

HUMAN ANATOMY AND PHYSIOLOGY

Chapter 1

Human Anatomy & Physiology

The systematic study of the human body is performed under two disciplines

Anatomy (Structure) and Physiology (Function)

Anatomy: Is the study of different structures of the human body and their relationship with each other.

Anatomy is made up of two Greek words

ana means up

temos means to cut

Anatomy is sub-divided into

- **Gross Anatomy** : It includes the study of such anatomical structures which can be with the naked eyes. It is also known as **topographical anatomy** , **regional anatomy** or **Anthropotomy**.
- **Microscopic Anatomy** : In this type of anatomy very minute anatomical structures (tissues and cells) are studied with the help of microscopes.
- **Superficial Anatomy or Surface Anatomy** : Includes the study of anatomical structures that can be seen from the body.
- **Comparative Anatomy** : In this type of anatomy the comparison of anatomical structures both gross and microscopic present in different animals is studied.

Physiology : Is the study of the functioning of these structures.

(or)

It can be also defined as the study related to the science of various body functions and their working.

Physiology is made up of two Greek words

physics means **nature**

logos means **study**

Which covers the study related to mechanical physical and biochemical functions of living organisms.

Scope of Human Anatomy & Physiology

The anatomy and physiology together form the foundation of medical sciences.

1. Study of human anatomy provides an essential base for the understanding of physiology and pathophysiology.
2. Helpful in the study of human evolution and development.
3. To understand the pathology of disease and pathological changes.
4. To determine the techniques of surgeries.
5. To know the parameters of normal health.

Terminologies used in anatomy

The anatomical terminology of the body can be studied under three groups:

- IV. Directional terms
- V. Sectional planes\planes of the body
- VI. Body cavities

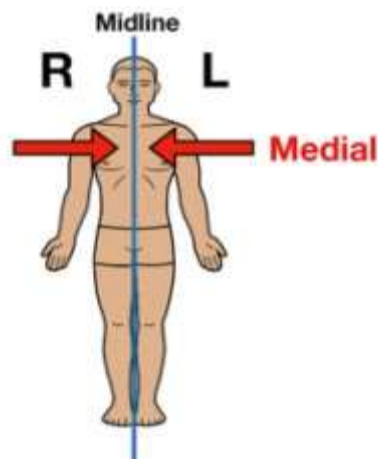
1. Directional terms

Directional terminologies are used to locate and one body structure with respect to other

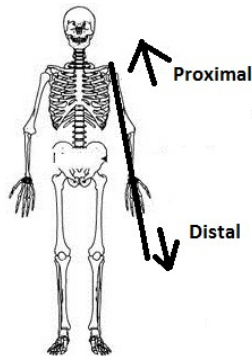
- I. **Superior (Upper, Cranial) end** : The end of the head lies in the upper most position therefore it is known as the superior end.
- II. **Inferior (lower) end** : This part starts from the extremity of the main body or the trunk along the legs in the downward direction or ground.
- III. **Anterior or ventral end** : This includes the body parts present on the front side , like chest, nipples, abdomen and external genitalia.
- IV. **Posterior or Dorsal end**: This includes the body parts present on the back side, vertebral column (also known as the backbone), shoulder blades and buttocks.



- V. **Supine position**: In this positions the face is towards the upper side (roof) while the back faces downwards.
- VI. **Prone position**: In this position the face focuses downwards or towards the ground.

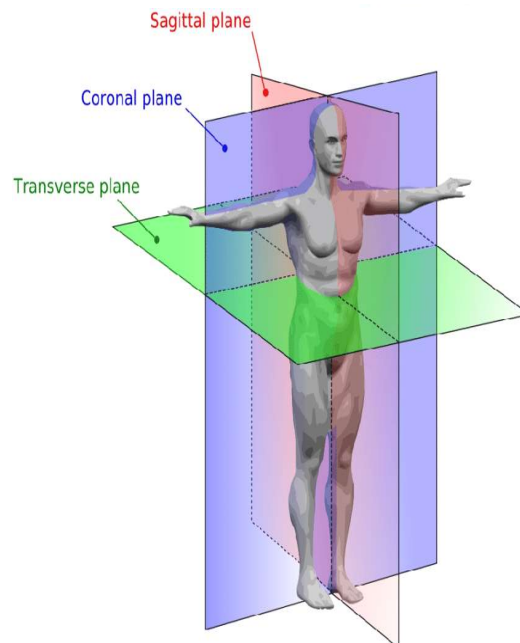


- VII. **Medial position:** It is an imaginary line passing through the longitudinal axis of the body dividing it into two equal halves from the middle starting from front to the back.
- VIII. **Lateral position :** It is that anatomical position of the body in which it is divided into two fragments though the mid line and the body structures remain away.



- IX. **Proximal:** It describes a body part that is closer to a point of attachment or closer to the trunk of the body than another part. For example the elbow is proximal to the wrist.
- X. **Distal :** This position is the opposite of proximal. It means that a particular body part is farther from the point of attachment. For example, the fingers are distal to the wrist.
- XI. **Superficial :** This position means situated near the surface.
- XII. **Peripheral :** This position means outward or far away from the surface.

2. Planes of the body

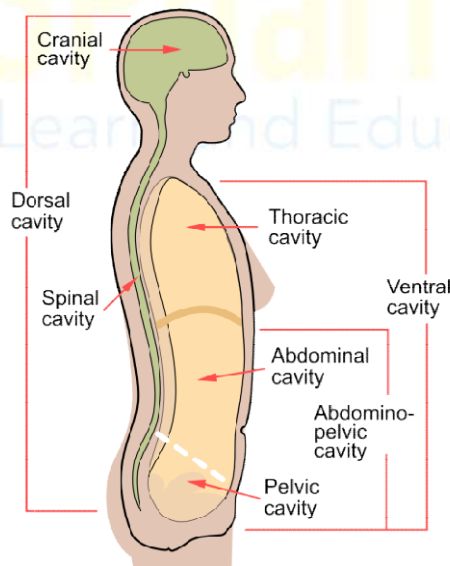


- i. **Sagittal** : In this plane, an imaginary line slicing the body (from head to toes) into two halves with erratic proportion is drawn, from top to the down.
- ii. **Horizontal** : This plane is parallel to the ground and passes through the body at the 90 degree angle to both coronal and medial plane.
- iii. **Coronal** : This plane divided the body into anterior and posterior portion, by passing through the body at the right angle to the medial system.
Anterior means the front portion and posterior means the back portion.
- iv. **Lithotomy position** : In this position the individual is lying on the back with thighs fully stretched and knees directing towards the roof.

3. Body cavities

- Cavities are the spaces of the body, containing internal organ.
- The two main cavities of the body are Dorsal cavity and Ventral cavity.
- Ventral cavity is a largest cavity which is further sub divided into the **thoracic** and **abdominopelvic cavity**.
- Both these cavities are separated by dome shaped respiratory muscles called Diaphragm.

The Different types of Cavity



Thoracic cavity : This cavity is present ventrally on the upper side of the body. It also known as the chest cavity this cavity contain the trachea, lungs, heart large blood vessels etc.

Abdominal cavity : This cavity is laterally attached to the body wall posteriorly by the pelvic cavity anteriorly by the diaphragm. This cavity contain maximum part of the gastrointestinal tract, kidneys, etc .

Pelvic cavity : This is a body cavity that is bounded by the pelvic bones of the pelvis.
This cavity contain urogenital system as well as the rectum.

Dorsal cavity : This is the smallest cavity. In this the organs are situated more posteriorly within the body. This Dorsal cavity is sub divided into 2 parts

1. The first part include Cranial cavity (upper portion which houses the Brain.
2. The Second part include spinal cavity (lower portion which houses the spinal cord.



THANK YOU