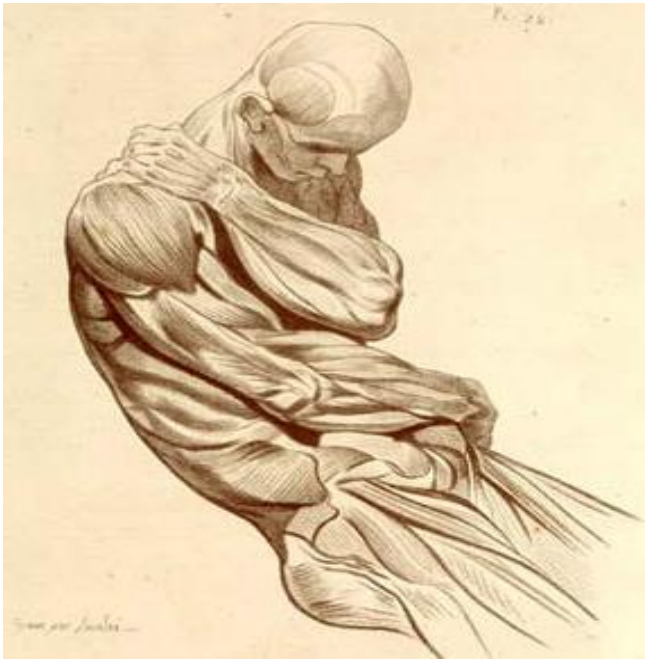
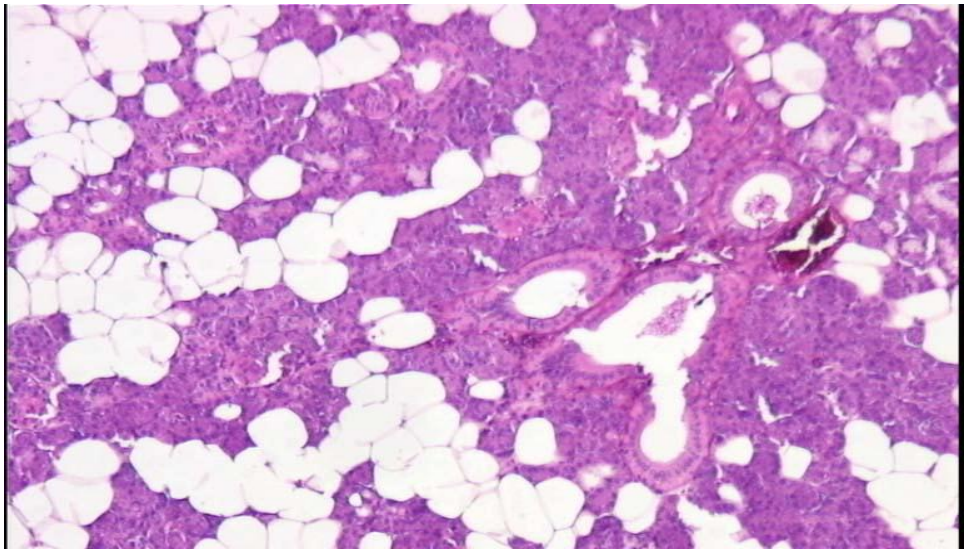
Welcome to Human Anatomy

ANATOMY

Is the study of the gross structure of the human ❑ body with the naked eyes and as well as microscopy.



Gross anatomy of muscle



Cytology of normal salivary glands

An Overview of Anatomy

Branches of Anatomy

An Overview of Anatomy

- **Anatomical terminology**
  - Based on ancient Greek or Latin
  - Provides standard nomenclature worldwide
- **Branches of anatomy**
  - **Gross anatomy**
  - **Microscopic anatomy (histology)**
  - **Surface anatomy**

An Overview of Anatomy

- **Other branches of anatomy**
  - Developmental anatomy
  - Embryology
  - Pathological anatomy (pathology)
  - Radiographic anatomy
  - Functional morphology

Methods of study of Anatomy

Microscopic Anatomy

- **Cytology** – study of the cell
- **Histology** – study of tissues

Organizational Levels

- Chemical
- Cell
- Tissue
- Organ
- System
- Organism

Cell and Tissues

The cell is the unit of building for all living body and the different cells form the tissue which categorized into:

A- Epithelial T.

1-Squamous epith.

2-Columnar epith.

B-Connective T

1-Fibrous T.

2-Areolar T.

3-Adipose T.

4-Cartilaginous T.

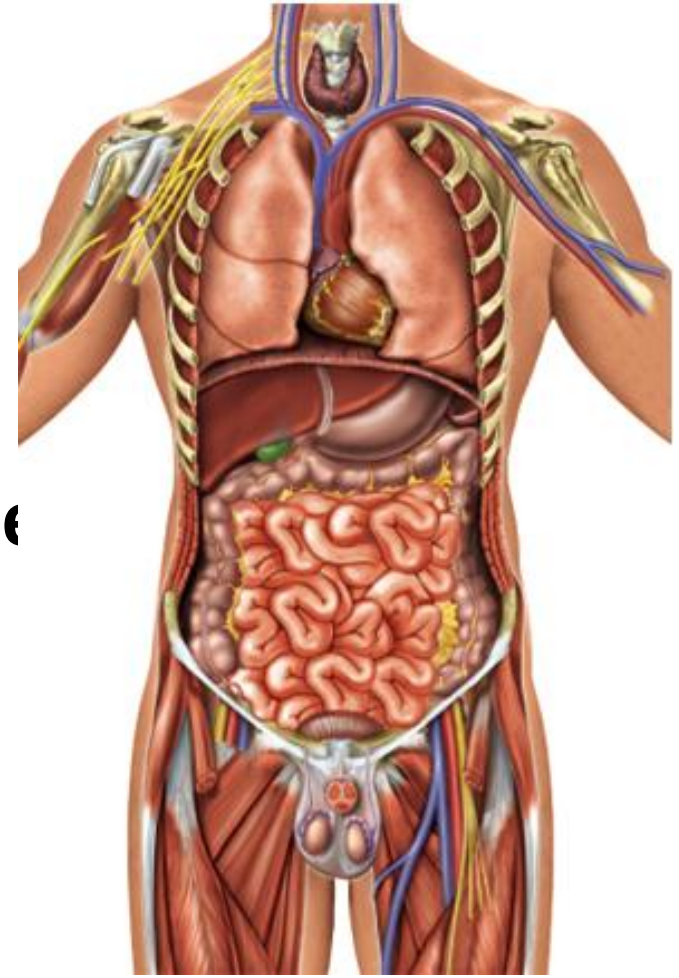
5-Bone T.

6-Muscular T.

General Orientation to Human Anatomy

General Orientation to Human Anatomy

- Anatomical position
- Planes of section
- Directional term
- Regions of the body
- Body cavities and membrane
- Organ systems
- Visual survey of the body
  - illustrations



Anatomical position

ANATOMICAL POSITION

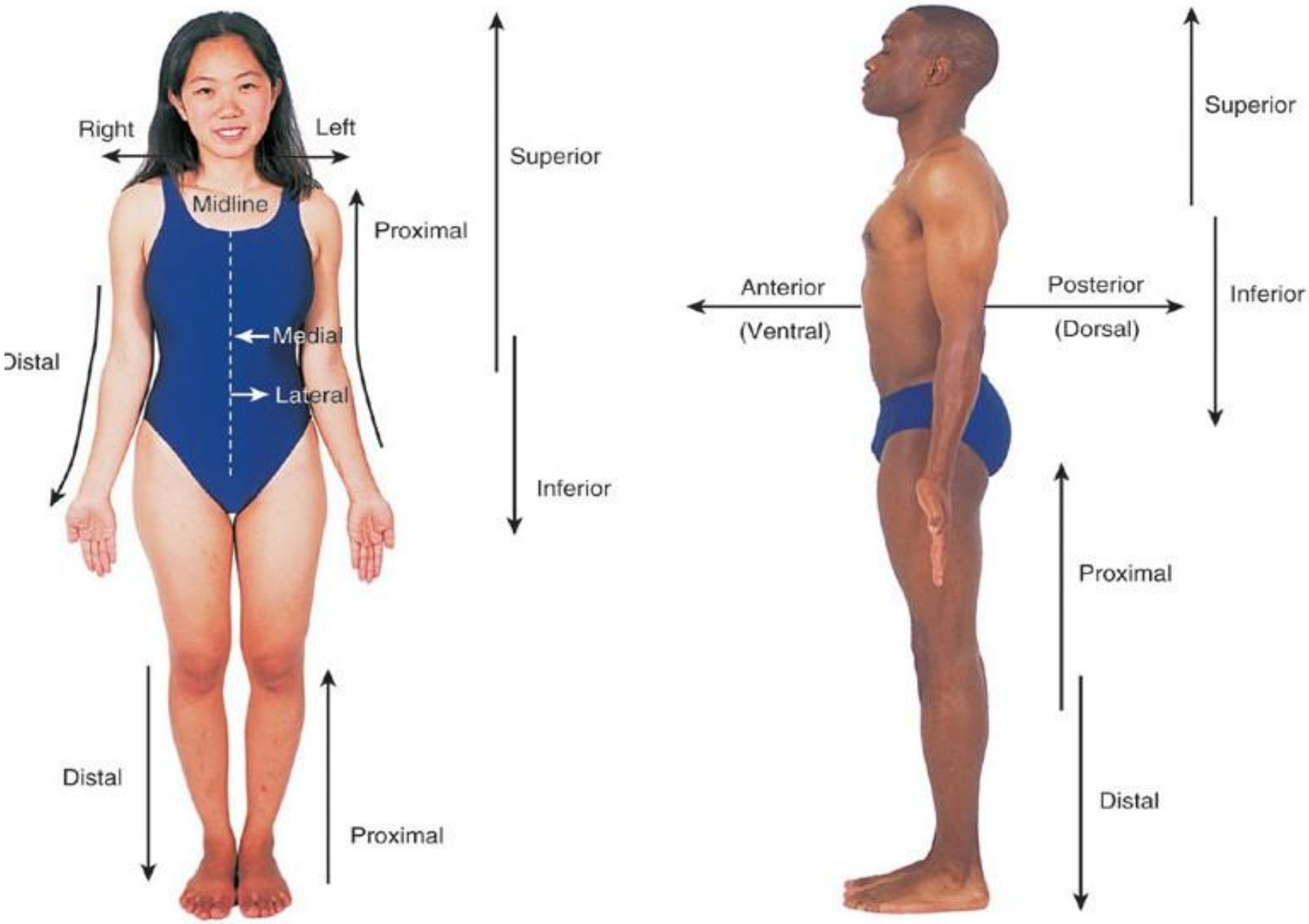
- By definition, "**Anatomical position**" is when ;

  - the person is **standing erect**
  - the **upper-limbs** are **by the sides**, with the **palm** of the **hands** facing **forwards**
  - the **head, eyes, and toes** directed **forward**
  - **lower limbs** together with the **feet** directed **anteriorly**

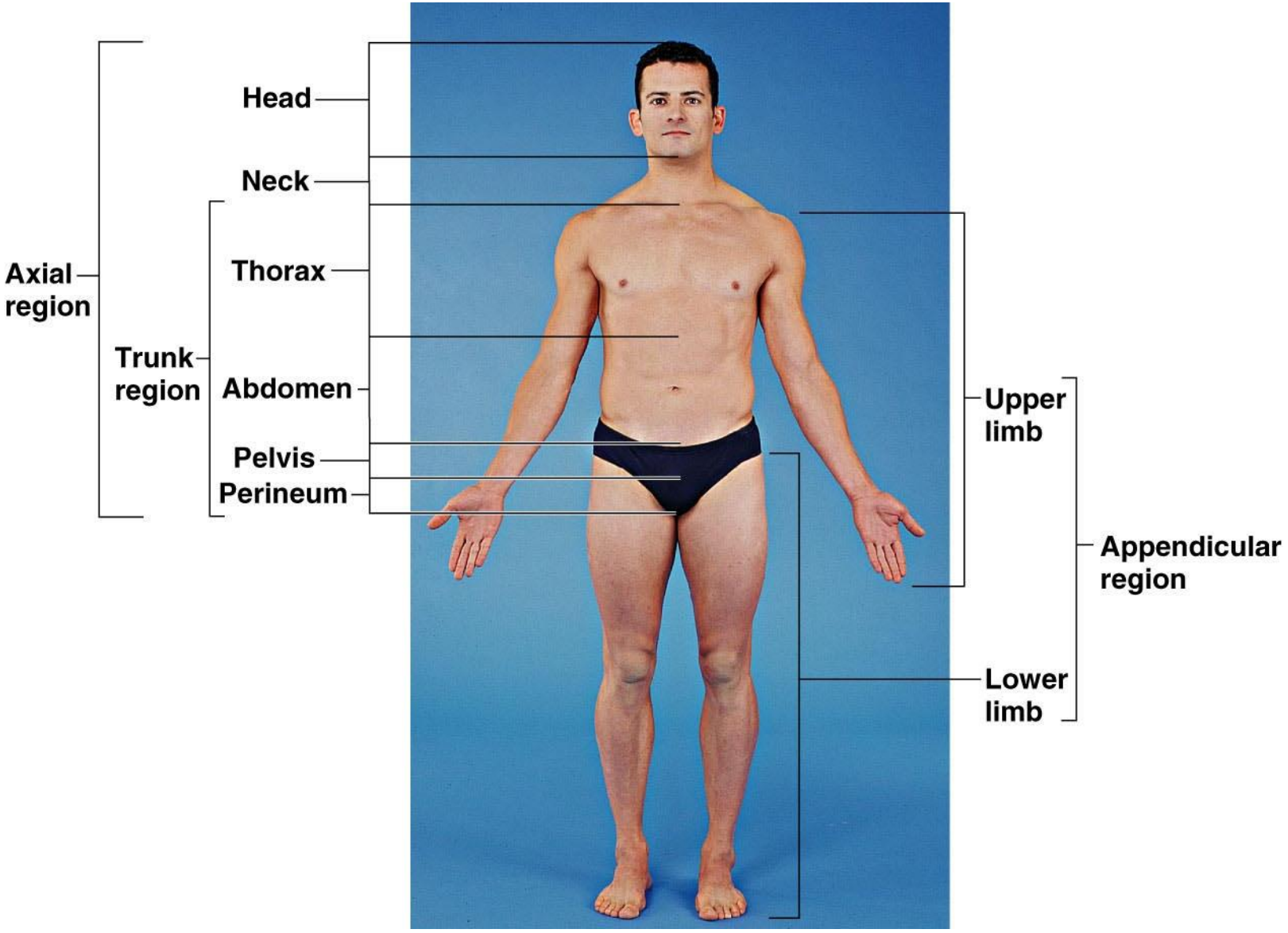
Anatomical Position

- Standing erect
- Arms by side
- Palms facing forward
- feet are flat on the floor

ANATOMICAL POSITION



Anatomical position



Planes & section

ANATOMICAL PLANES and SECTIONS

- It is often useful to show a figure of a sectioned/cut human body or organ.

- SECTION - refers to a part **cut along a plane**.

- 3 Types of sections;
  1. TRANSVERSE SECTION
  2. LONGITUDINAL SECTION
  3. OBLIQUE SECTION

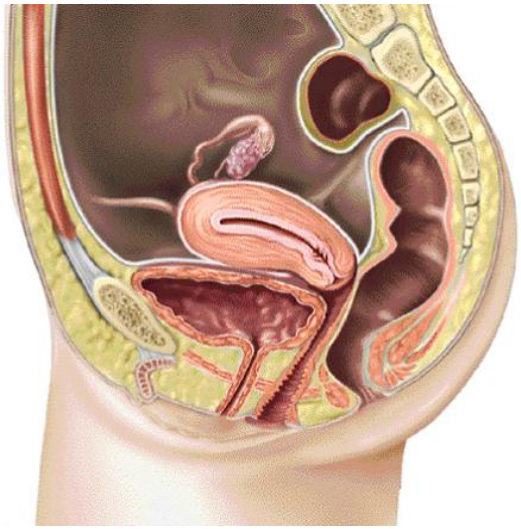
ANATOMICAL SECTION

- ✓ TRANSVERSE SECTION – (also called CROSS-SECTION) refers to a part **cut crosswise/ "width wise"**

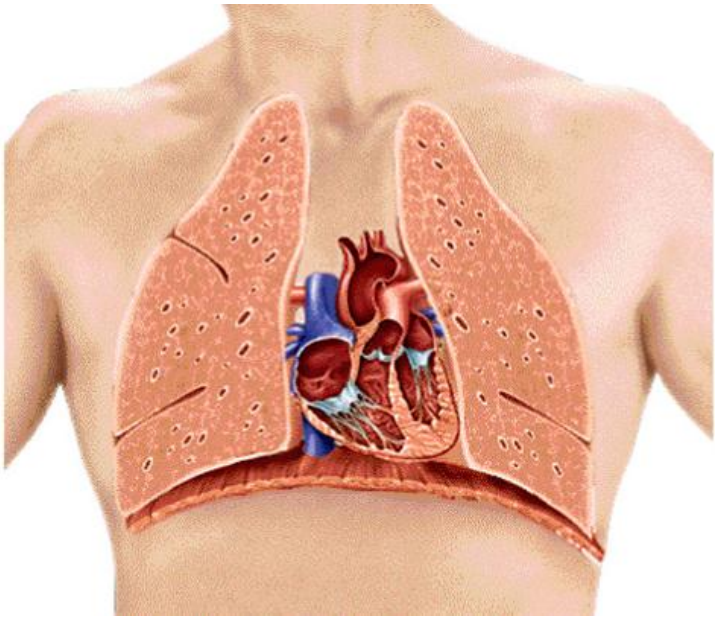
- ✓ LONGITUDINAL SECTION – is a **cut** made along the **long axis (length wise)** of the organ.

- ✓ OBLIQUE SECTION – refers to a cut are neither longitudinal nor transverse cut. They often lie on a slightly oblique plane.

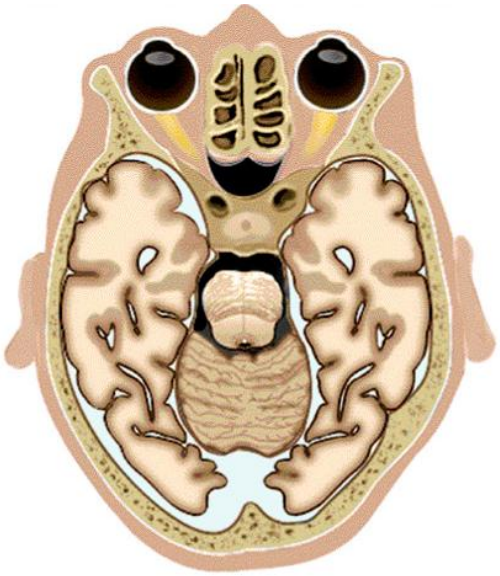
Typical Sectional Views of the Body



Sagittal

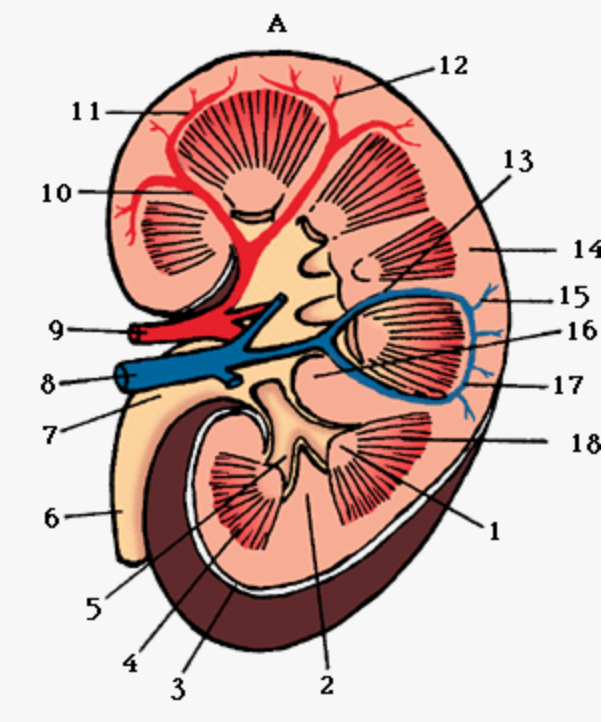


Frontal

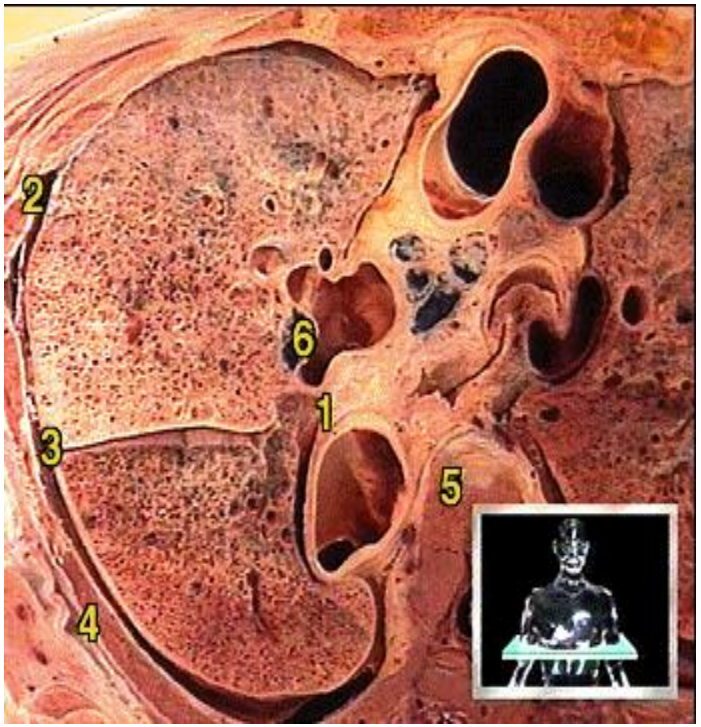


Transverse

ANATOMICAL SECTIONS



Longitudinal section of kidney



Transverse section of lungs

ANATOMICAL PLANES

PLANE - is geometrical concept referring to an imagined flat surface.

- They are used to describe the sections of the body.

- There are **3 main anatomical planes**;
  1. **SAGITTAL PLANE**
  2. **CORONAL PLANE** (also called FRONTAL PLANE)
  3. **HORIZONTAL PLANE** (also called TRANSVERSE PLANE)

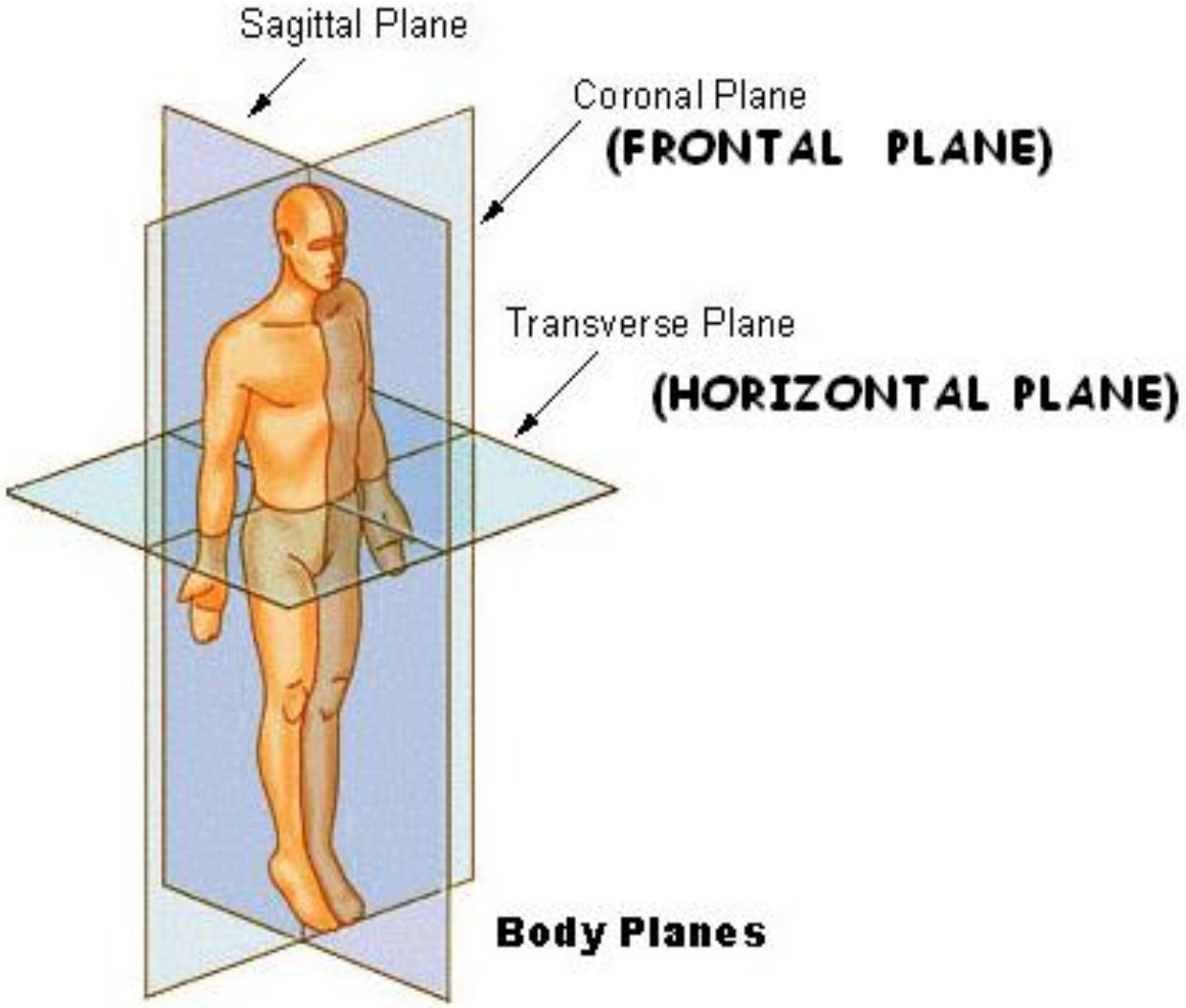
ANATOMICAL PLANES

- **SAGITTAL PLANE** – it is an imaginary vertical plane (extending from front to back and top to bottom), dividing the body into left and right portions.
- ✓ **MIDSAGITTAL** PLANE – (also called **MEDIAN** PLANE) refers to a sagittal plane that divides the body into exactly **equal right and left portions**.

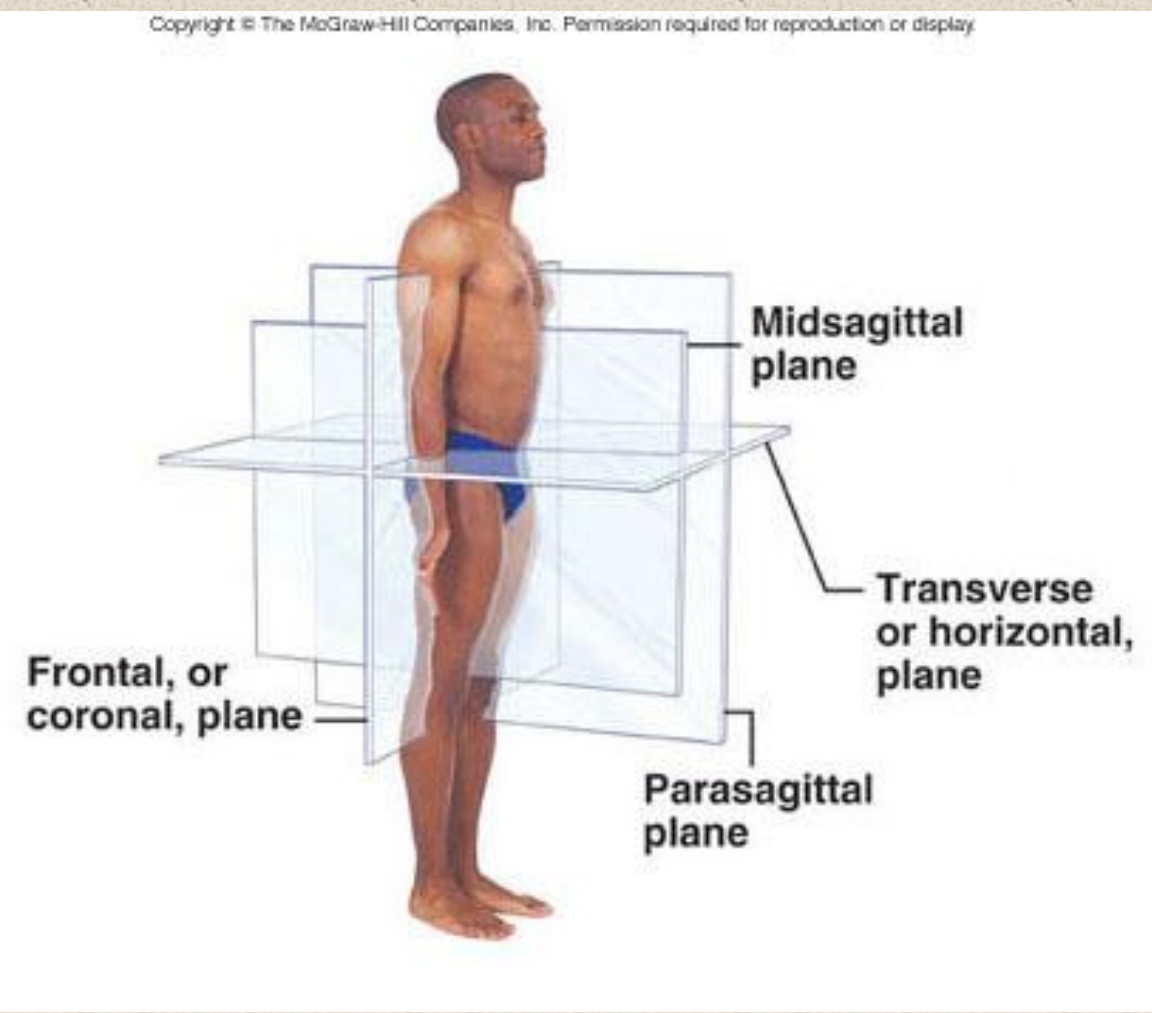
- **FRONTAL PLANE** – (also called the **CORONAL** PLANE)
  - A vertical plane passing through the body (at right angles to sagittal plane) and divides the body into front (**anterior**) and back (**posterior**) portions

- **HORIZONTAL PLANE** – (also called a TRANSVERSE plane)
  - It divided the body into top (**superior**) and bottom (**inferior**) portions

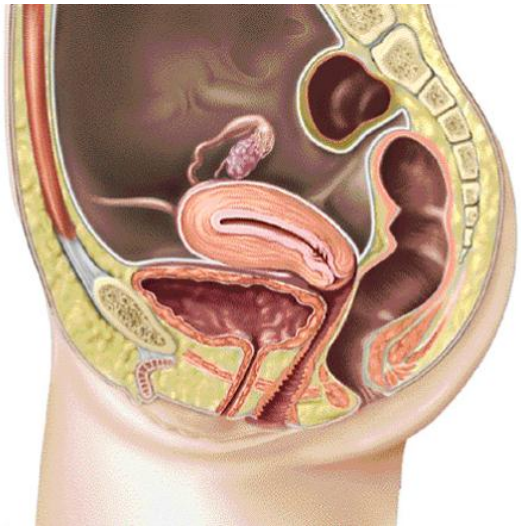
ANATOMICAL PLANES



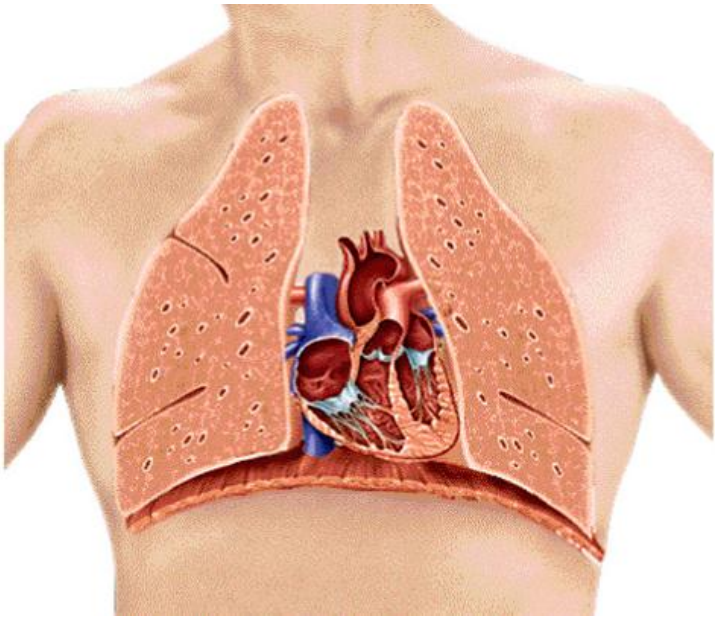
Chapter 1
The Human Organism



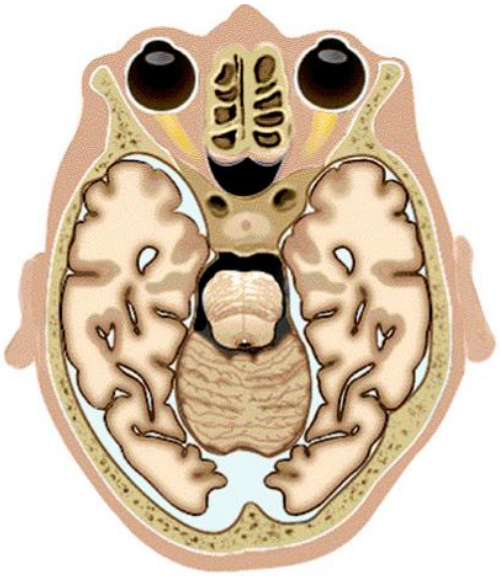
Typical Sectional Views of the Body



Sagittal



Frontal



Transverse

Anatomical line

1-Vertical lines(planes):

-Anterior median line

-posterior median line

-Mid-clavicular line

-Median line of upper limb

-Median line of lower limb

-Axillary lines : . Anterior

. Posterior

. mid axillary

2-Horizontal lines(planes):

.Transpyloric

.Subcostal

.Transtubercular

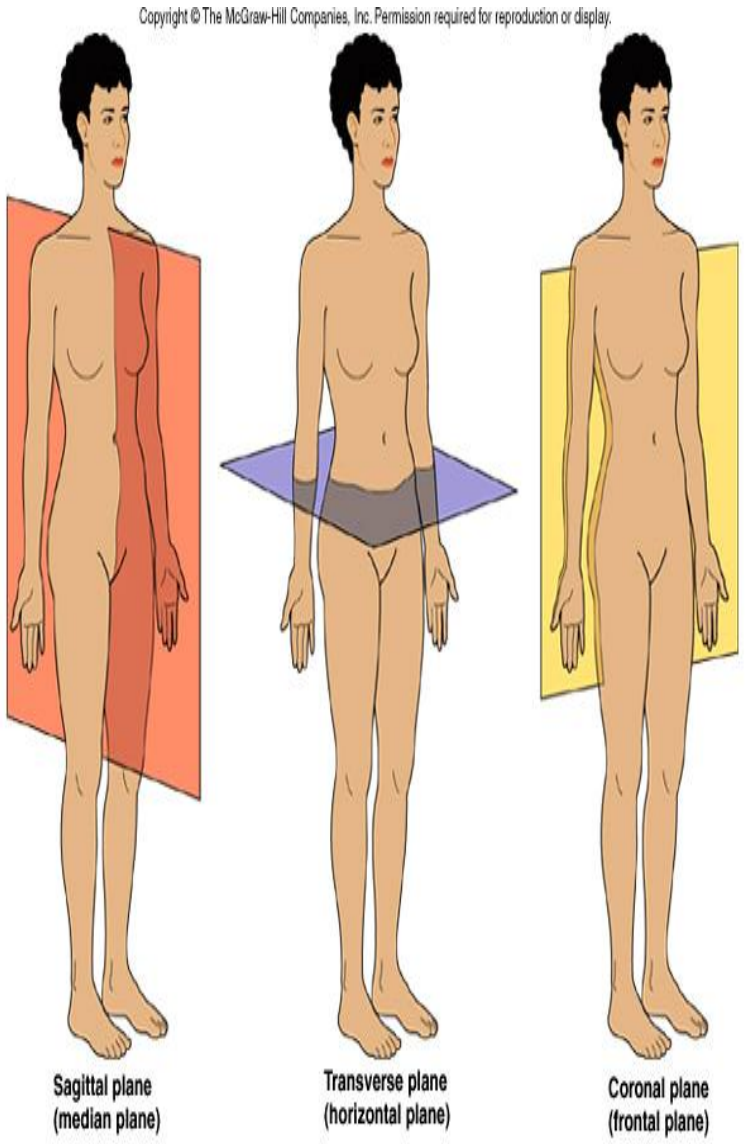
Planes and Sections& lines

- Sagittal :

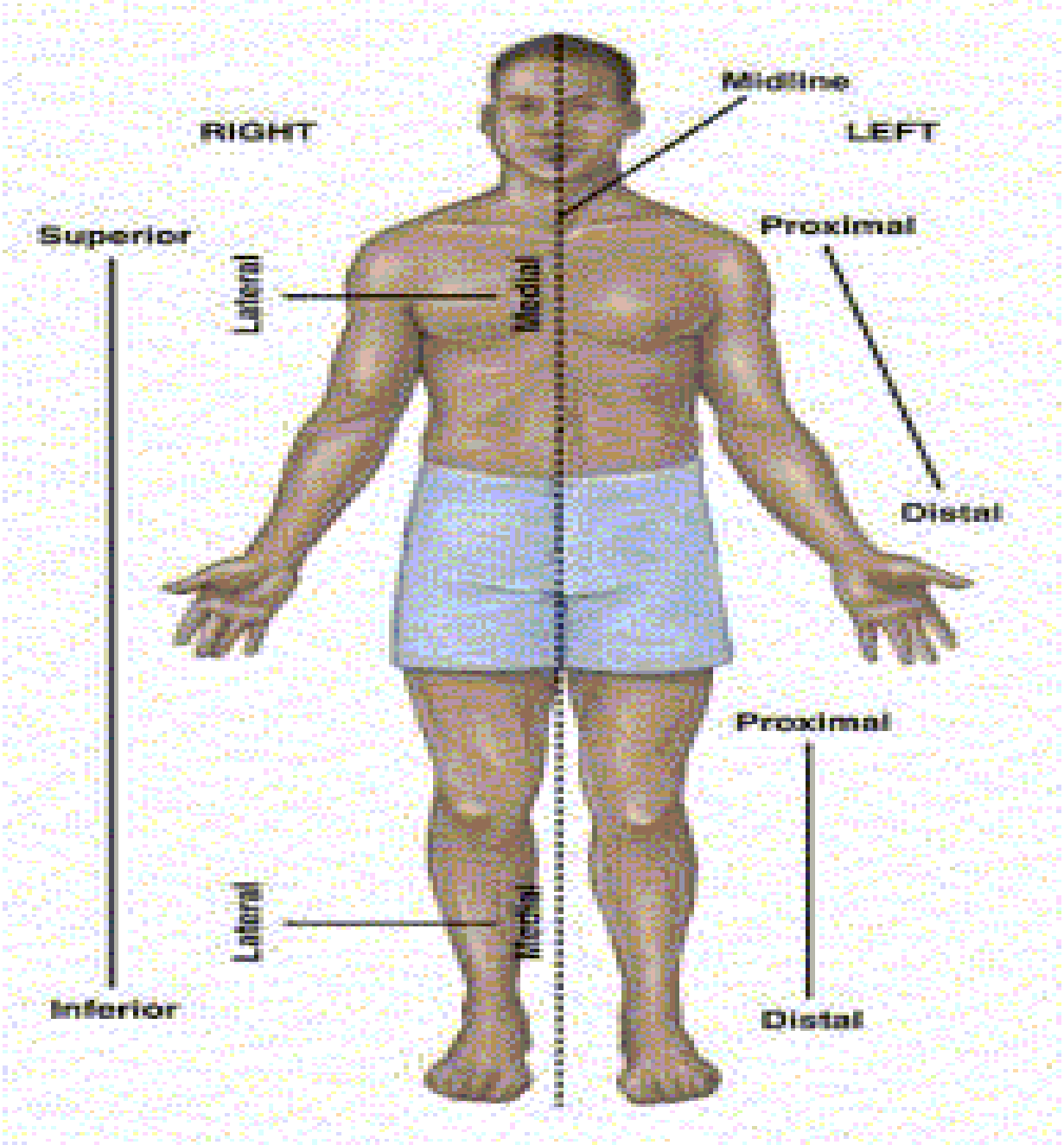
  -midsagittal

  -Parasagittal

- Transverse=Horizontal
- Frontal = Coronal



ANATOMICAL DIRECTIONS



- **DIRECTIONAL TERMS are used to indicate the relationship of one body part to another.**

- **Commonly used terms include:**

- **SUPERIOR – above or towards the head**
- **INFERIOR – below or towards the tail**
- **ANTERIOR/VENTRAL – towards the front**
- **POSTERIOR/DORSAL – towards the back**
- **MEDIAL – towards the midline**
- **LATERAL – away from the midline**

- **INTERMIDATE** – between lateral and medial
- **PROXIMAL** – nearer to the point of attachment of an extremity to the trunk or structure.
- **DISTAL** – farther from the point of attachment of an extremity to the trunk or structure.
- **SUPERFICIAL** – on or near the surface.
- **DEEP** – inward away from the surface.

Anatomical Regions

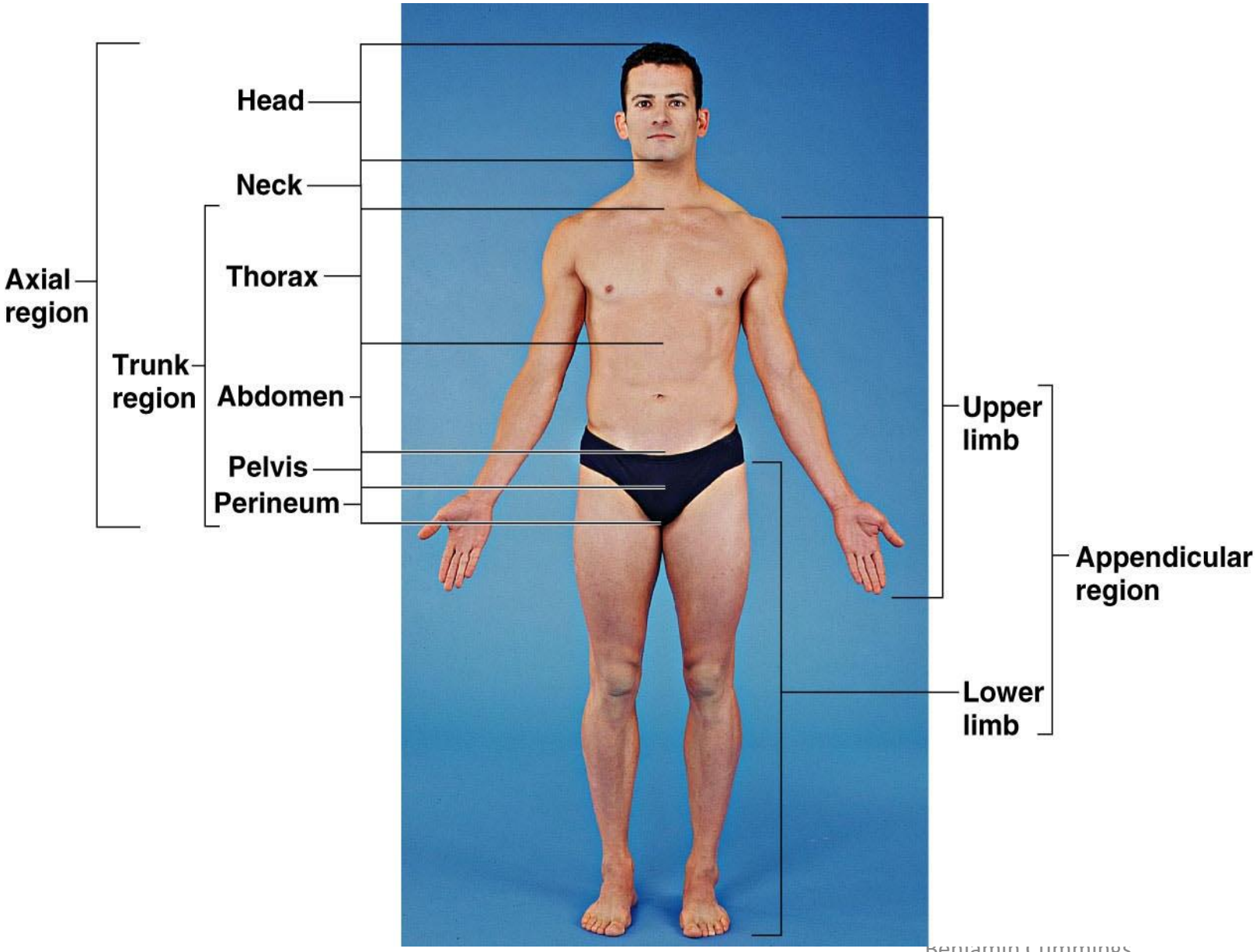
Gross Anatomy – An Introduction

- Regional terms – names of specific body areas
  - **Axial region** – the main axis of the body
  - **Appendicular region** – the limbs

Body Regions

- **Axial region** = **head, neck & trunk**
  - **trunk**
    - thoracic region above diaphragm & abdominal region below
  - **abdomen**
    - divided into quadrants to describe pain
    - divided into nine regions by tic-tac-toe grid
- **Appendicular region** = **upper and lower limbs**
  - **upper limb** = brachium(**arm**), antebrachium(**forearm**), carpus(**wrist**), manus(**hand**) and digits(**fingers**)
  - **lower limb** = **thigh**, crus(**leg**), tarsus(**ankle**), pes(**foot**) and digits(**toes**)

Gross Anatomy – An Introduction

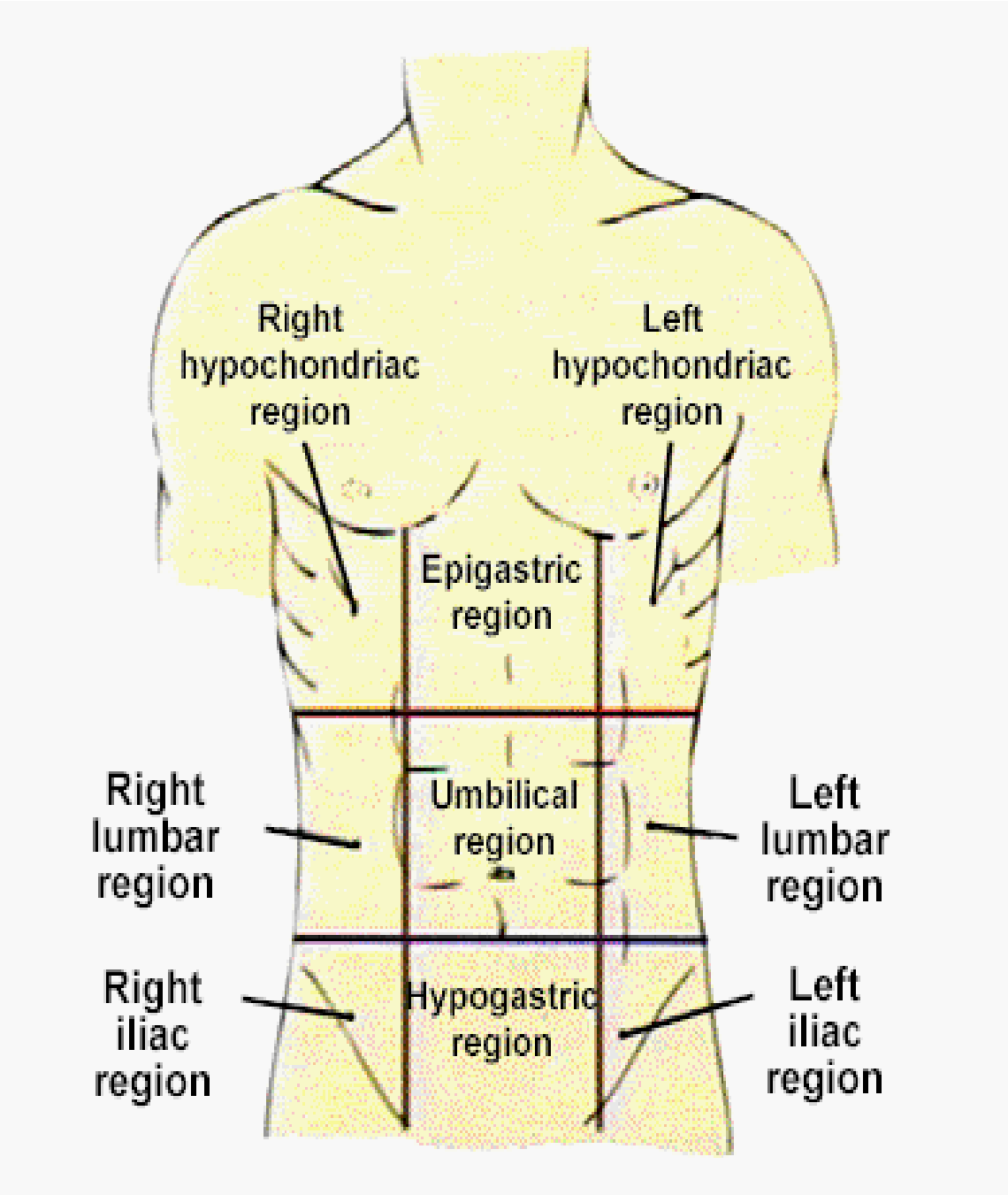


ABDOMEN AND THORAX REGIONS

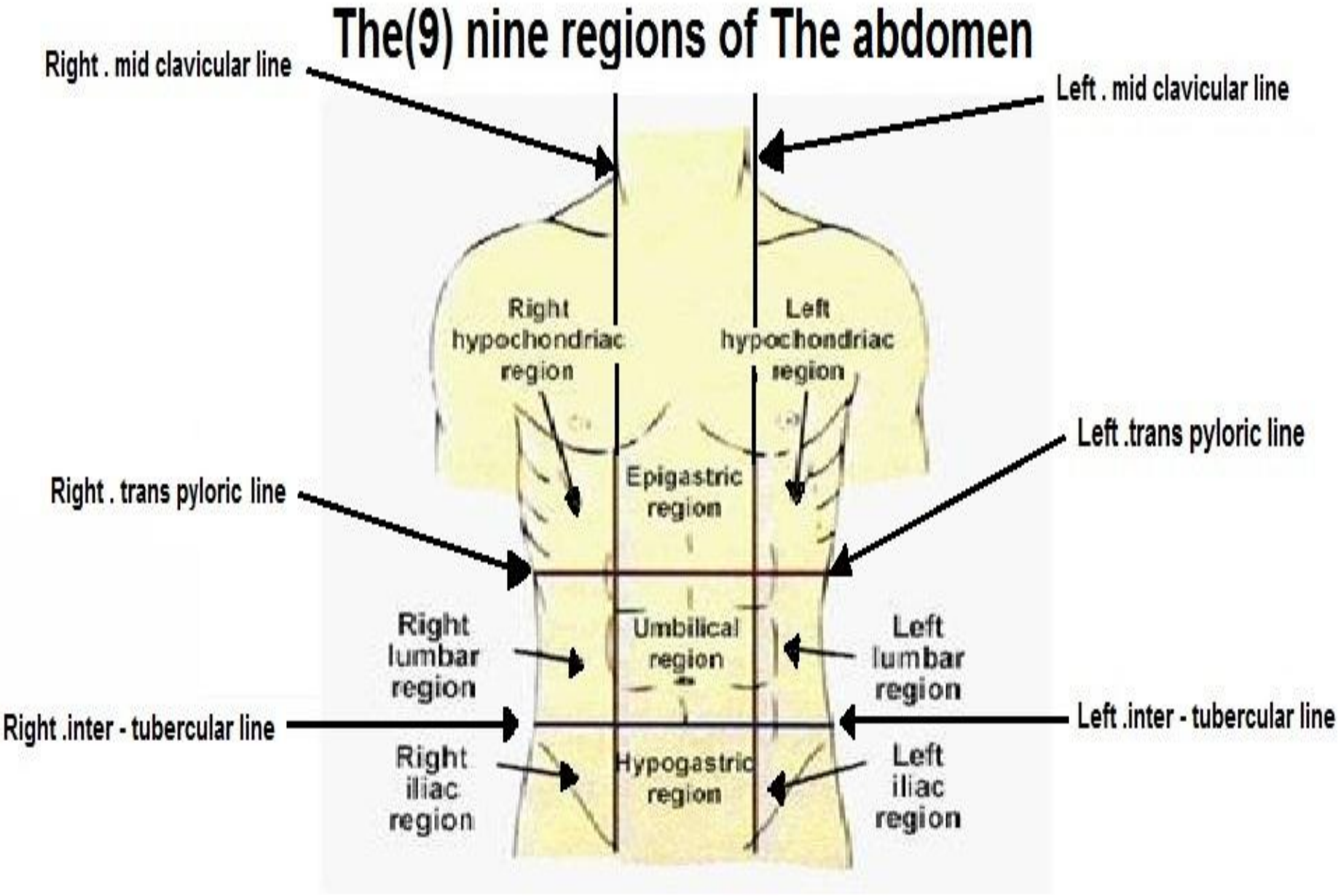
- RT. AND LEFT HYPOCHONDRIAC
- EPIGASTRIC
- RT. AND LEFT LUMBAR
- UMBILICAL
- RT. AND LEFT ILIAC
- HYPOGASTRIC

Anatomical Regions:

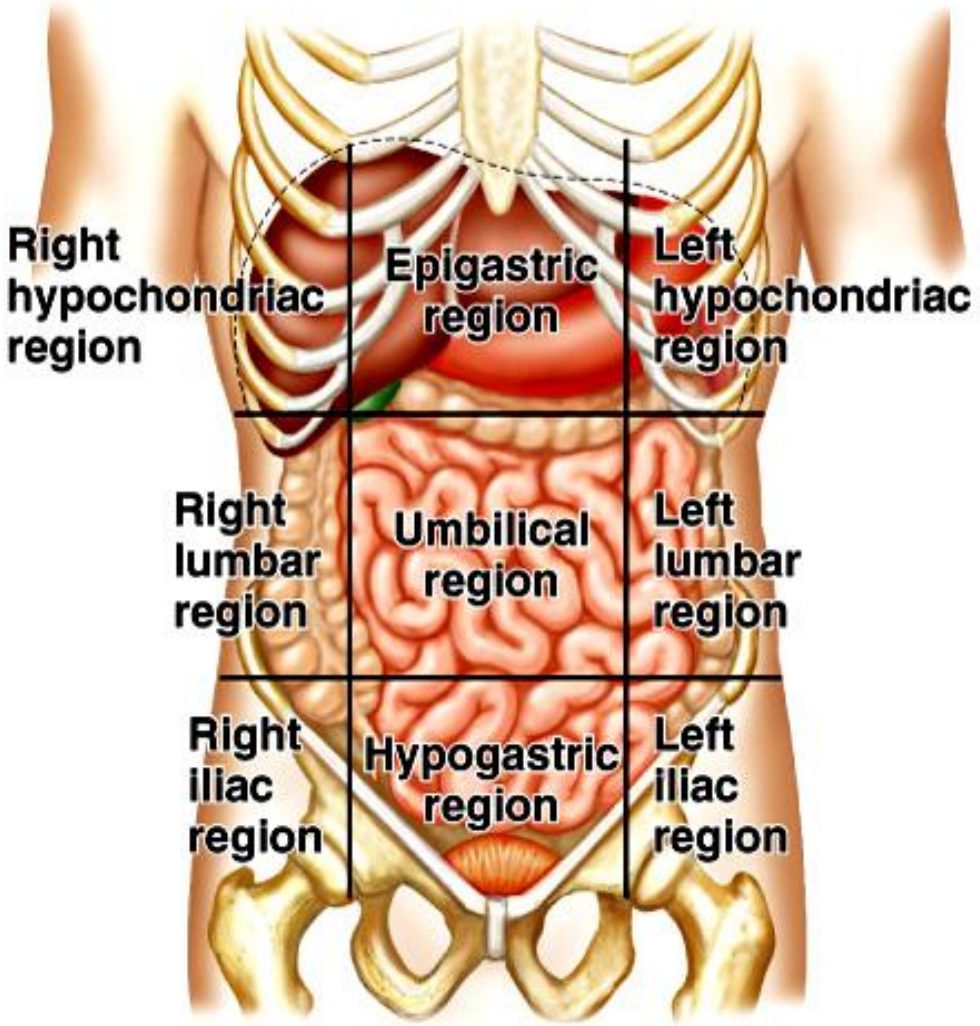
The abdominal area can be divided-into nine-regions.



Anatomical Regions



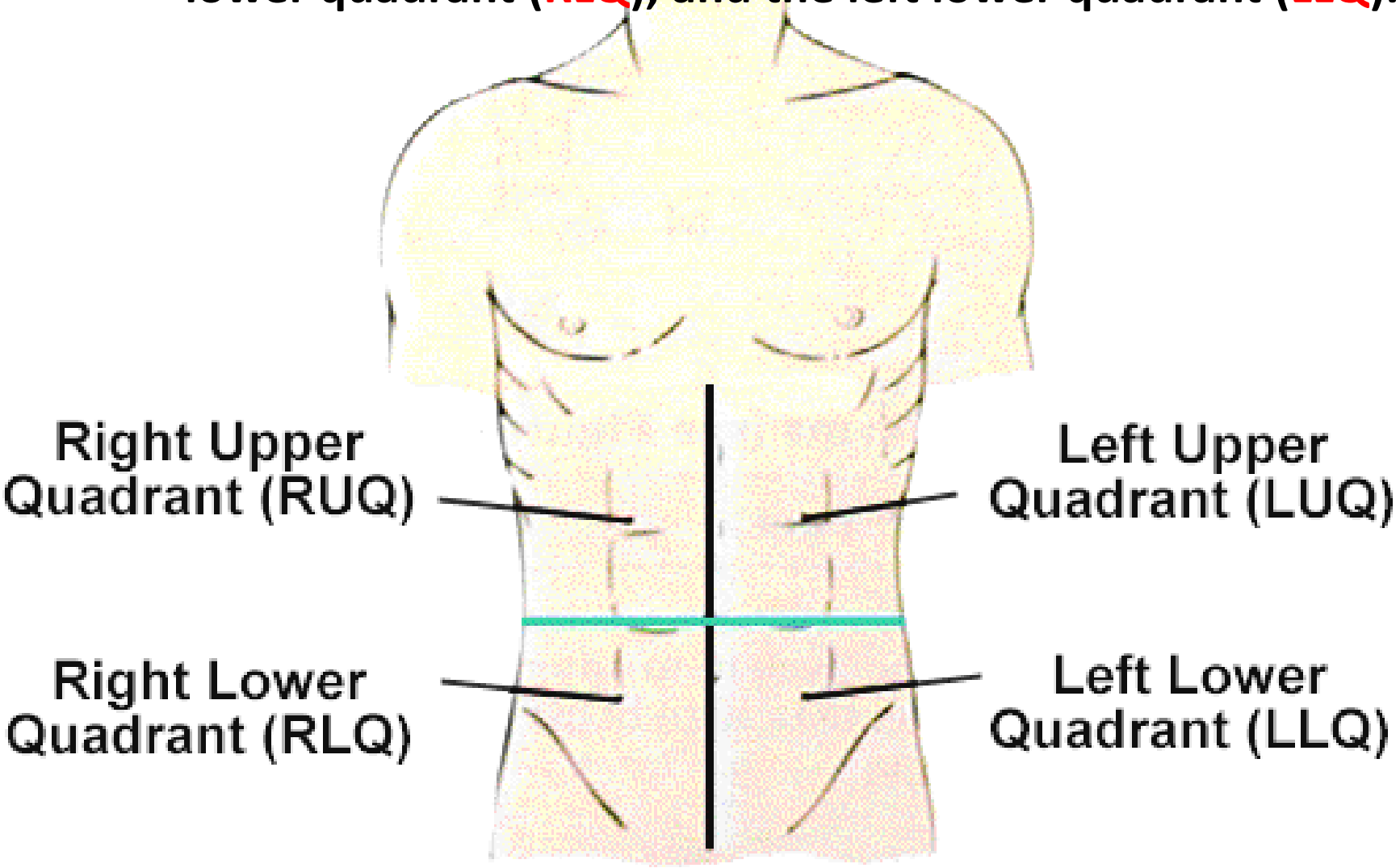
- **Body Regions**
  1. **The abdominal area can be divided into nine regions.**



Abdominal divisions

- Right upper
- Left upper
- Right lower
- Left lower

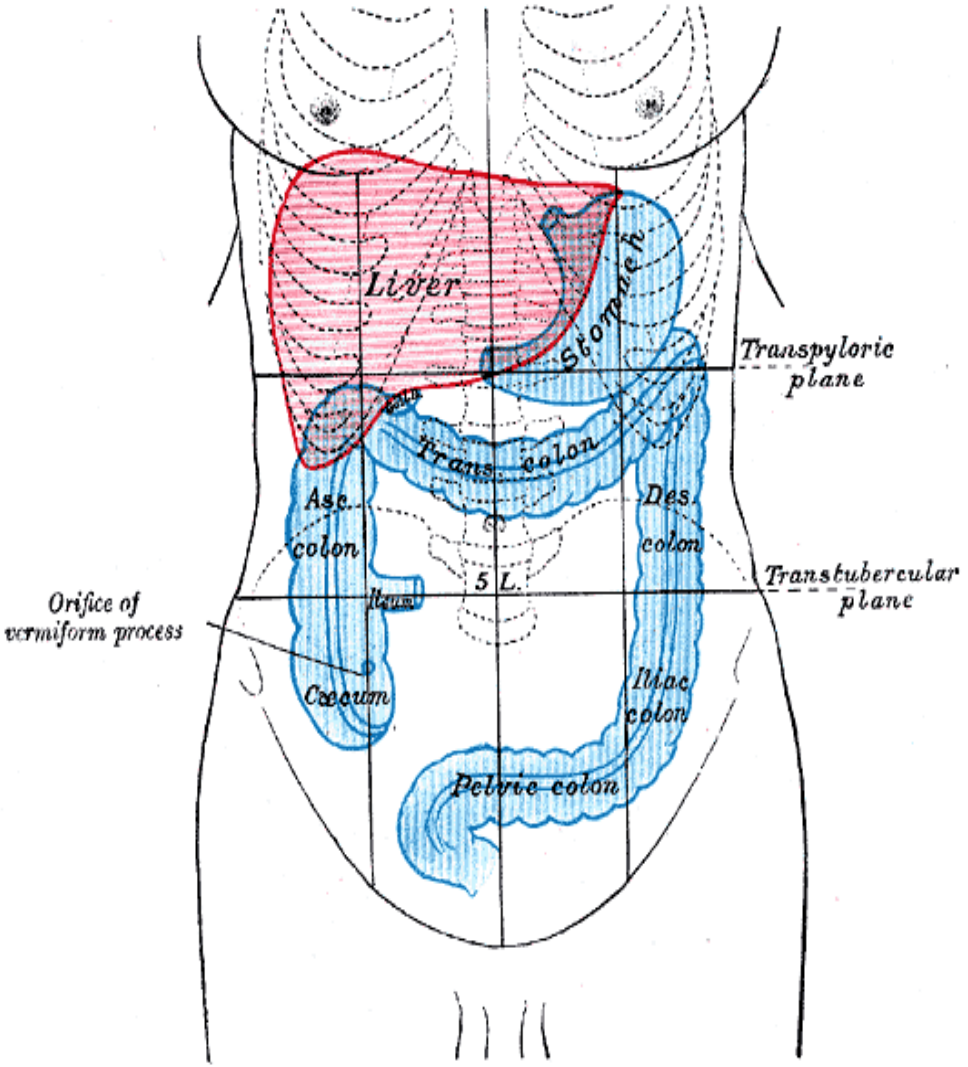
The FOUR QUADRANTS of the abdominopelvic cavity are the right upper quadrant(RUQ), the left upper quadrant (LUQ), right lower quadrant (RLQ), and the left lower quadrant (LLQ).



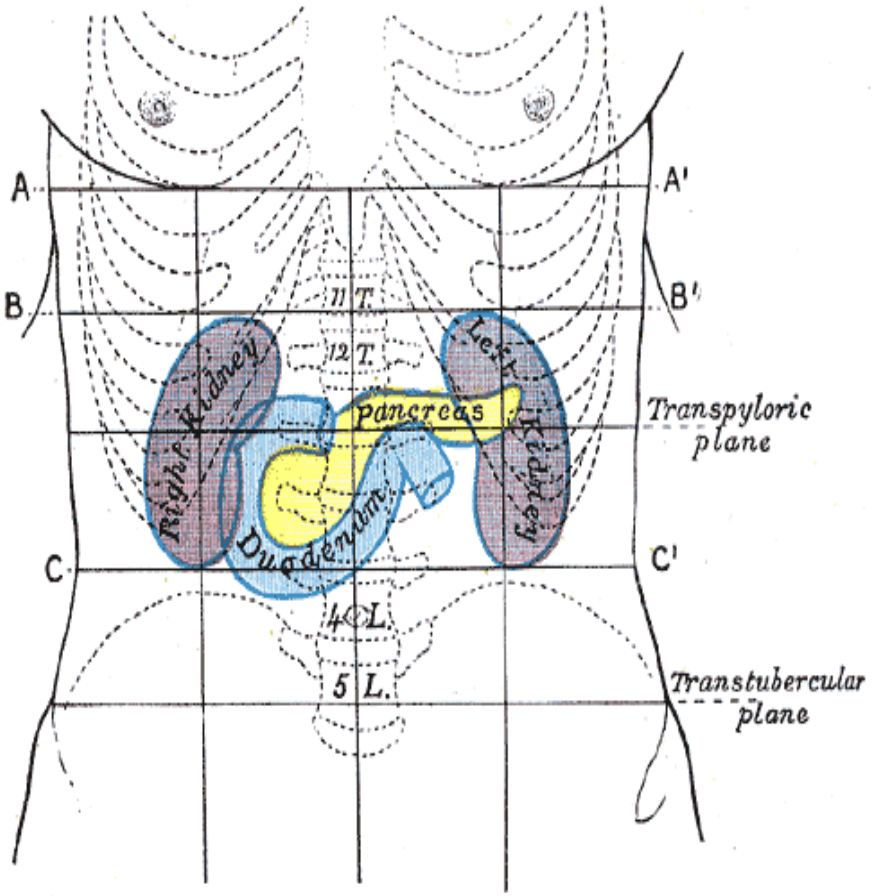
4 Quadrants

- Right Upper
  - Liver
- Left Upper
  - Spleen
  - Stomach
- Right Lower
  - Gall Bladder
  - Appendix
  - Kidney
- Left Lower
  - Kidney

- Small Intestine (3 parts) (in Umbilical Reg.)
  - Duodenum
  - Jejunum
  - Ileum
- Large intestine (3 parts)
  - Cecum (Rt.Iliac Reg)
  - Colon (Rt&LtL Lumb.,Epig. Reg.)
  - Rectum (Hypo. Reg.)
- Stomach (in Lt.hypo. ,epig. ,umb. &Lt. lumb.Reg.)
- Appendex (Rt. Iliac Reg.)
- Liver (Rt.&Lt.Hypo. ,Rt.Lumb.& Epig.Reg.)



- Pancreas
  - Located between the small intestine and the spleen
  - Fxn: secretes pancreatic juice, which is critical in digestion of fats, carbs, and proteins. Secretes insulin and glucagon, which control amt of glucose and amino acids in blood



Organ Systems of the Body

- Skeletal system
- Respiratory system
- Cardiovascular system
- Lymphatic system
- Muscular system
- Digestive system
- Nervous system
- Urinary system
- Reproductive system(Male & Female)
- Integumentary system

Organ Systems of the Body

- Integumentary system
  - Forms the external body covering
  - Composed of the skin, sweat glands, oil glands, hair, and nails
  - Protects deep tissues from injury and synthesizes vitamin D

Organ Systems of the Body

- Skeletal system
  - Composed of bone, cartilage, and ligaments
  - Protects and supports body organs
  - Provides the framework for muscles
  - Site of blood cell formation
  - Stores minerals

Organ Systems of the Body

- Muscular system
  - Composed of muscles and tendons
  - Allows manipulation of the environment, locomotion, and facial expression
  - Maintains posture
  - Produces heat

Organ Systems of the Body

- Nervous system
  - Composed of the brain, spinal column, and nerves
  - Is the fast-acting control system of the body
  - Responds to stimuli by activating muscles and glands

Organ Systems of the Body

- Cardiovascular system
  - Composed of the heart and blood vessels
  - The heart pumps blood
  - The blood vessels transport blood throughout the body

Organ Systems of the Body

- Lymphatic system
  - Composed of red bone marrow, thymus, spleen, lymph nodes, and lymphatic vessels
  - Picks up fluid leaked from blood vessels and returns it to blood
  - Disposes of debris in the lymphatic stream
  - Houses white blood cells involved with immunity

Organ Systems of the Body

- Respiratory system
  - Composed of the nasal cavity, pharynx, trachea, bronchi, and lungs
  - Keeps blood supplied with oxygen and removes carbon dioxide

Organ Systems of the Body

- Digestive system
  - Composed of the oral cavity, esophagus, stomach, small intestine, large intestine, rectum, anus, and liver
  - Breaks down food into absorbable units that enter the blood
  - Eliminates indigestible foodstuffs as feces

Organ Systems of the Body

- Urinary system
  - Composed of kidneys, ureters, urinary bladder, and urethra
  - Eliminates nitrogenous wastes from the body
  - Regulates water, electrolyte, and pH balance of the blood

Organ Systems of the Body

- Male reproductive system
  - Composed of prostate gland, penis, testes, scrotum, and ductus deferens
  - Main function is the production of offspring
  - Testes produce sperm and male sex hormones
  - Ducts and glands deliver sperm to the female reproductive tract

Organ Systems of the Body

- Female reproductive system
  - Composed of mammary glands, ovaries, uterine tubes, uterus, and vagina
  - Main function is the production of offspring
  - Ovaries produce eggs and female sex hormones
  - Remaining structures serve as sites for fertilization and development of the fetus
  - Mammary glands produce milk to nourish the newborn

MOVEMENTS

MOVEMENTS

- Movements take place at joints where two or more bones or cartilages articulate with one another.

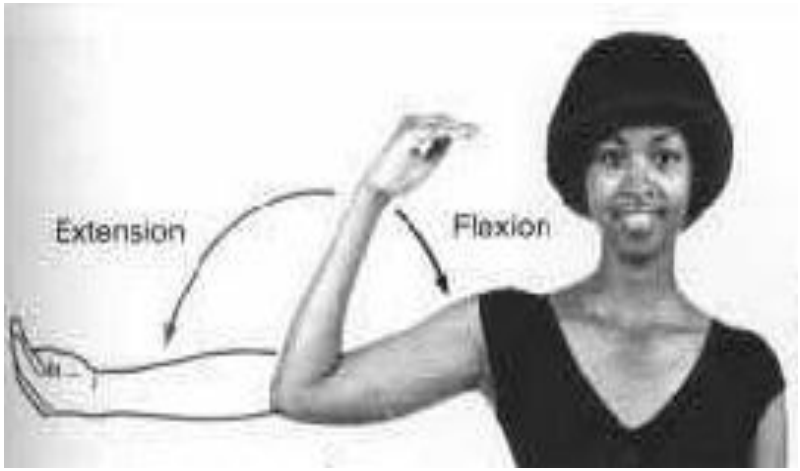
- The different types of movements are;
  1. FLEXION
  2. EXTENSION
  3. ABDUCTION
  4. ADDUCTION
  5. ROTATION – MEDIAL and RADIAL ROTATION

MOVEMENTS

6. EVERSION
7. INVERSION
8 17. PRONE
9. SUPINE

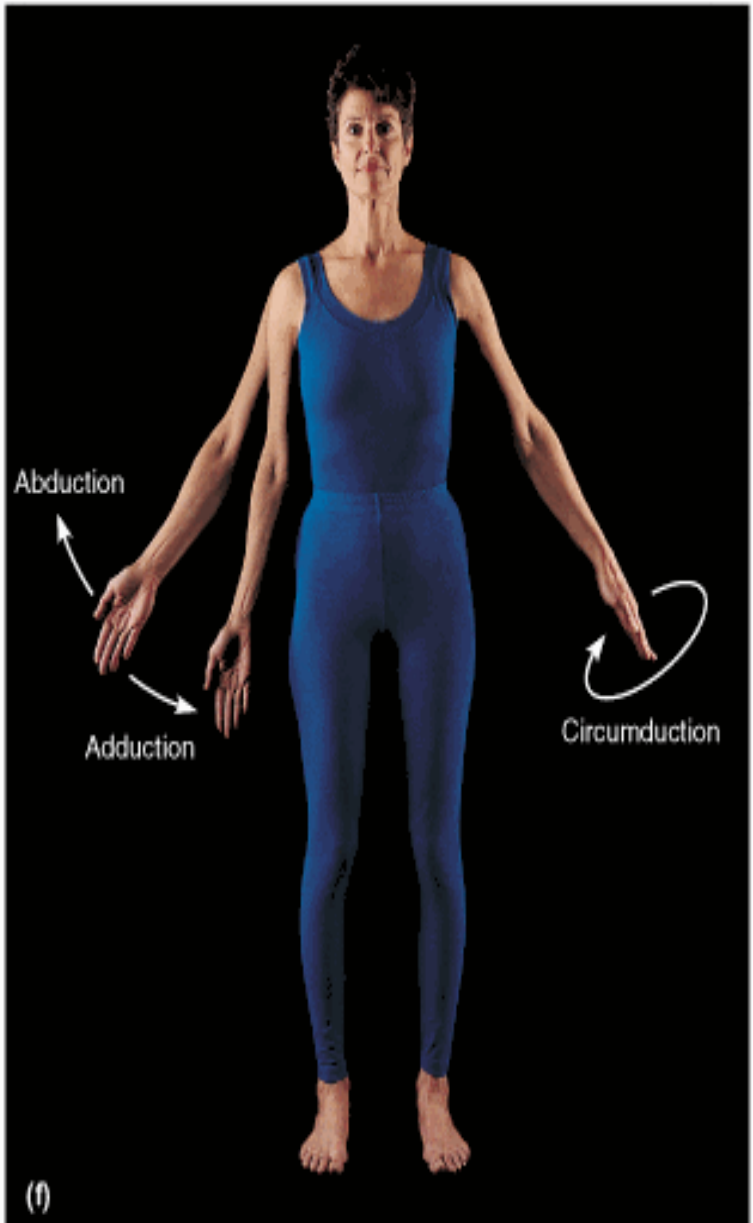
MOVEMENTS

- ✓ FLEXION – **Bending or decreasing the angle** between the bones or parts of the body.



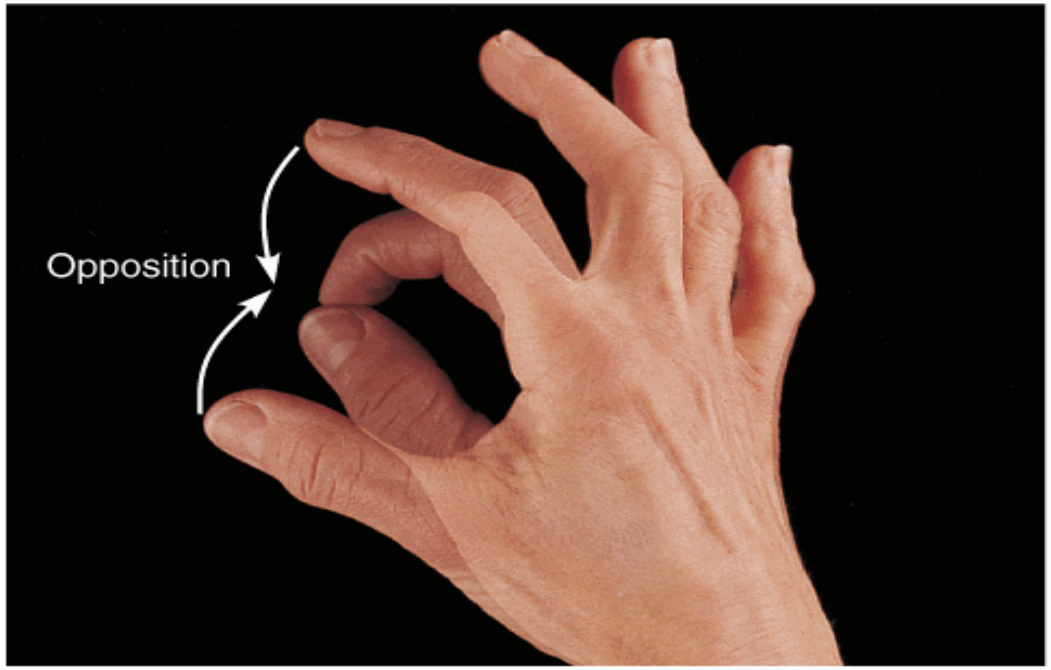
MOVEMENTS

- ✓ ABDUCTION – means **moving away** from **body midline.**
- ✓ ADDUCTION – means **moving toward the body midline**



MOVEMENTS

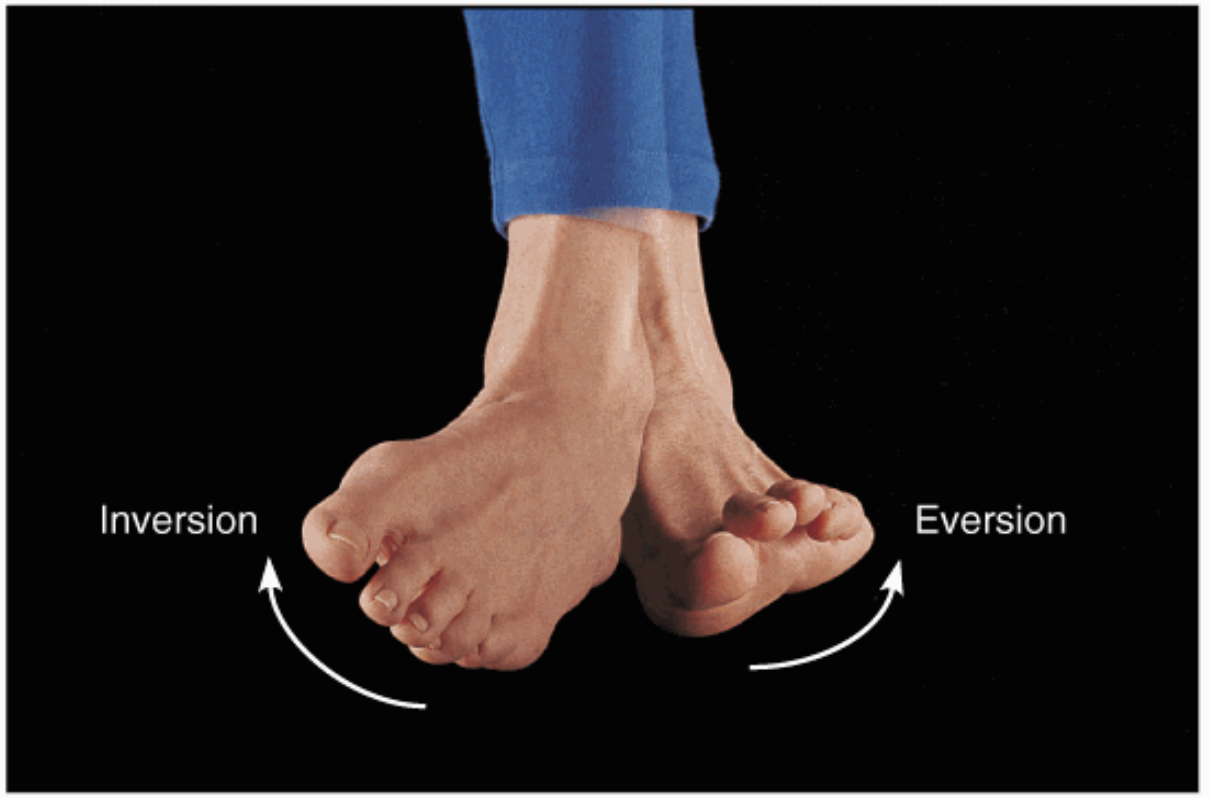
- ✓ OPPOSITION – **Movement** by which the **pad of the thumb**



(e) Opposition

MOVEMENTS

- ✓ EVERSION – **Lateral** (outward) **rotation** of sole of foot.
- ✓ INVERSION – **Medial** (inward) **rotation** of the sole of foot.

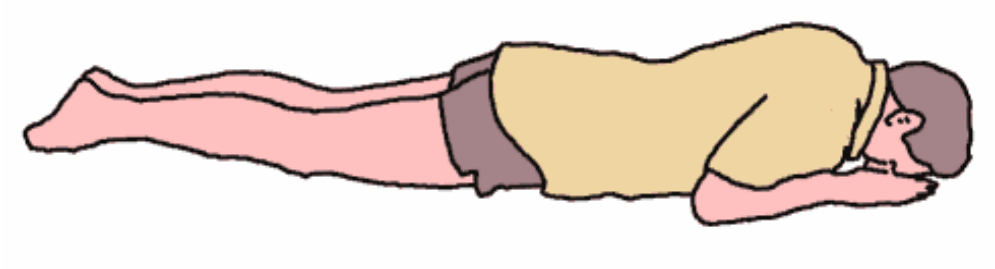


(b) Inversion and eversion

MOVEMENTS

ADDITIONAL TERMS

✓ PRONE – Face down



✓ SUPINE – Face up