HBS2HAA – HUMAN ANATOMY A

LESSON NOTES

TOPIC 1: INTRODUCTION/BASIC TERMINOLOGY

MAJOR PRINCIPLES:

D1 *Structure reflects function*

D2 *The anatomy of the human body has a commonly accepted pattern but there may be variation from one person to another*

M1 *Simple movements of the body or its parts take place in directions parallel to the body's planes of references*

M3 *Simple movements in an anatomical plane of reference take place around an axis which is perpendicular to that plane*

OBJECTIVES:

LO1 – ANATOMY

Anatomy is the science concerned w. the structure of the body.

Regional Anatomy is concerned w. the organization of the human body as major parts or segments:

- A main body, consisting of the head, neck, and trunk (subdivided into thorax, abdomen, back, and pelvis/perineum)
- Paired with upper and lower limbs

All the major parts can be further subdivided into areas and regions. Regional anatomy is the method of studying the body's structure by focusing attention on a specific part, area, or region; examining the arrangement and relationships of the various systemic structures w/in it; and then usually continuing to study adjacent regions in an ordered sequence.

Regional anatomy also recognizes the body's organisation by layers: skin, subcutaneous tissue, and deep fascia covering the deeper structures of muscles, skeleton, and cavities, which contain *viscera* (internal organs).

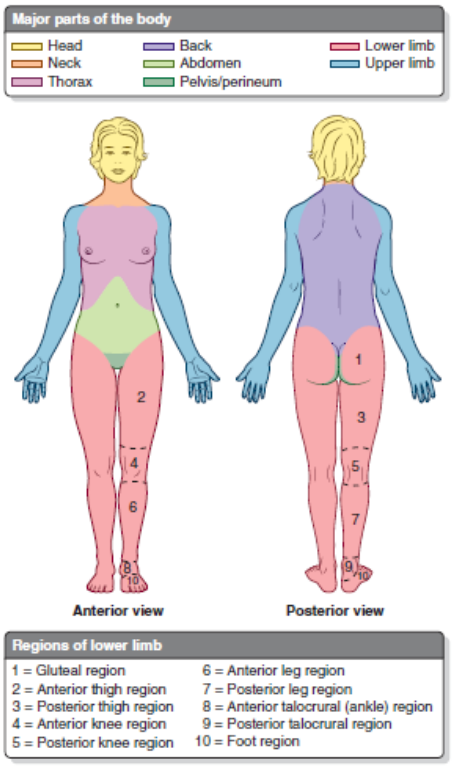


FIGURE 1.1. Major parts of the body and regions of the lower limb. Anatomy is described relative to the anatomical position illustrated here.

Systemic Anatomy is the study of the body's organ systems that work together to carry out complex functions. Systemic anatomy studies the body system by system. The basic systems and the field of study/treatment of each are:

- The integumentary system (dermatology)
- The skeletal system (osteology)

- The articular system (arthrology)
- The muscular system (myology)
- The nervous system (neurology)
- The circulatory system (angiology)
- The cardiovascular system (cardiology)
- The lymphatic system
- The alimentary/digestive system (gastroenterology)
- The respiratory system (pulmonology)
- The urinary system (urology)
- The genital system (gynecology/andrology)
- The endocrine system (endocrinology)

Surface Anatomy is the study of internal structures of the body as they relate to the overlying skin surface.

Gross Anatomy is the study of large structures visible to the naked eye.

Histology is the study of tissues within the body.

Embryology is concerned with the study of embryos and their developmental changes that occur before birth.

Radiology is the use of x-rays to study the internal structures of the body.

LO2 – ANATOMICAL POSITION OF REFERENCE

The **Anatomical Position** refers to the body position as if the person were standing upright w. the:

- Head facing forward
- Palms forward and near side of body
- Toes forward and feet slightly apart
- Thumbs pointed away from the body

Anatomical Descriptions are based on **FOUR** imaginary planes that intersect the body in the anatomical position.

- The median sagittal plane is the vertical plane passing longitudinally through the body and divides the body into left and right halves. The plane defines the midline of the head, neck, and trunk where it intersects the surface of the body.
- Sagittal planes are vertical planes passing through the body parallel to the median plane. Parasagittal is used when dividing the body into uneven right and left regions and runs parallel to the sagittal plane.
- Frontal (coronal) planes are vertical planes passing through the body as right angles to the median plane, dividing the body into anterior (front) and posterior (back) parts.
- Transverse planes are horizontal planes passing through the body at right angles to the median and frontal planes, dividing the body into superior (upper) and inferior (lower) parts.

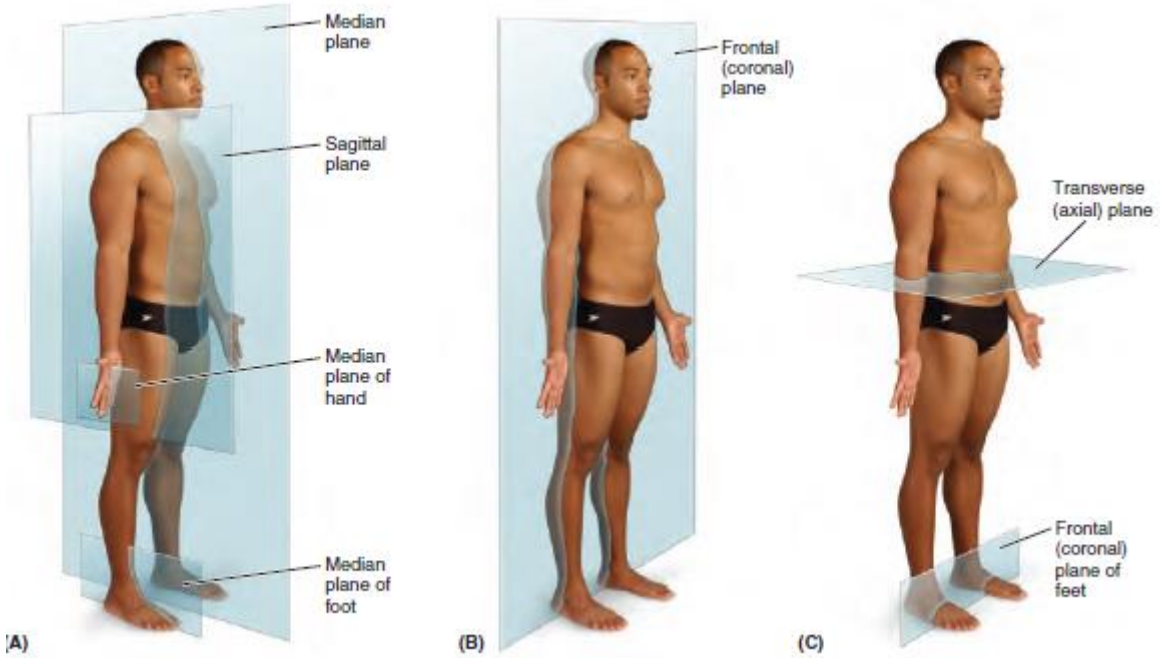
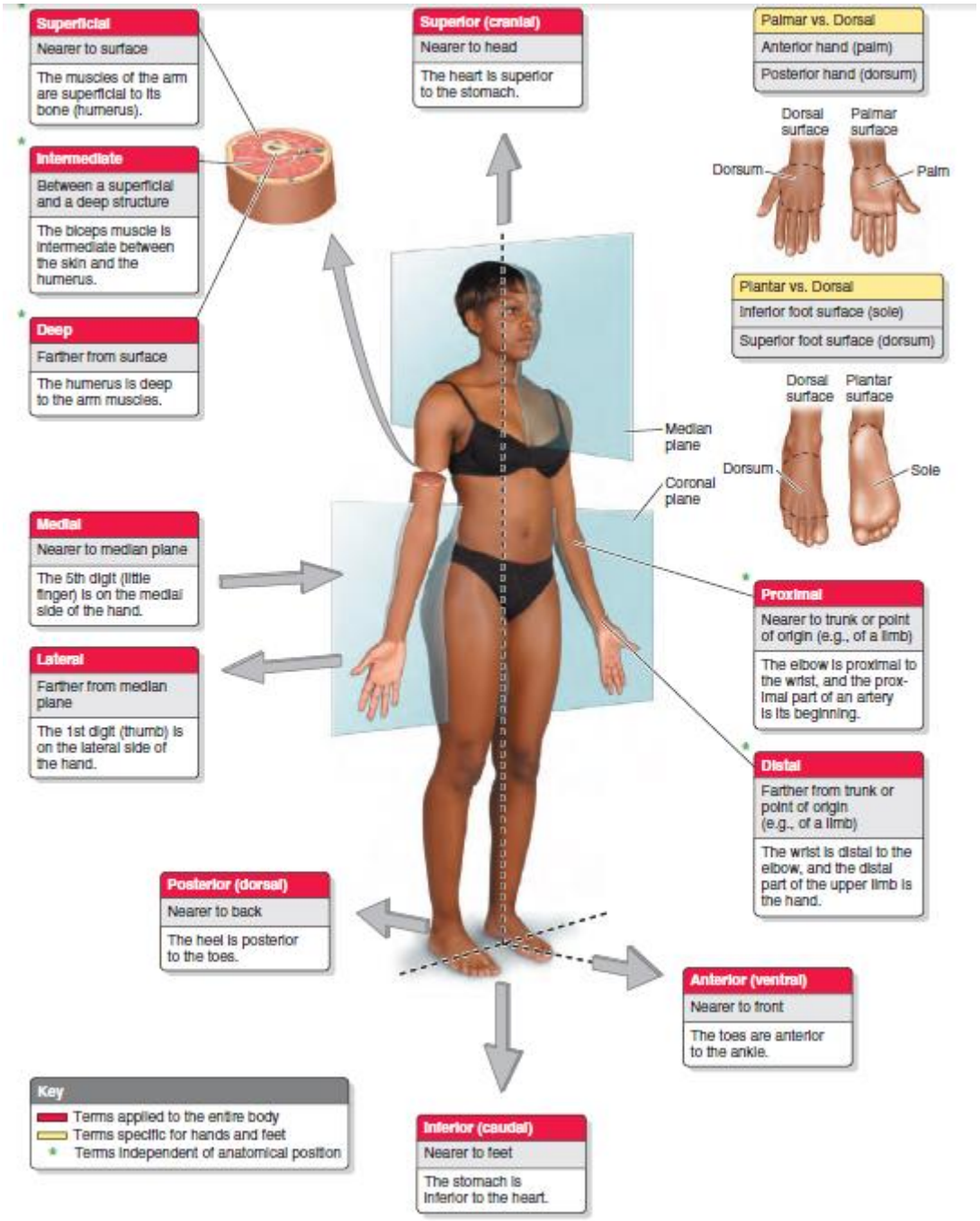


FIGURE I.2. Anatomical planes. The main planes of the body are illustrated.

LO3 – ANATOMICAL RELATIONSHIPS

Anatomical Relationships of an anatomical structure can be described in terms of where it is relative to something else:

- Superior (cranial) – Towards the head or upper part of a structure/body; above.
- Inferior (caudal) – Away from the head or toward the lower part of a structure/body; below
- Anterior (ventral) – Toward or at the front of the body; in front of
- Posterior (dorsal) – toward or at the back of the body; behind
- Medial – Toward or at the midline of the body; on the inner side of
- Lateral – Away from the midline of the body; on the outer of
- Proximal – Closer to the origin of a body part or the point of attachment of a limb to the body trunk
- Distal – Farther from the origin of a body part or the point of attachment of a limb to the body trunk
- Superficial – Toward or at the body surface
- Deep – Away from the body surface; more internal


Superficial
Nearer to surface
The muscles of the arm are superficial to its bone (humerus).
Intermediate
Between a superficial and a deep structure
The biceps muscle is intermediate between the skin and the humerus.
Deep
Farther from surface
The humerus is deep to the arm muscles.
Superior (cranial)
Nearer to head
The heart is superior to the stomach.
Palmar vs. Dorsal
Anterior hand (palm)
Posterior hand (dorsum)
Dorsal surface
Palmar surface
Dorsum
Palm
Plantar vs. Dorsal
Inferior foot surface (sole)
Superior foot surface (dorsum)
Dorsal surface
Plantar surface
Dorsum
Sole
Median plane
Coronal plane
Medial
Nearer to median plane
The 5th digit (little finger) is on the medial side of the hand.
Lateral
Farther from median plane
The 1st digit (thumb) is on the lateral side of the hand.
Proximal
Nearer to trunk or point of origin (e.g., of a limb)
The elbow is proximal to the wrist, and the proximal part of an artery is its beginning.
Distal
Farther from trunk or point of origin (e.g., of a limb)
The wrist is distal to the elbow, and the distal part of the upper limb is the hand.
Posterior (dorsal)
Nearer to back
The heel is posterior to the toes.
Anterior (ventral)
Nearer to front
The toes are anterior to the ankle.
Key
Terms applied to the entire body
Terms specific for hands and feet
Terms independent of anatomical position
Inferior (caudal)
Nearer to feet
The stomach is inferior to the heart.