When you first start studying Anatomy, it can feel a lot like trying to learn a new language! Many of the terms used to describe anatomical movements differ from those used when talking about the body in everyday conversation. This can be confusing for new learners.

The goal of this tutorial is to help you learn the terms used to describe anatomical movements in order to make learning Anatomy a little easier.

Each anatomical movement is explained with a definition and a diagram. In some cases, photos have also been included. You can find an index of all of the movements at the end of the module.

There are two quizzes at the end of this module to help you test your knowledge.

Good luck!
Anatomical Directions

**Anatomical directions** are used to orient the position of a body part in relation to the rest of the body

**Superior:** Above; towards the head  
**Inferior:** Below; towards the feet

**Proximal:** Closer to an attached area, or the trunk  
**Distal:** Further from an attached area, or the trunk

**Medial:** Toward the midline  
**Lateral:** Away from the midline

**Anterior (Ventral):** Front of the body  
**Posterior (Dorsal):** Back of the body (*not shown*)

*NOTE: The terms **proximal** and **distal** are used to describe the upper and lower limbs only. For example: The hand is distal to the elbow (i.e., the hand is further away from an attached area [the shoulder] than the elbow)*
Anatomical Planes

- **Frontal (Coronal) plane**: Divides *front (anterior) from back (posterior)*

- **Sagittal plane**: Divides *left from right*

- **Transverse (Horizontal) plane**: Divides *horizontally*, creating inferior and superior sections

**Memorization Hint:**
To remember the **TRANSVERSE (HORIZONTAL) PLANE**, imagine a magic trick where the magician pretends to saw their assistant in half!

**Memorization Hint:**
To remember the **FRONTAL (CORONAL) PLANE**, imagine a crown with a sharp, blade-like edge that, when worn on the head, slices all the way through the body. Ouch, that’s a coronation gone wrong!
Flexion: Movement that *decreases* the angle between two bones or two parts of the body.

Extension: Movement that *increases* the angle between two bones or two parts of the body.

Plane of movement: *Sagittal plane*

Where it happens: Neck, arm at the shoulder, forearm at the elbow, hand at the wrist, digits, spine, thigh at the hip, leg at the knee.
**Flexion**: Movement that **decreases** the angle between two bones or parts of the body.
**Flexion:** Movement that *decreases* the angle between two bones or parts of the body

*NOTE: This photo also demonstrates flexion of the leg at the knee – can you see it?*
Extension: Movement that *increases* the angle between two bones of parts of the body.

*NOTE: This photo also demonstrates flexion of the thigh at the hip – can you see it?*
Extension: Movement that *increases* the angle between two bones of parts of the body.

* NOTE: This photo also demonstrates flexion of the thigh at the hip – can you see it?
**Abduction**: Movement of the limb/digit *away* from the midline *(laterally)*

**Adduction**: Movement of the limb/digit *towards* the midline *(medially)*

Plane of movement: **Frontal plane**

Where it happens: Arm at the shoulder, digits, thigh at the hip

**Memorization Hint:** To remember **ABduction**, imagine something being taken away

**Memorization Hint:** To remember **ADduction**, think of things being brought together and added up

**Memorization Hint:** **ABdaction** and **ADdaction** are the same movements you make when you do jumping jacks
Rotation: *Turning* around a central longitudinal axis

The head can be rotated to the **left** and the **right** (i.e., shaking the head “no”)

Rotation of the limbs occurs when the forward-facing (anterior) surface is turned **internally (medially)** towards the midline, or **externally (laterally)**, away from the midline

Where it happens: Head, arm at the shoulder, thigh at the hip
Pronation: *Rotation* of the forearm (radius bone) *inwards (medially)*, causing the palm to face *downwards*.

Supination: *Rotation* of the forearm (radius bone) *outwards (laterally)*, causing the palm to face *upwards*.

Memorization Hint: To remember SUPINATION, imagine holding a bowl of **soup** in your hands.
Hand Movements

The hands are capable of many movements, due to their complex structure of muscles and joints.

Note: In the hand, the third finger (middle finger) is considered midline.

Memorization Hint:
When you give the “thumbs up,” your thumb is EXTENDED, and your other fingers are FLEXED.
**Abduction of the thumb**: Moving the thumb to a position that is 90 degrees perpendicular to the palm

**Adduction of the thumb**: *Reversal* of abduction (returning the thumb to neutral position)

**Memorization Hint:**
Imagine holding a stack of plates, with your thumb raised to support them. In this position, the thumb is ABducted.

**Opposition**: Movement of the pad of the thumb to *touch another finger*

**Reposition: Reversal** of opposition (returning thumb to neutral position)
**Plantar Flexion**: Pushing or pointing the toes and the ball of the foot *down* towards the ground (i.e., standing on “tip toes”)

**Dorsiflexion**: Standing on the heel of the foot, with the toes *pointing up* towards the sky

**Inversion**: Moving the foot to turn the sole *inwards (medially)*

**Eversion**: Moving the foot to turn the sole *outwards (laterally)*
Elevation: Moving a body part *upwards (superiorly)*

Depression: Moving a body part *downwards (inferiorly)*

Where it happens: Eyelid, jaw (mandible), shoulder

Protraction: Moving a body part *forwards (anteriorly)*

Retraction: Moving a body part *backwards (posteriorly)*

Where it happens: Jaw (mandible), scapula
Lateral Flexion: Bending the vertebral column (spine) to the side

Where it happens: Neck (cervical spine), upper back (thoracic spine)

Circumduction: Movement at the joint that causes the limb to move in a circle

Note: Circumduction is a compound movement that involves abduction, adduction, extension, and flexion

Where it happens: Ball-and-socket joints (e.g., shoulder, hip)
Quiz 1
What is the anatomical movement depicted by the arrow?

(Click on each photo to see a larger image)
Pronation & Supination
Quiz 2
Which description correctly describes the anatomical movement?
(Click on each photo to see a larger image)

1. a) Flexion of the hands at the wrists
   b) Extension of the hands at the wrists

2. a) Flexion at the spine
   b) Extension at the spine

3. a) Flexion of the thigh at the hip
   b) Extension of the thigh at the hip

4. a) Pronation of the forearm
   b) Supination of the forearm

5. a) Eversion of the feet
   b) Inversion of the feet

6. a) Abduction of the fingers
   b) Adduction of the fingers
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Flexion

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## Quiz Answer Keys

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<td>1) Flexion of the hands at the wrist (a)</td>
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<td>2) Abduction of the arm at the shoulder</td>
<td>2) Extension of the spine (b)</td>
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<td>3) Abduction of the thigh at the hip</td>
<td>3) Flexion of the thigh at the hip (a)</td>
</tr>
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<td>4) Lateral flexion of the spine</td>
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<tr>
<td>5) Flexion of the leg at the knee</td>
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<td>6) Extension of the hand at the wrist</td>
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<td>Movement of the limb/digit <strong>towards</strong> the midline (medially)</td>
</tr>
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<td>Circumduction</td>
<td>Movement <strong>at the joint</strong> that causes the distal limb to <strong>move in a circle</strong></td>
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<td>Depression</td>
<td>Moving a body part <strong>downwards (inferiorly)</strong></td>
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<td>Dorsiflexion</td>
<td>Standing on the heel of the foot, with the toes <strong>pointing up</strong> towards the sky</td>
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<td>Elevation</td>
<td>Moving a body part <strong>upwards (superiorly)</strong></td>
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<td>Moving the foot to turn the sole <strong>outwards (laterally)</strong></td>
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<td><strong>Reversal</strong> of Opposition (returning pad of thumb to anatomical position)</td>
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<td>Moving a body part <strong>backwards (posteriorly)</strong></td>
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Acknowledgements

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