

Terms of position and movements

Curricular Objectives

By the end of this session students are expected to:

Theory

1. Define anatomy and describe its subdivisions
2. List the various parts of the human body and give examples of major body systems
3. Define the anatomical, supine and prone positions
4. Describe the different anatomical planes and their uses in medicine
5. Outline the terms used to describe positions of various structures relative to each other
6. Describe the terms used to describe the movements of various body parts

Practical

1. Identify various body parts
2. Distinguish the positions and planes used in studying anatomy
3. Relate the positions of various body parts to each other using the terms of position
4. Identify the type of movement of various body parts

Selected references and suggested resources

- ✦ Clinical Anatomy by Regions, Richard S. Snell, 10th edition
- ✦ Grant's Atlas of Anatomy, 13th Edition
- ✦ McMinn's Clinical Atlas of Human Anatomy, 7th Edition
- ✦ [Anatomy for Babylon medical students](#) (Facebook page)
- ✦ [Anatomy for Babylon medical students](#) (YouTube channel)
- ✦ [Human Anatomy Education](#) (Facebook page)
- ✦ [Human anatomy education](#) (YouTube channel)

Feedback and suggestions

- ✦ <http://goo.gl/forms/SjyjGeUpvH>

Session check list

❖ Clinical importance

- Anatomy as a basic science is recommended by almost all clinical specialties and is highly required for general medical practice of junior doctors.
- Doctors need to know anatomical terms and structures in order to communicate with each other so as to describe surgical procedures and the findings of physical examination.

❖ Anatomy and its subdivisions

- **Anatomy "to cut"**: the branch of science concerned with studying the structure of the bodies of humans, and animals that can be revealed by dissection.
- **Gross anatomy**: (Macroscopic anatomy) the study of structures that can be seen without a microscope.
- **Microscopic anatomy**: the study of cells and tissues using the microscope.

- **Regional anatomy** (topographical anatomy): the study of major parts or segments of the human body (Head, Neck, Back, Thorax, Abdomen, Pelvis/perineum and paired upper limbs and lower limbs).
 - **Systemic anatomy:** the study of the body organ systems that work together to carry out complex functions. Examples of basic body systems are skeletal, muscular, nervous, and circulatory systems
 - **Surface anatomy:** the study of what lies under the skin and what structures are perceptible to touch (palpable) in living body. This knowledge is essential to master physical examination.
 - **Clinical (applied) anatomy:** the study of the macroscopic structure and function of the body as it relates to the clinical practice in medicine, surgery and other health sciences.
 - **Sectional anatomy:** the study of structures revealed by (longitudinal, transverse, oblique) sectioning of the body and its parts either anatomically or by imaging technologies, such as computerized tomography (CT- scan) and magnetic resonant imaging (MRI)
 - **Radiological anatomy:** the study of structures revealed by various radiographic techniques.
 - **Note:** the study of anatomy is linked to dissection. Dissection of cadavers by students is now augmented, or even in some cases replaced, by viewing prosected (previously dissected) material and plastic models, or using computer teaching modules and other learning aids.
- ❖ **Positions of the body used in clinical practice**
- All descriptions of human body are based on a conventional reference posture termed the anatomical position
 - Supine and prone positions are used during some of clinical examination techniques
- ❖ **Anatomical planes**
- Four imaginary planes (median, sagittal, coronal, and transverse/ horizontal) intersect the body in anatomical position.
 - Sections of the body at these planes are created by techniques like CT-scans and MRI
- ❖ **Terms to describe position (location)**
- They are used to describe the location of structures relative to the body as a whole or to other structures. They are also called terms of relationships and comparison
 - They are used in pairs of opposites keeping in mind that the body is in anatomical position
 - Some terms are specific to certain parts of the body for example palmar and planter for the hand and foot respectively
- ❖ **Terms to describe movements**
- Movement takes place at joints. A joint is a site where two or more bones articulate, or come together with or without movement.
 - Movements of different parts of the body take place within different anatomical planes

Lab activity list

For each task below, define the listed terms/ identify the listed structures then answer the related questions

❖ Task 1 (positions and planes)

- ✓ Anatomic/ Supine/ Prone positions
- ✓ Median/ Sagittal/ Coronal/ Horizontal/ Transverse
- ⊕ Which anatomical plane divides the body into equal right and left halves?
- ⊕ What is the direction of the hands in anatomic position

❖ Task 2 (terms of positions)

- ✓ Anterior/ Posterior
- ✓ Medial / Lateral
- ✓ Superior / Inferior
- ✓ Proximal / Distal
- ✓ Superficial / Deep
- ✓ Internal / External
- ✓ Unilateral/ Bilateral
- ✓ Ipsilateral / Contralateral
- ✓ Special terms Palmar (hand)- Planter (foot)/ Dorsal (hand and foot)
- ⊕ When comparing the location of the upper limb parts, the forearm is said to be _____ to the arm
- ⊕ The skin lies _____ to the subcutaneous fat
- ⊕ The head lies _____ to the neck

❖ Task 3 (terms of movements)

- Movements in a sagittal plane (antero-posterior direction)
 - ✓ Flexion / Extension
- Movements in a coronal plane (medial-lateral direction)
 - ✓ Abduction / Adduction
 - ✓ Lateral flexion
- Movements around long axis (Rotation)
 - ✓ Medial rotation / Lateral rotation
- Special movements
 - ✓ **Forearm:** Pronation / Supination
 - ✓ **Mandible:** Protraction / Retraction
 - ✓ **Foot:** Inversion / Eversion
 - ✓ **Circumduction**
- ⊕ When the head bends forward on the neck, what is the name given for the movement?
- ⊕ When the palm of the hand faces posteriorly, what is the name given for the movement?

Review questions:

1. What is the difference between transverse and horizontal planes?
2. During examination of the abdomen, the patient should be in which position?
3. A structure is said to be superficial to other structure when it is closer to _____
4. The terms proximal/ distal are used to compare the location of two structures relative to _____
5. The trunk is surrounded by external wall and contain internal organ. Explain the use of the terms external/ internal in this example
6. If there is numbness in both hands. What is the best term used? (unilateral/bilateral/ipsilateral)

Homework:

A fourth year medical student has just completed a full neurological examination of a patient's upper and lower limbs. Now he needs to write a report of his findings. Which term is most appropriate to use for each of the following findings

- I. There was a loss of sensation on the little finger but not the thumb. The little finger is _____ to the thumb
 - a) Lateral
 - b) Posterior
 - c) Medial
 - d) Anterior
 - e) Superior
- II. The right upper and left lower limbs are weak
 - a) Ipsilateral
 - b) Contralateral
 - c) Superior
 - d) Inferior
 - e) Dorsal
- III. Patient could not bend his elbow forward. Patient is unable to _____ the elbow
 - a) Extends
 - b) Rotates
 - c) Abducts
 - d) Flexes
 - e) Pronates