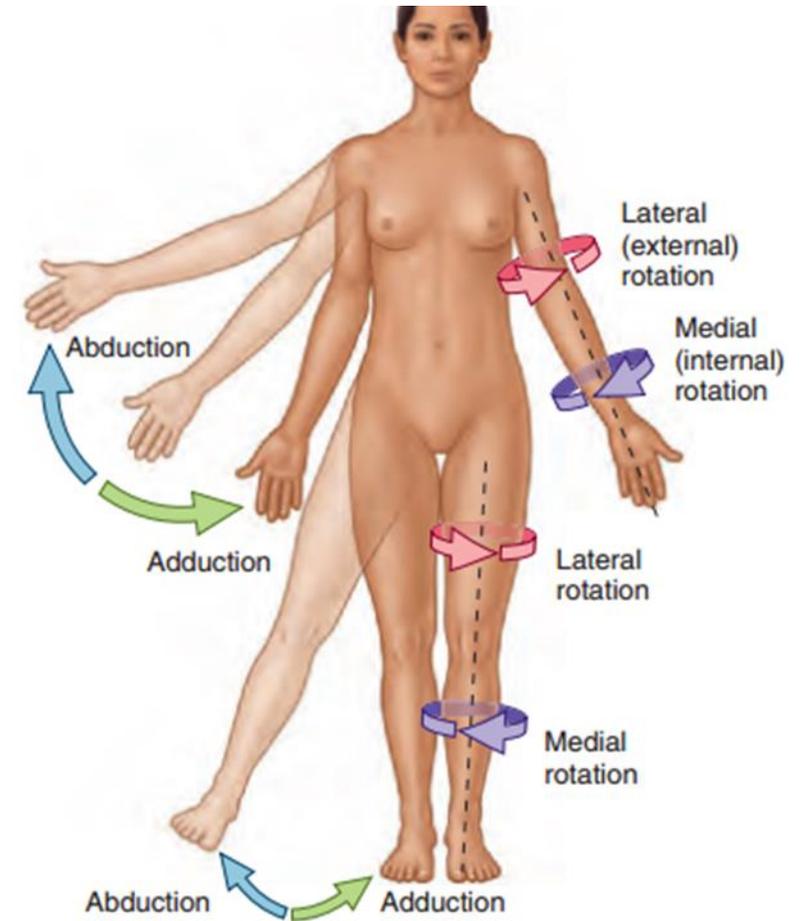
Rotation

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.

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



Eversion and Inversion

Eversion moves the sole of the foot away from the median plane, turning the sole laterally.

Inversion moves the sole of the foot toward the median plane (facing the sole medially).

