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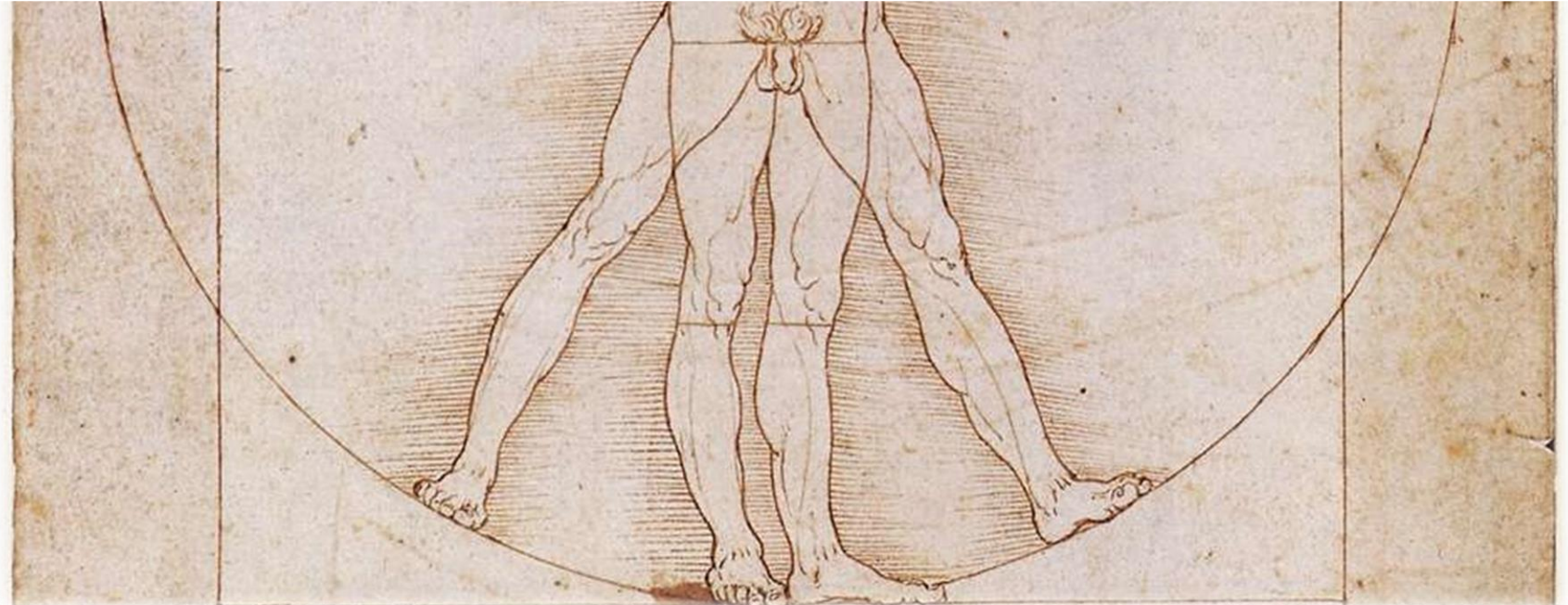
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# Introduction to Anatomy: *Anatomical Movements*



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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!

## ***Navigation***

*There are two ways to move through this module:*

- 1) Scroll through the PDF*
- 2) Click on the title headings on the left side of the screen*

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## 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

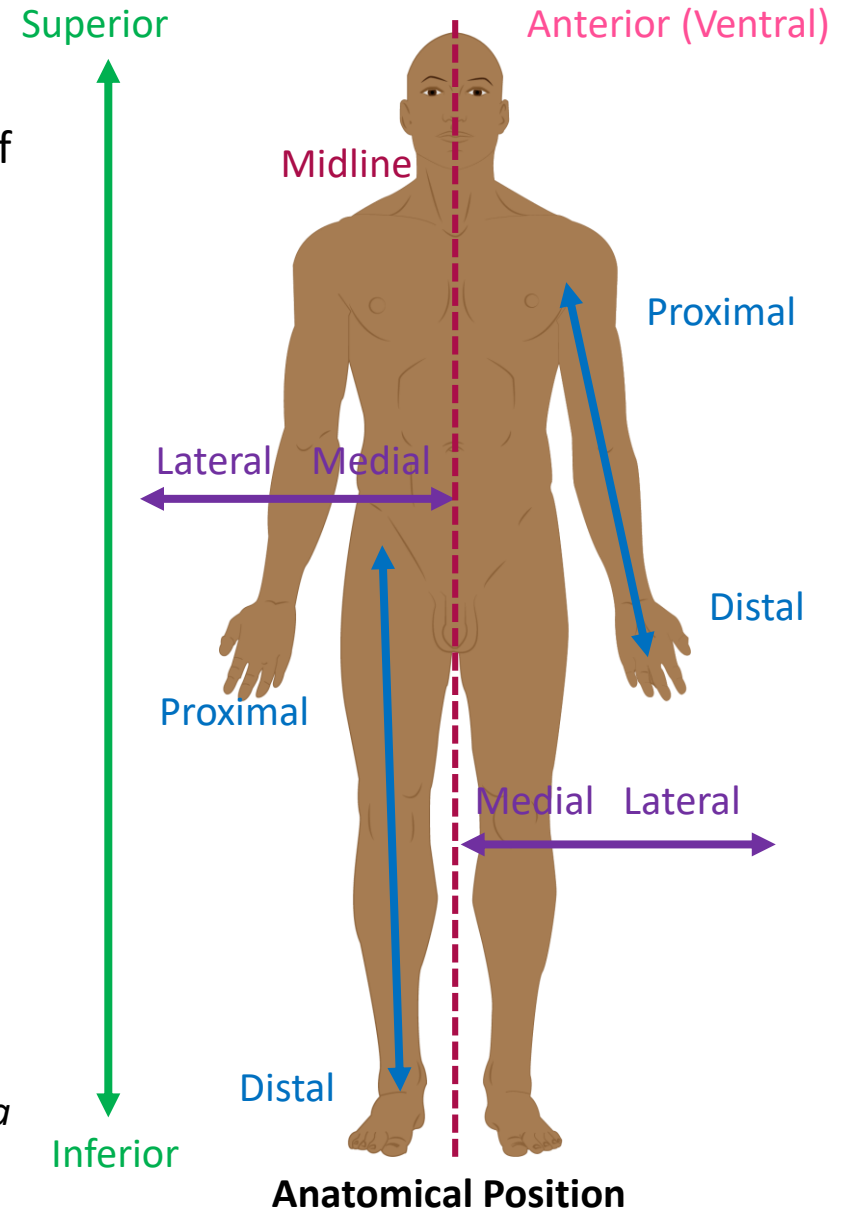
**Medial:** Toward the midline

**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)*



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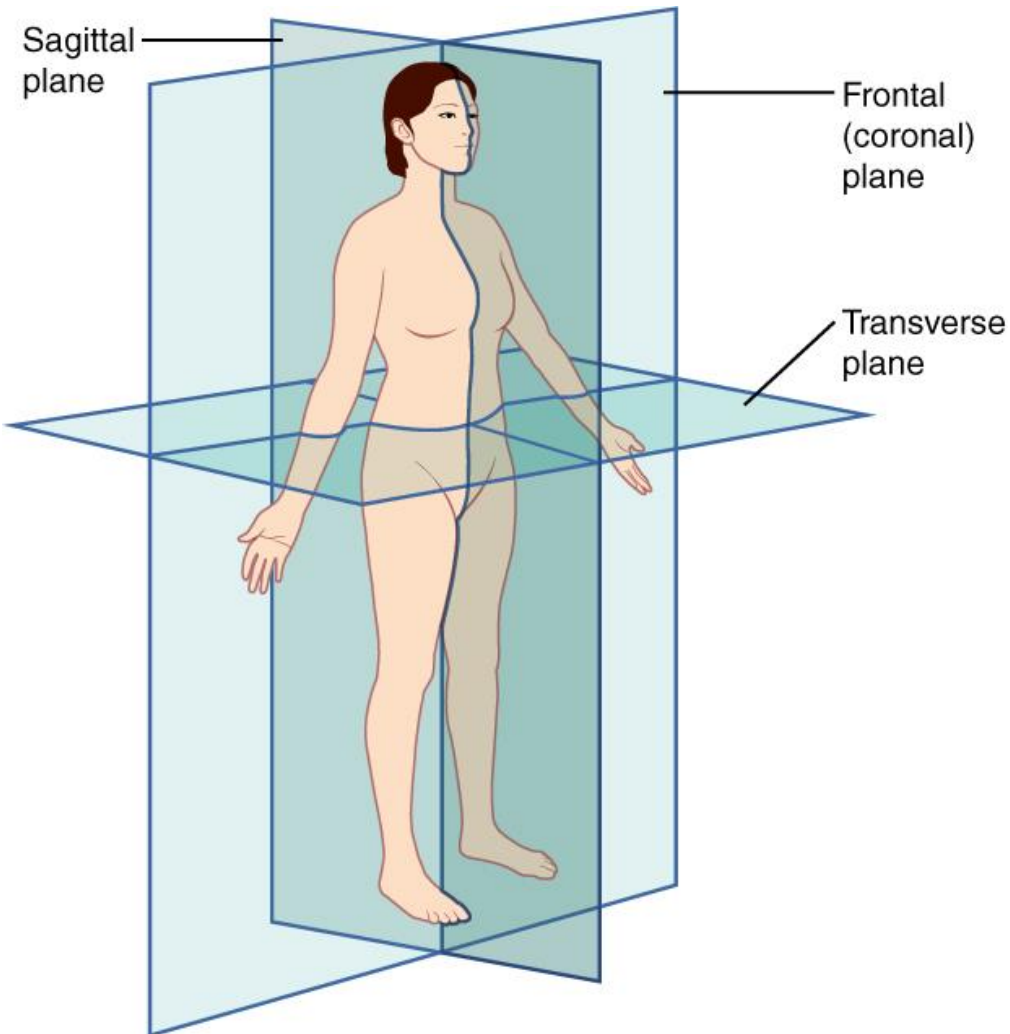
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## Anatomical Planes




**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!  

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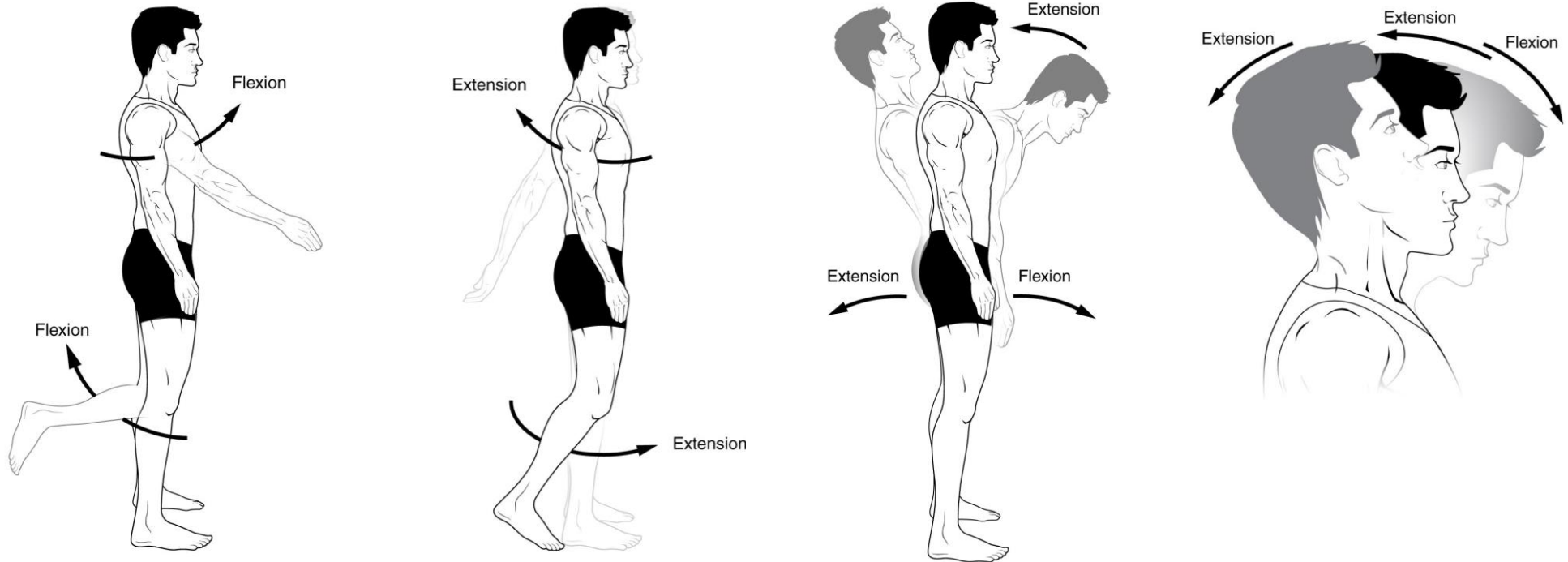
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**Flexion:** Movement that *decreases* the angle between two bones or two parts of the body

**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

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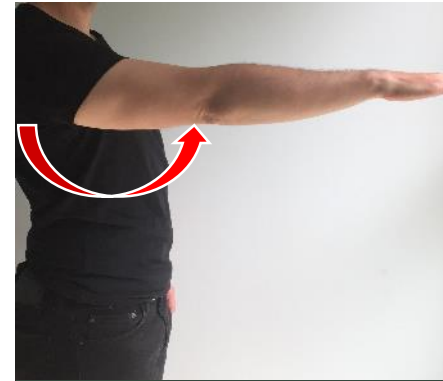
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**Flexion:** Movement that *decreases* the angle between two bones or parts of the body



Flexion of the head at the neck



Flexion of the arm at the shoulder



Flexion of the forearm at the elbow



Flexion of the hand at the wrist



Flexion of the spine



Flexion of the thigh at the hip\*



Flexion of the leg at the knee

\* Note: This photo also demonstrates flexion of the leg at the knee – can you see it?

[Click here to see how the angles change with movement](#)

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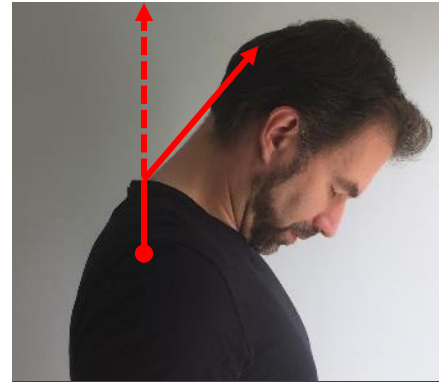
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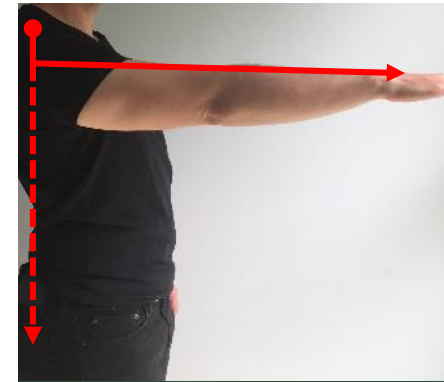
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**Flexion:** Movement that *decreases* the angle between two bones or parts of the body



Flexion of the head at the neck



Flexion of the arm at the shoulder



Flexion of the forearm at the elbow



Flexion of the hand at the wrist



Flexion of the spine

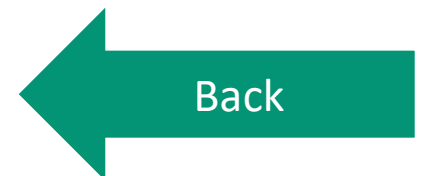


Flexion of the thigh at the hip\*



Flexion of the leg at the knee

\* NOTE: This photo also demonstrates flexion of the leg at the knee – can you see it?



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



Extension of the head at the neck



Extension of the arm at the shoulder



Extension of the forearm at the elbow



Extension of the hand at the wrist



Extension of the spine



Extension of the thigh at the hip



Extension of the leg at the knee\*

\* NOTE: This photo also demonstrates flexion of the thigh at the hip – can you see it?

[Click here to see how the angles change with movement](#)



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



Extension of the head at the neck



Extension of the arm at the shoulder



Extension of the forearm at the elbow



Extension of the hand at the wrist



Extension of the spine

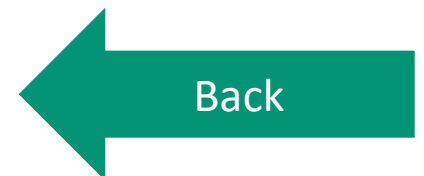


Extension of the thigh at the hip



Extension of the leg at the knee\*

\* NOTE: This photo also demonstrates flexion of the thigh at the hip – can you see it?



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**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

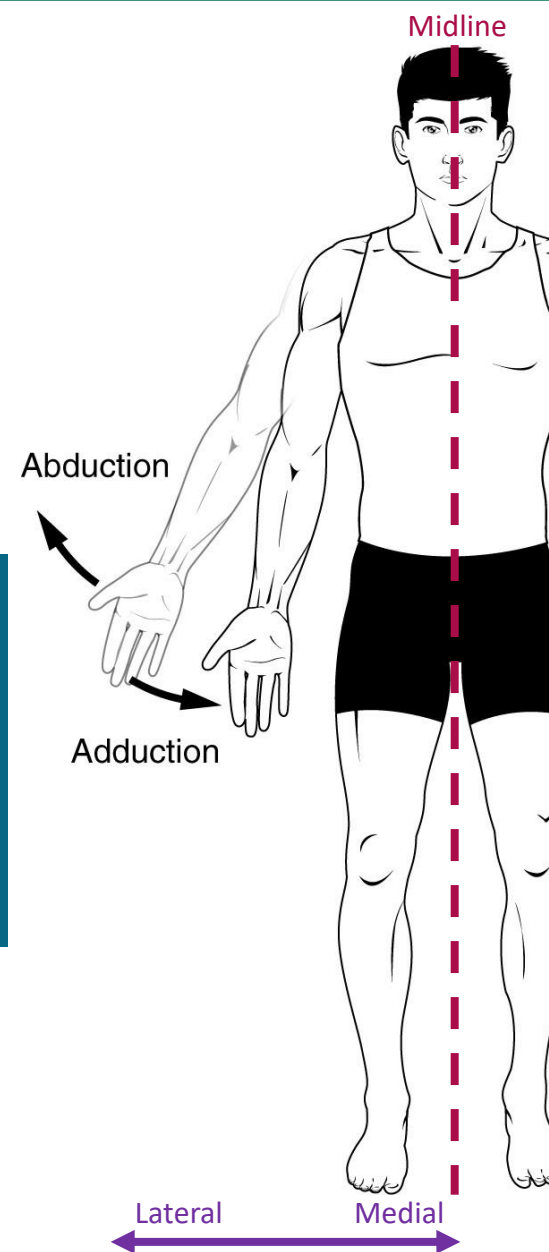
**Memorization Hint:**  
To remember **AB**duction, imagine something being taken away



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



**Memorization Hint:**  
**AB**duction and **AD**duction are the same movements you make when you do jumping jacks



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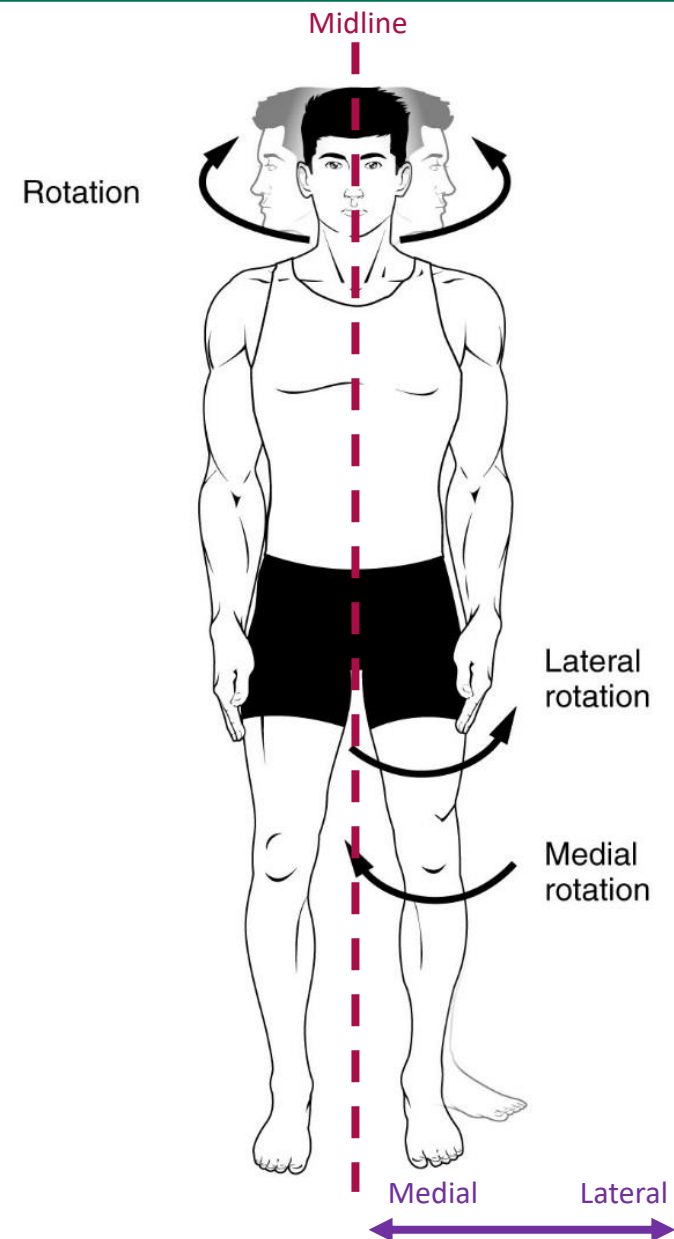
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**Rotation:** *Turning* around a central longitudinal axis

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

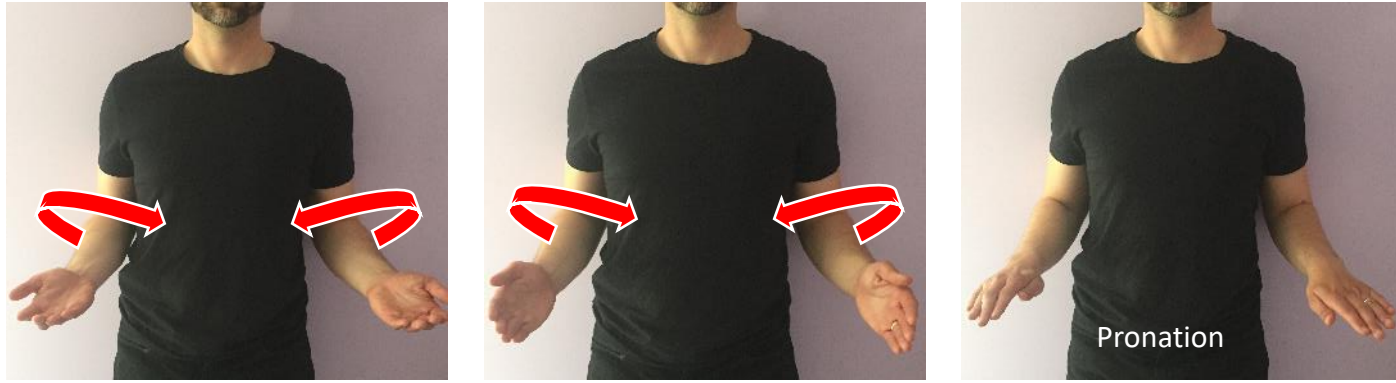
Rotation of the limbs occurs when the forward-facing (anterior) surface is turned **internally (medially)** towards the midline, or **externally (laterally)**, away from the midline

Where it happens: Head, arm at the shoulder, thigh at the hip

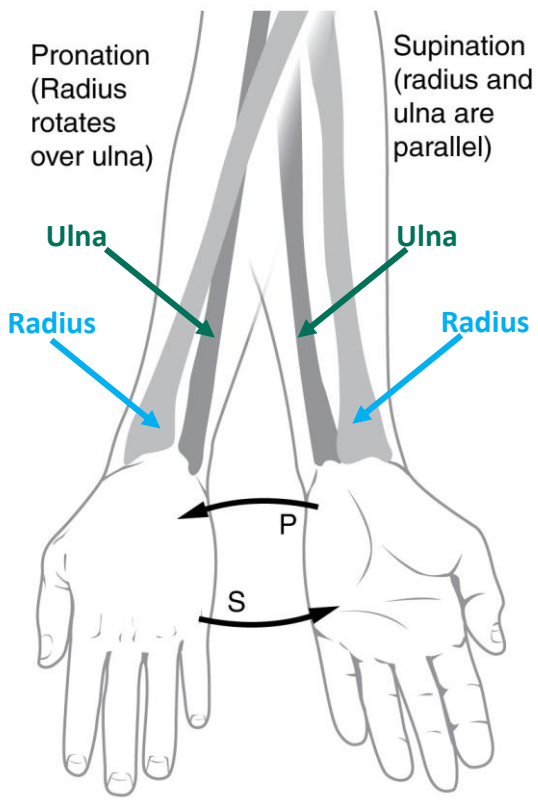


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**Pronation:** *Rotation* of the forearm (radius bone) **inwards (medially)**, causing the palm to face **downwards**



**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

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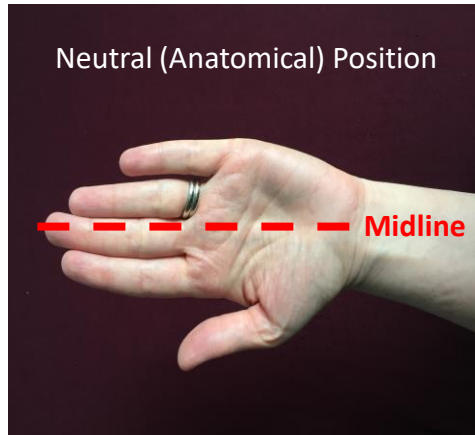
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## Hand Movements

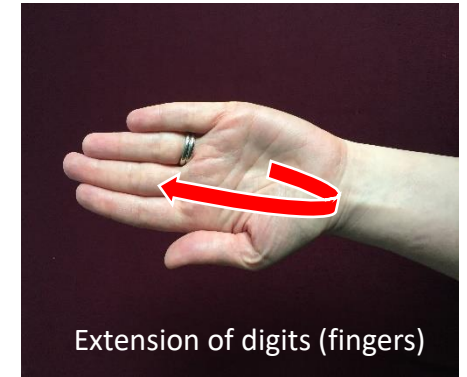
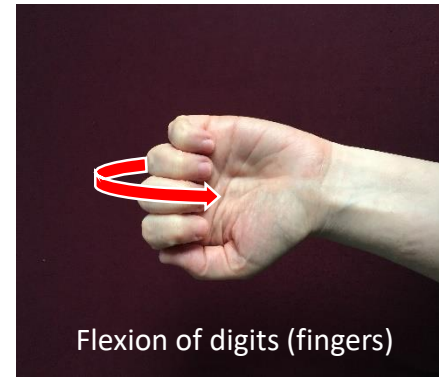
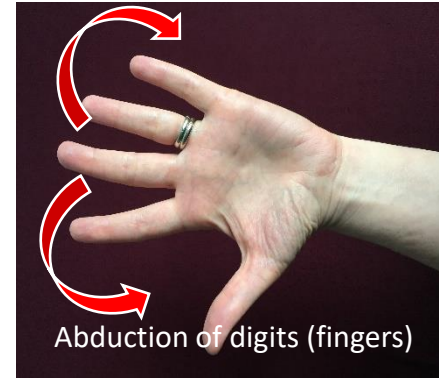
The hands are capable of many movements, due to their complex structure of muscles and joints



*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** 👍



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**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 **AB**ducted.



Abduction of thumb



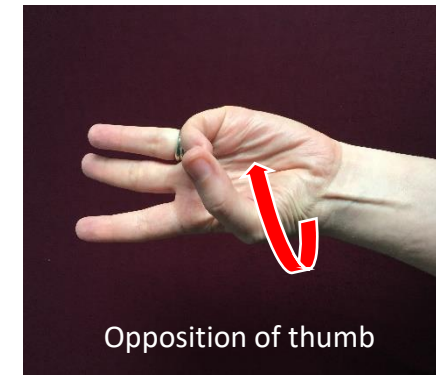
Abduction of thumb (side view)



Adduction of thumb

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

**Reposition:** *Reversal* of opposition (returning thumb to neutral position)



Opposition of thumb



Reposition of thumb

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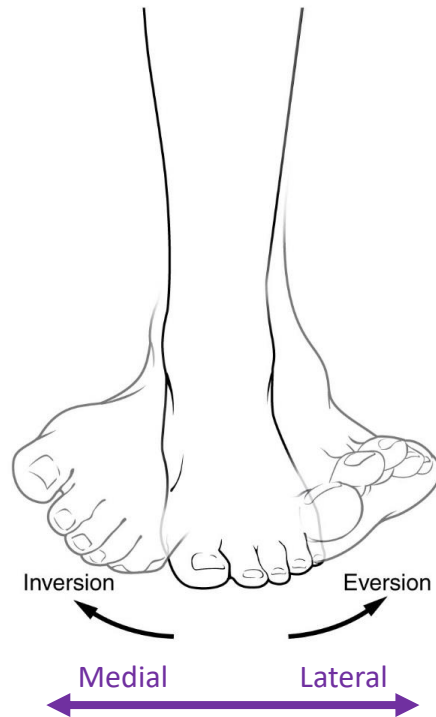
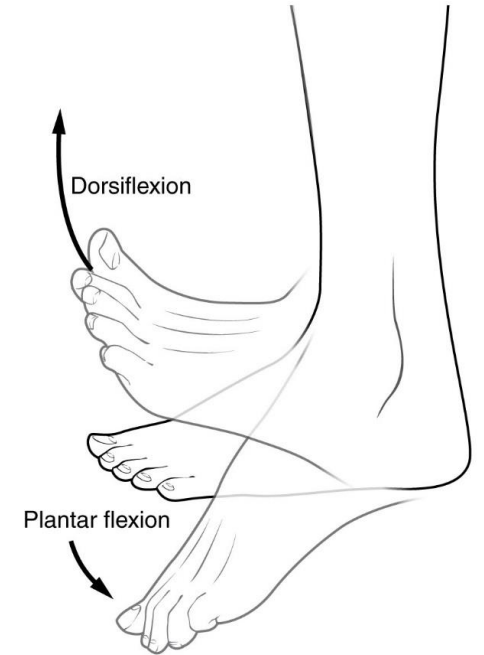
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**Plantar Flexion:** Pushing or pointing the toes and the ball of the foot **down** towards the ground (i.e., standing on “tip toes”)

**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)**

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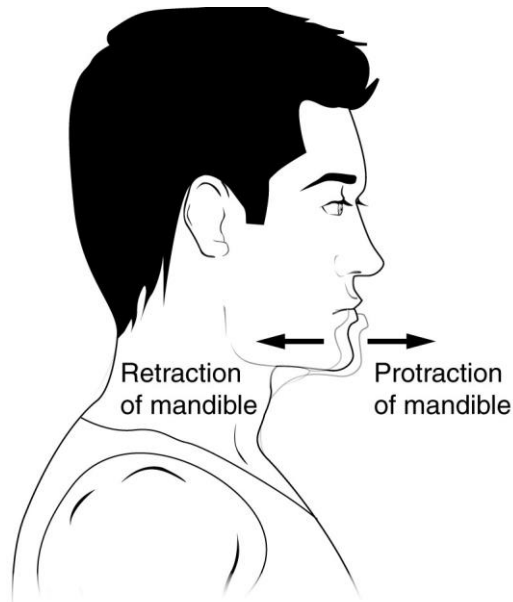
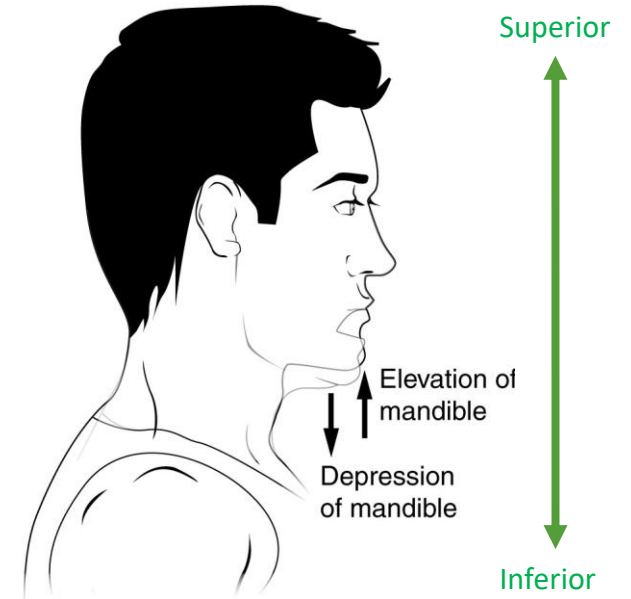
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**Elevation:** Moving a body part *upwards (superiorly)*

**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



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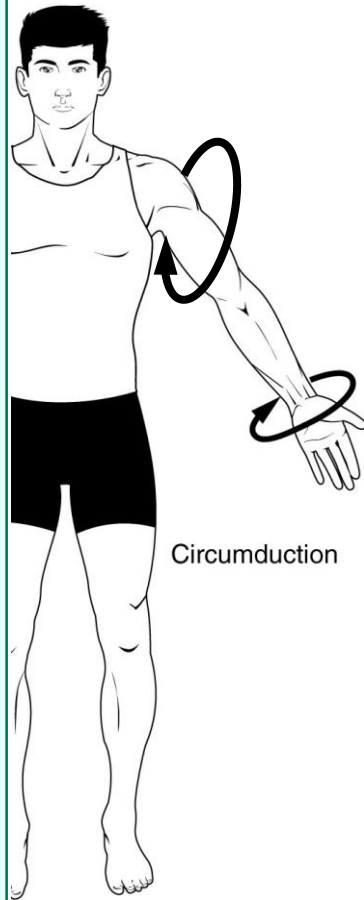
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**Lateral Flexion:** Bending the vertebral column (spine) *to the side*

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



Lateral flexion at the spine



Circumduction

**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)

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## Quiz 1

**What is the anatomical movement depicted by the arrow?**

*(Click on each photo to see a larger image)*



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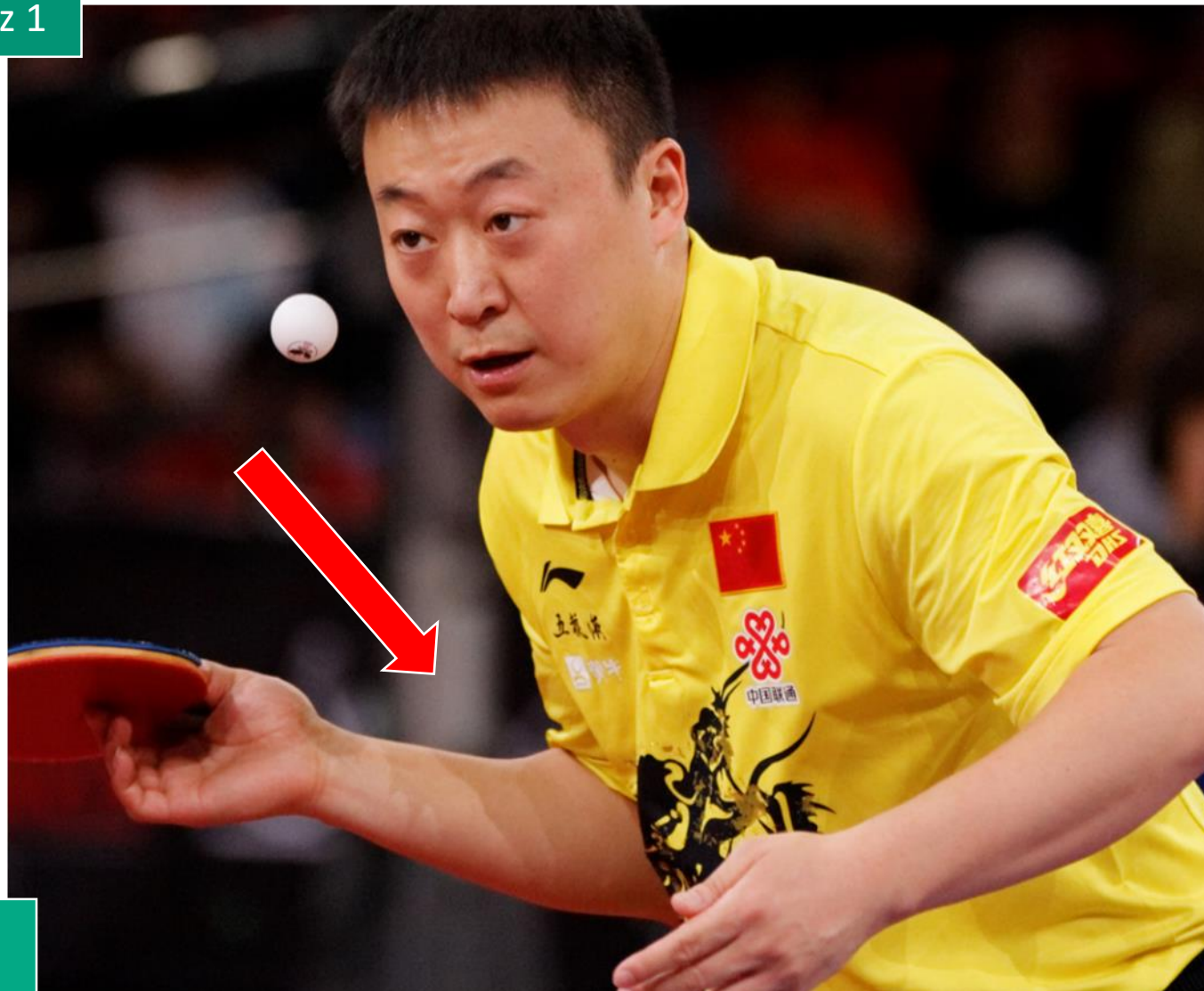
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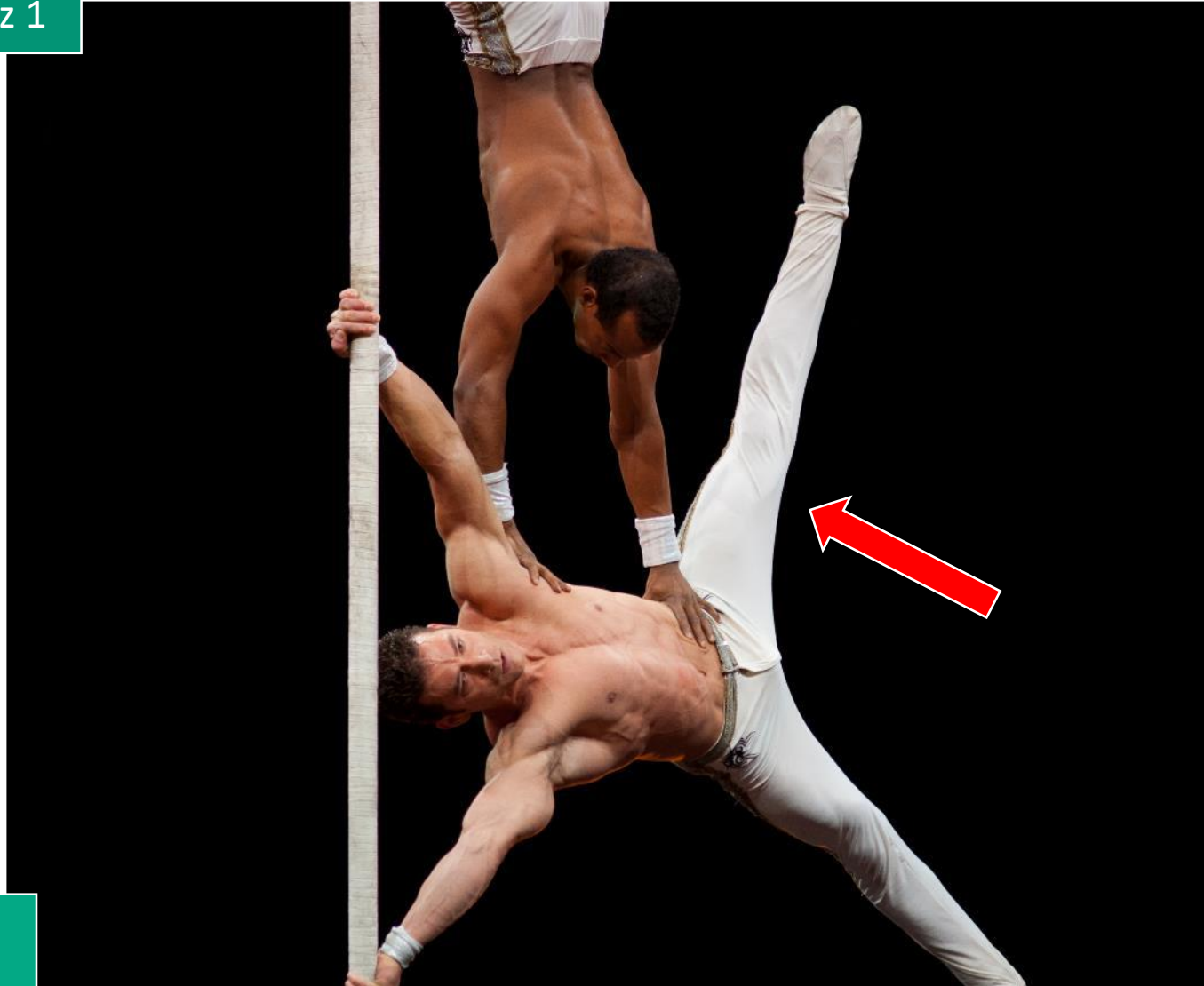
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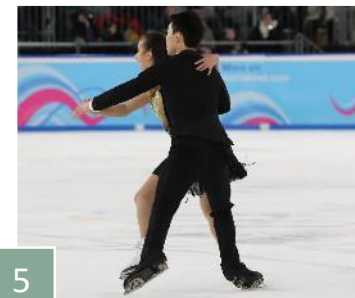
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## Quiz 2

**Which description correctly describes the anatomical movement?**

*(Click on each photo to see a larger image)*

- Flexion of the hands at the wrists
  - Extension of the hands at the wrists
- Flexion at the spine
  - Extension at the spine
- Flexion of the thigh at the hip
  - Extension of the thigh at the hip
- Pronation of the forearm
  - Supination of the forearm
- Eversion of the feet
  - Inversion of the feet
- Abduction of the fingers
  - Adduction of the fingers



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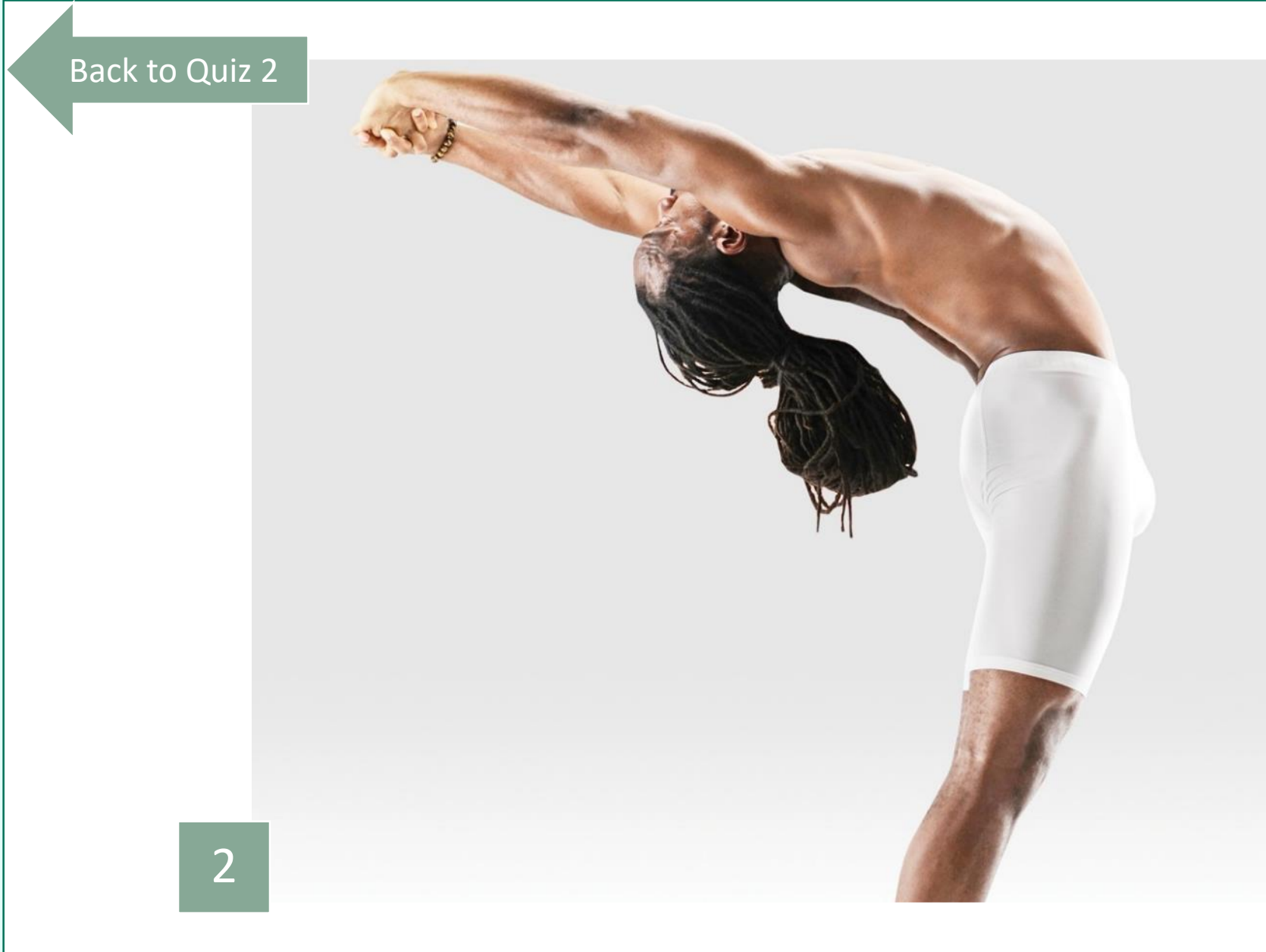
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## Quiz Answer Keys

Quiz 1		
1)	Flexion of the forearm at the elbow	
2)	Abduction of the arm at the shoulder	
3)	Abduction of the thigh at the hip	
4)	Lateral flexion of the spine	
5)	Flexion of the leg at the knee	
6)	Extension of the hand at the wrist	

Quiz 2		
1)	Flexion of the hands at the wrist (a)	
2)	Extension of the spine (b)	
3)	Flexion of the thigh at the hip (a)	
4)	Pronation of the forearm (a)	
5)	Eversion of the feet (a)	
6)	Abduction of the fingers (a)	



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Movement	Description
Abduction	Movement of the limb/digit <b>away from</b> the midline (laterally)
Adduction	Movement of the limb/digit <b>towards</b> the midline (medially)
Circumduction	Movement <b>at the joint</b> that causes the distal limb to <b>move in a circle</b>
Depression	Moving a body part <b>downwards (inferiorly)</b>
Dorsiflexion	Standing on the heel of the foot, with the toes <b>pointing up</b> towards the sky
Elevation	Moving a body part <b>upwards (superiorly)</b>
Eversion	Moving the foot to turn the sole <b>outwards (laterally)</b>
Extension	Movement that <b>increases</b> the angle between two body parts
Flexion	Movement that <b>decreases</b> the angle between two body parts
Inversion	Moving the foot to turn the sole <b>inwards (medially)</b>
Lateral flexion	Bending the vertebral column (spine) to the <b>side</b>
Opposition	Movement of the pad of the thumb to <b>touch another finger</b>
Plantar flexion	Pushing or pointing the toes and ball of the foot <b>towards the ground</b> (i.e., standing on “Tip Toes”)
Pronation	<b>Rotation</b> of the forearm (radius) <b>inwards (medially)</b> , causing the palm to face <b>downwards</b>
Protraction	Moving a body part <b>forwards (anteriorly)</b>
Reposition	<b>Reversal</b> of Opposition (returning pad of thumb to anatomical position)
Retraction	Moving a body part <b>backwards (posteriorly)</b>
Rotation	<b>Turning</b> to the side around a central longitudinal axis
Supination	<b>Rotation</b> of the forearm (radius) <b>outwards (laterally)</b> , causing the palm to face <b>upwards</b>

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## References

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