

Anatomy: Definition and Scope

- Anatomy is the study of the **structure and organization** of living organisms, particularly focusing on the **physical makeup of the human body**.
- It involves examining the body's various parts, including **bones, muscles, organs, blood vessels, nerves, and tissues**.

Branches of Anatomy:

1. Gross Anatomy (Macroscopic Anatomy):

- Studies structures visible to the naked eye, such as organs and organ systems.

2. Microscopic Anatomy:

- Examine structures only visible under a microscope, such as cells and tissues.
 - **Histology:** Study of tissues
 - **Cytology:** Study of cells

3. Developmental Anatomy:

- Investigates structural changes from conception to adulthood.
 - Includes **embryology**, which focuses on development from fertilization to birth.

4. Comparative Anatomy:

- Compares anatomical structures of different species, providing insight into evolutionary relationships and adaptations.

Physiology: Definition and Scope

- Physiology is the study of the **functions and processes** of living organisms.
- It emphasizes how the human body's systems work together to maintain **homeostasis**.
- Physiology explores mechanisms at various levels: **molecular, cellular, tissue, organ, and system**.

Branches of Physiology:

1. Cell Physiology:

- Studies the processes and functions of cells and their internal components.

2. Systems Physiology:

- Examine the function and interactions of specific organ systems, such as the cardiovascular, respiratory, and nervous systems.

3. Neurophysiology:

- Focuses on the functions of the nervous system, including the brain, spinal cord, and peripheral nerves.

4. Endocrinology:

- Studies hormone production, secretion, and their role in regulating body functions.

5. Exercise Physiology:

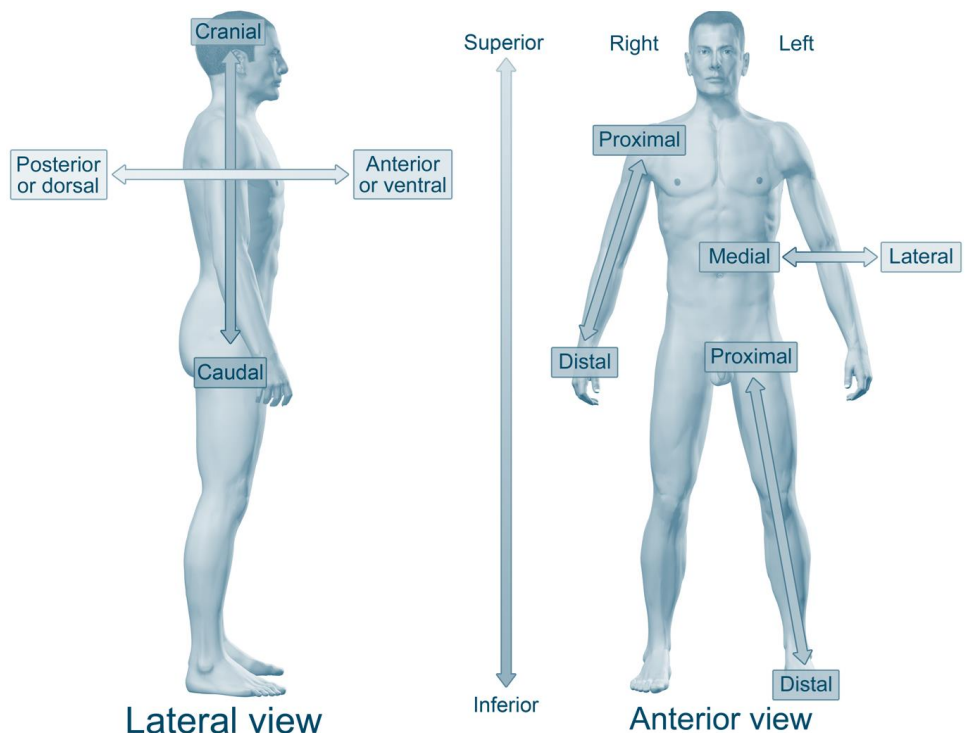
- Investigates the effects of physical activity on the body and how it adapts to enhance performance.

Definition of various terminologies

- Basic anatomical terminology is essential for accurate and effective communication in anatomy, physiology, and medicine.
- These standardized terms describe the **location**, **orientation**, and **relationships** of body structures.

1. Anatomical Position

- The standard reference point for describing the location and orientation of body structures.
- **Description:** The individual stands **upright**, facing **forward**, with **arms at the sides**, **palms facing forward**, and **feet parallel**.



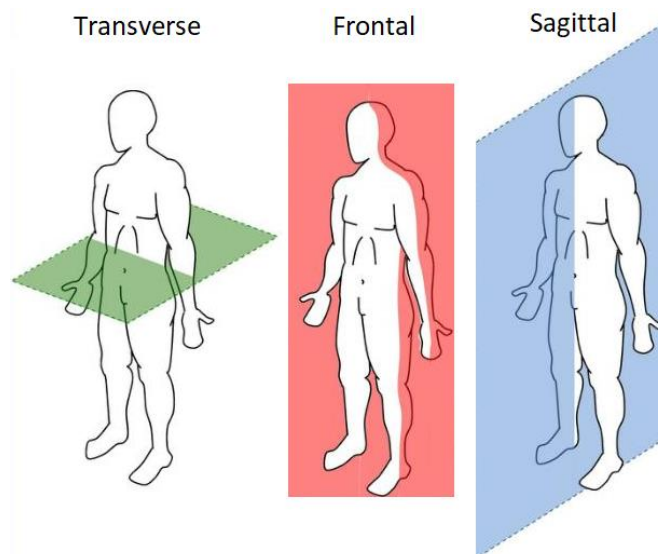
2. Directional Terms

- These terms describe the relative position of one body structure to another:

Term	Meaning
Anterior (Ventral)	Toward the front of the body
Posterior (Dorsal)	Toward the back of the body
Superior (Cranial)	Closer to the head or higher in position
Inferior (Caudal)	Closer to the feet or lower in position
Medial	Nearer to the midline of the body
Lateral	Farther from the midline of the body
Proximal	Closer to the point of attachment (limbs)
Distal	Farther from the point of attachment (limbs)
Superficial	Closer to the surface of the body
Deep	Farther from the surface of the body

3. Body Planes

- Imaginary flat surfaces used to divide the body or organs:



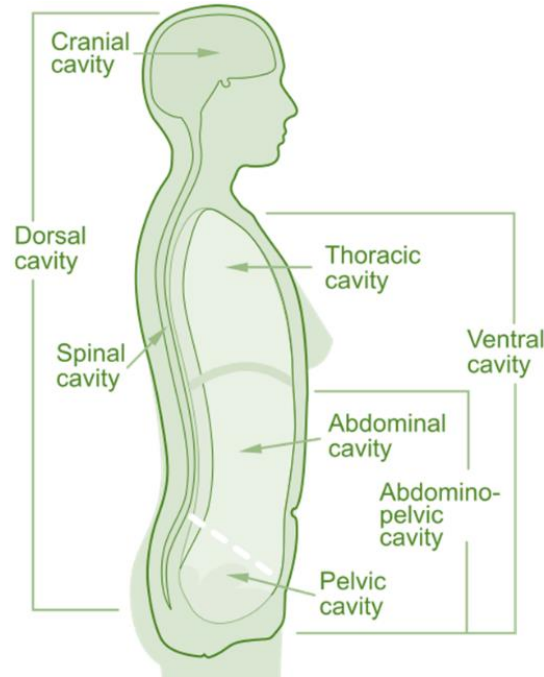
Plane	Description
Sagittal Plane	Vertical plane dividing the body into left and right parts
Midsagittal (Median)	Divides the body into equal left and right halves
Coronal (Frontal)	Vertical plane dividing the body into front (anterior) and back (posterior) parts

Transverse (Horizontal)

Horizontal plane dividing the body into **top (superior)** and **bottom (inferior)** parts

4. Body Cavities

- Spaces within the body that house and protect internal organs:



A. Dorsal Cavity

- **Cranial cavity** – contains the brain
- **Spinal cavity** – contains the spinal cord

B. Ventral Cavity

- **Thoracic cavity** – contains the heart and lungs
- **Abdominopelvic cavity** – contains digestive, urinary, and reproductive organs
- *Note:* The thoracic and abdominopelvic cavities are separated by the **diaphragm**.

5. Body Regions

- Specific areas of the body used for anatomical description:
 - **Axial Region:** Includes the **head, neck, and trunk**
 - **Appendicular Region:** Includes limbs **or extremities** (arms and legs)



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