

**BASIC
ANATOMICAL
TERMINOLOGY**

What is anatomy...?

Anatomy- study of body structure

Physiology- study of body function

Pathology- study of diseases

Embryology- study of embryo development

Developmental Anatomy- study of growth after birth into old age

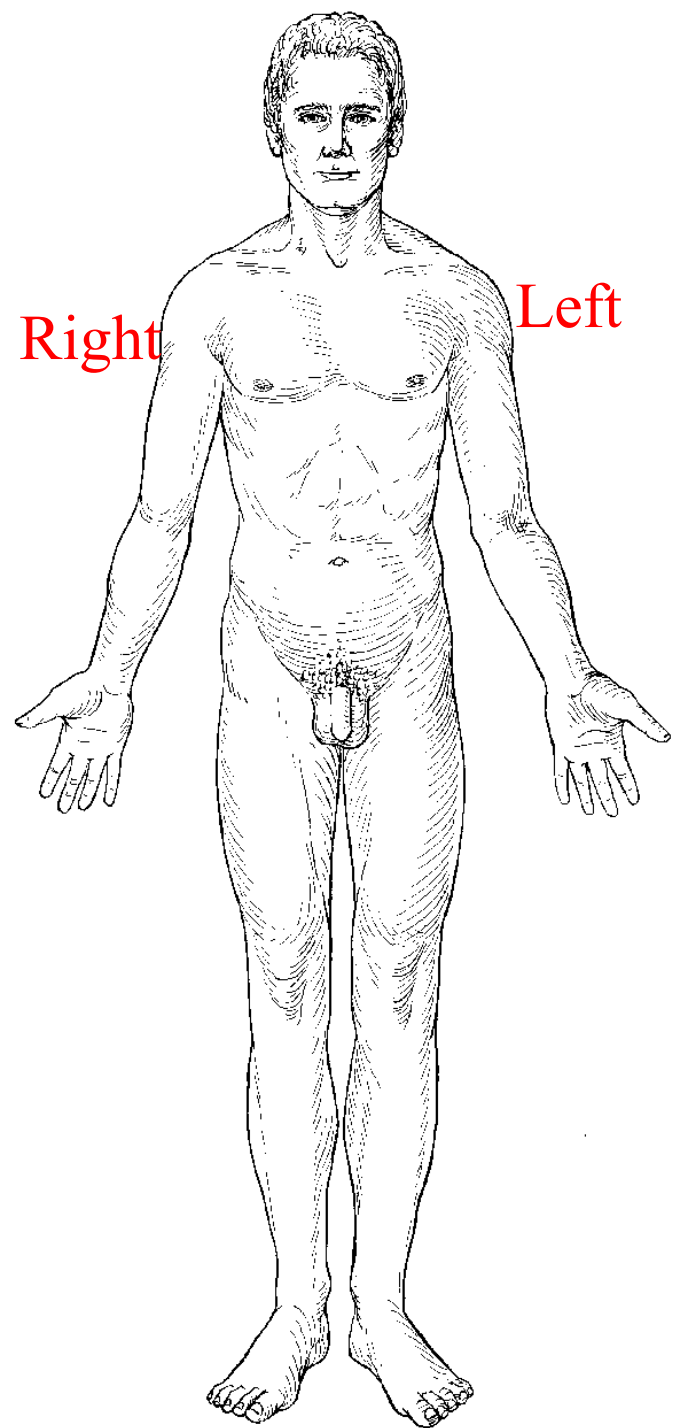
Gross Anatomy- study of body visible to the eye

Microscopic Anatomy- study of body at microscopic size

THE ANATOMICAL POSITION

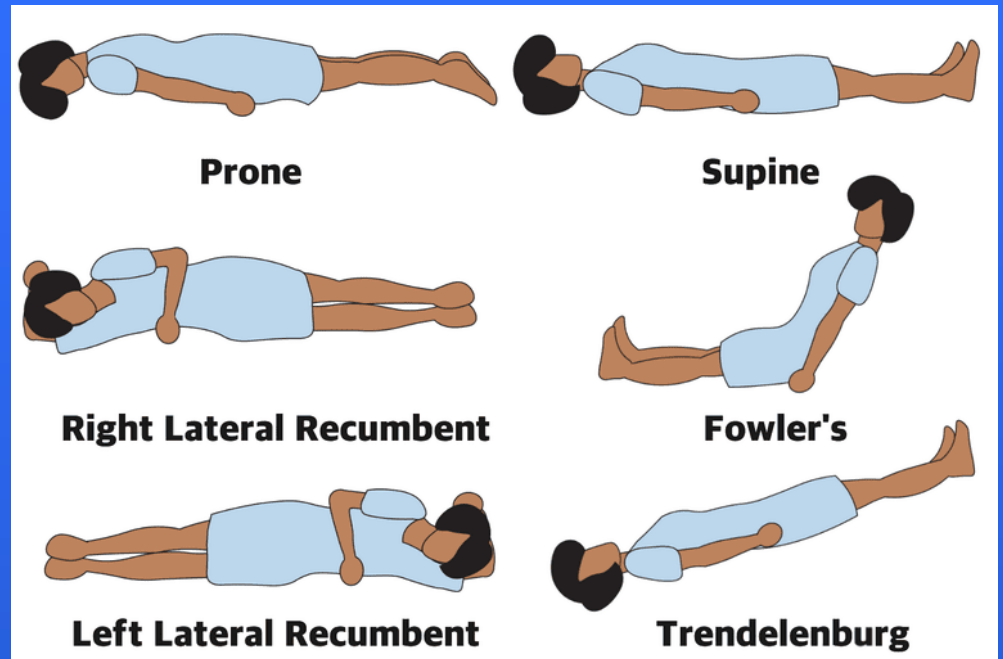
Standing facing observer,
arms down, palms forward

Right=person's right



RECLINING POSITIONS

- *Prone-*
- lying face down
- *Supine-*
- lying face up



BODY REGIONS

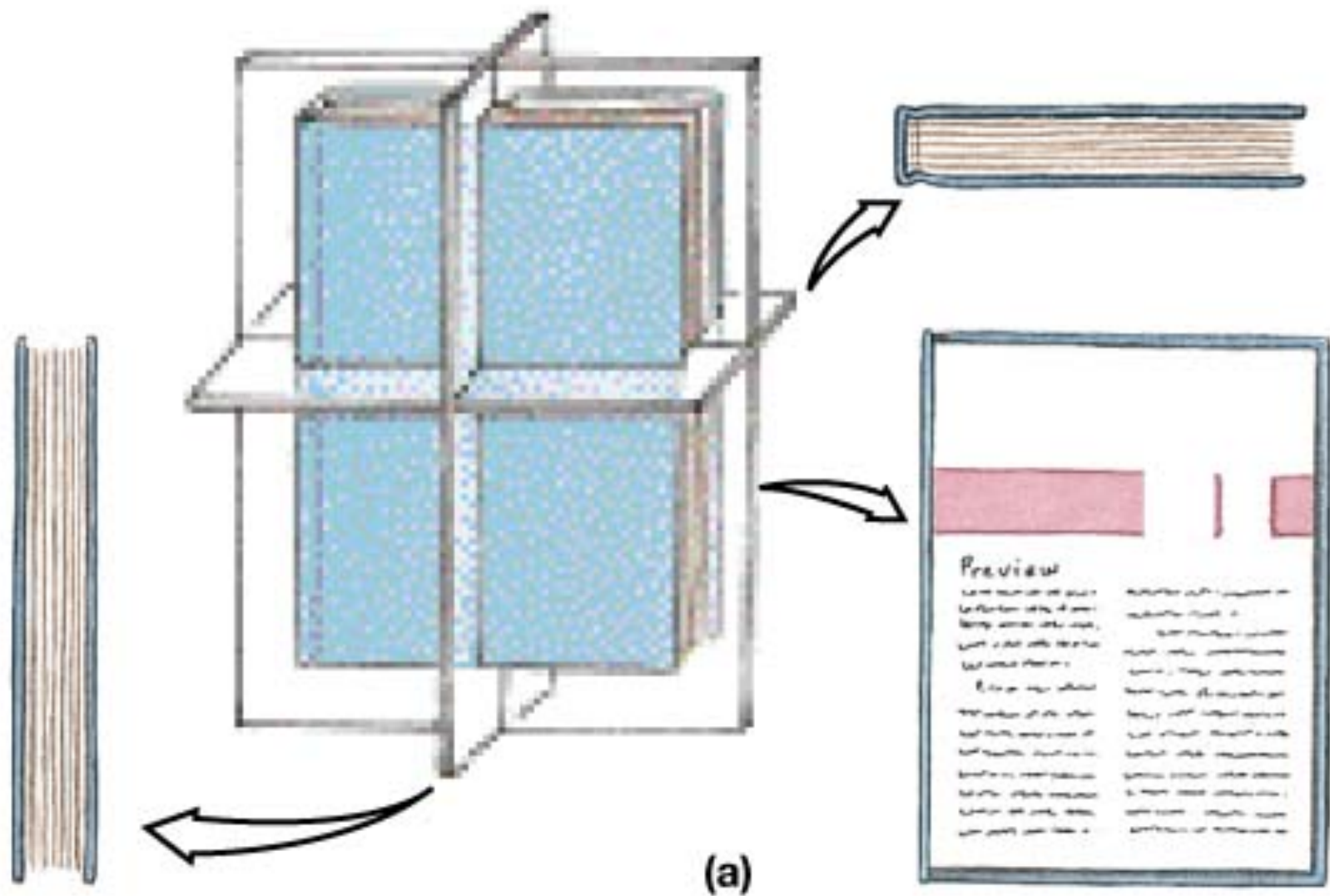
- cranial (skull)
- **thoracic** (chest)
- brachial (arm)
- patellar (knee)
- cephalic (head)
- gluteal (buttock)

PLANES

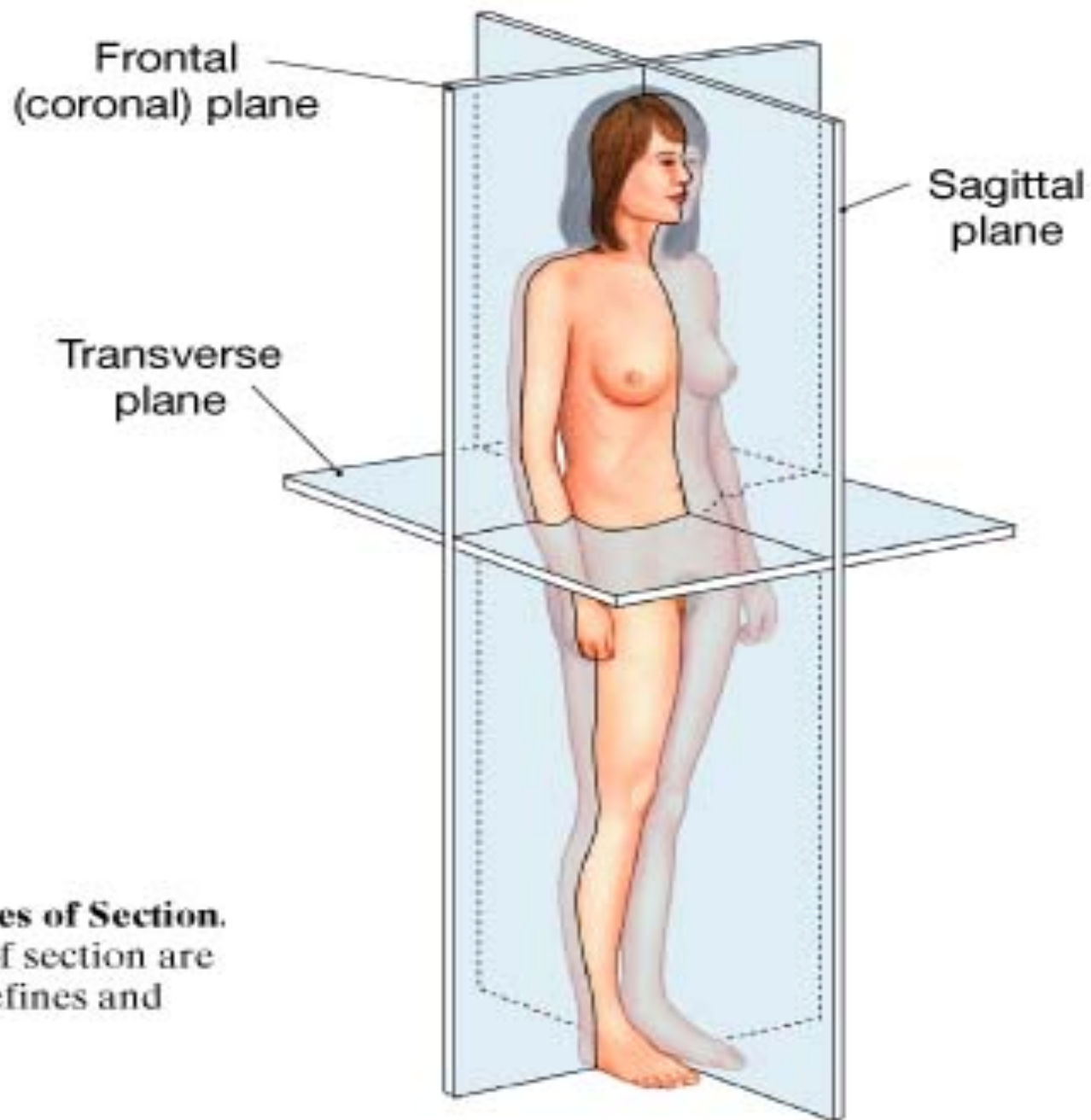
- **Planes** are imaginary flat surfaces that are used to divide the body or organs into definite areas & include:
 - **Midsagittal** (medial) and **parasagittal**, **frontal** (coronal), **transverse** (cross-sectional or horizontal) and **oblique**.

SECTIONS

- **Sections** are flat surfaces resulting from cuts through body structures. They are named according to the plane on which the cut is made and include **transverse**, **frontal**, and **midsagittal**

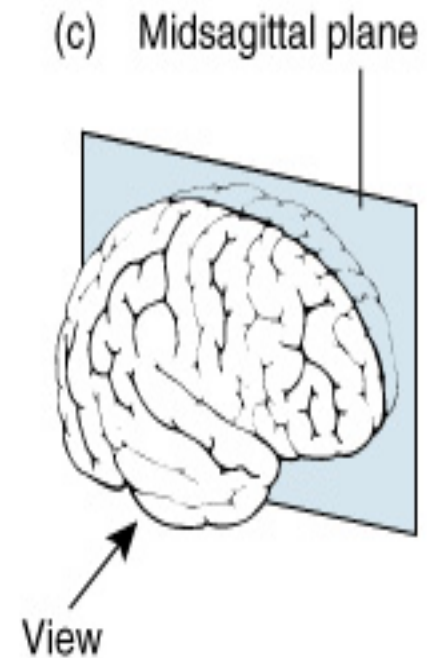
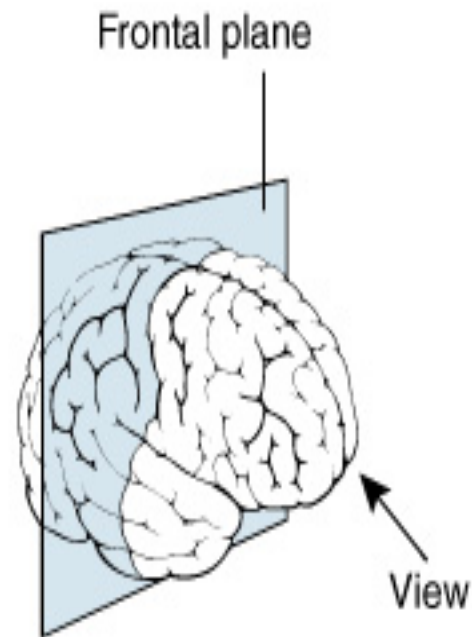
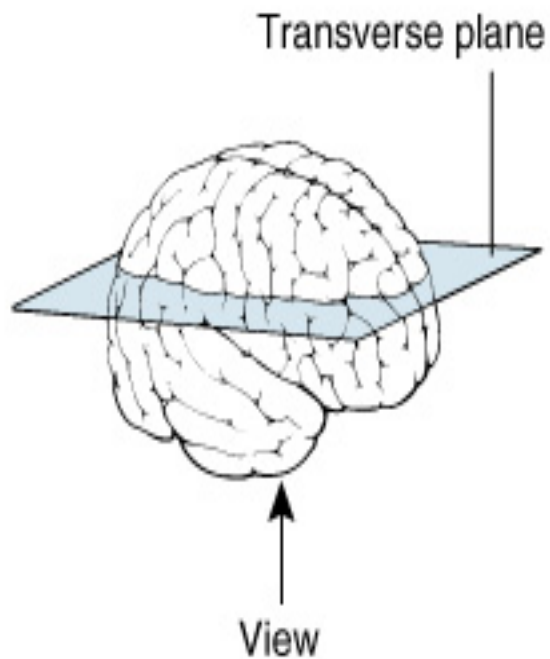


● **FIGURE 1-11 Sectional Planes and Visualization.** (a) Taking three different sections through a book provides detailed information about its three-dimensional structure.

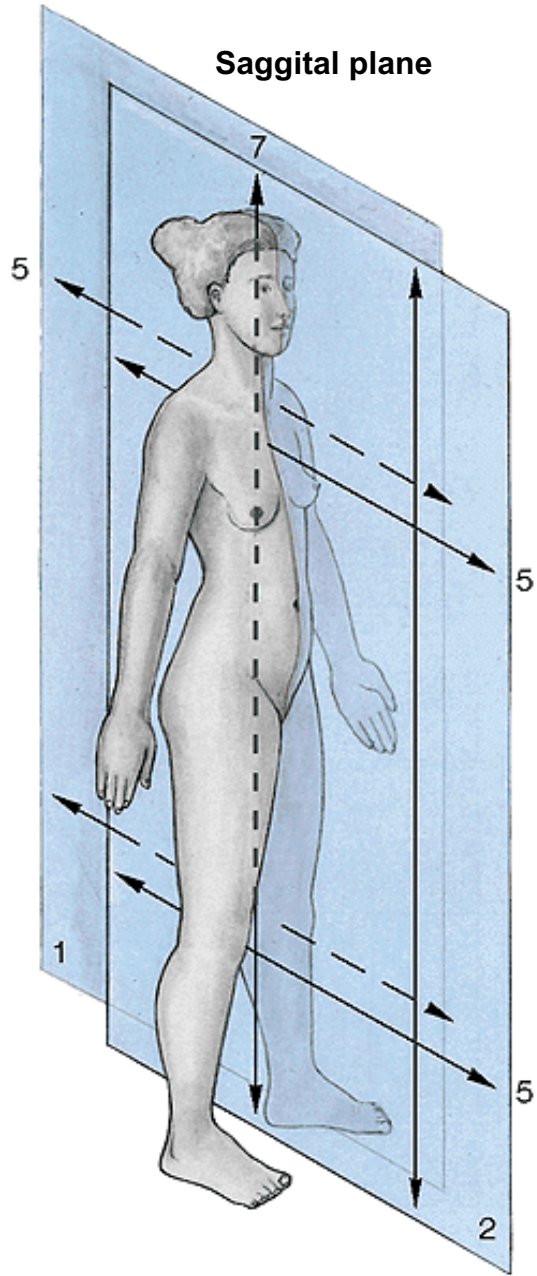


• **FIGURE 1-10** **Planes of Section.** The three primary planes of section are indicated here. Table 1-3 defines and describes them.

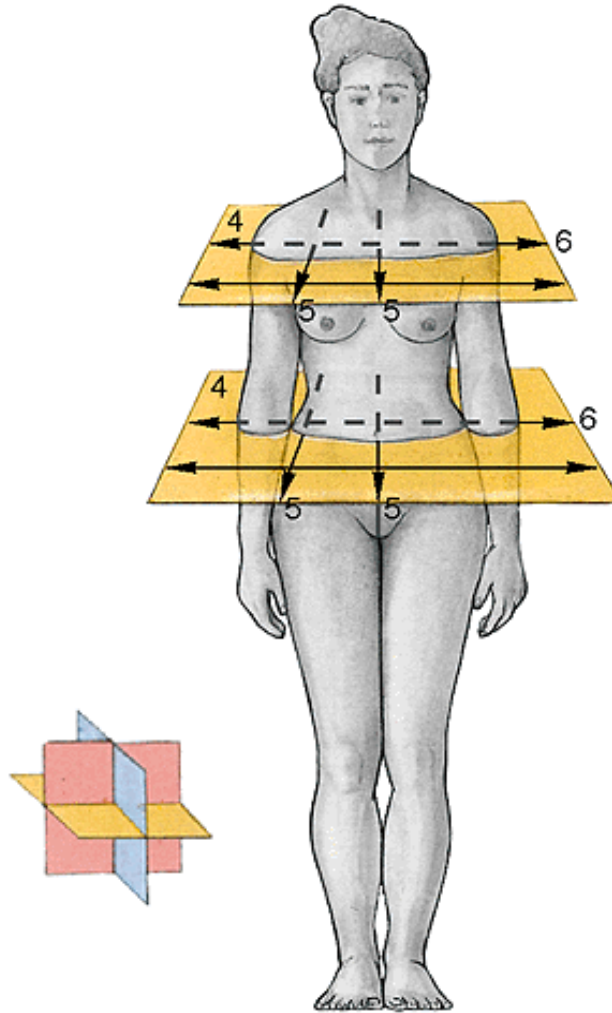
Example of how planes would cut the brain



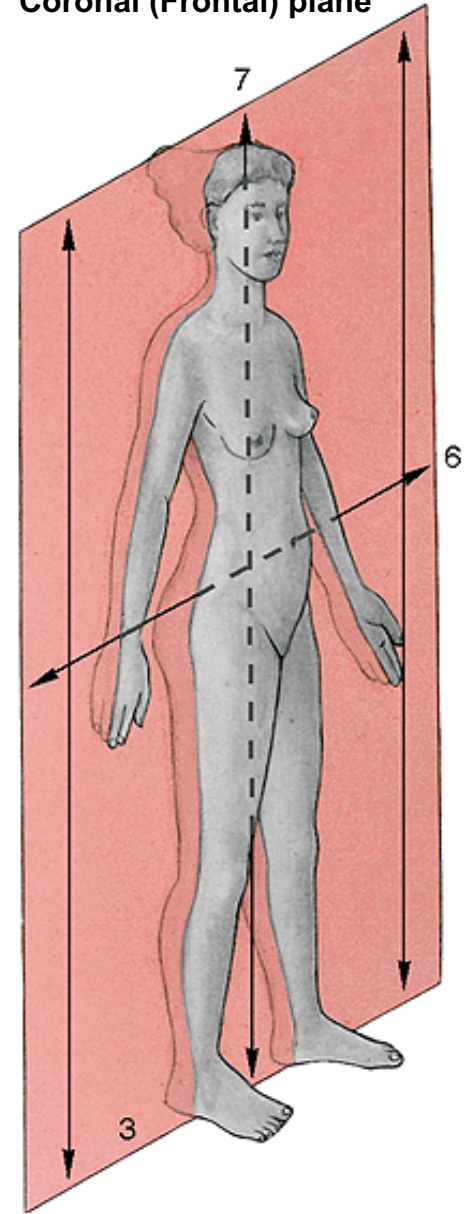
Saggital plane

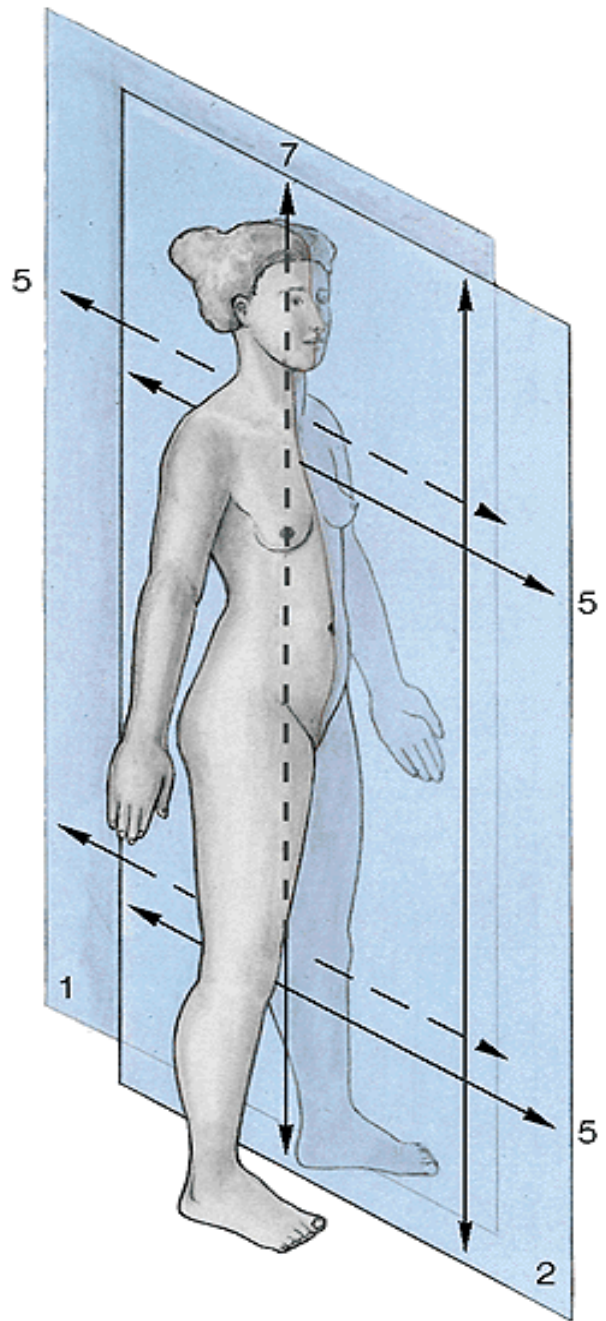


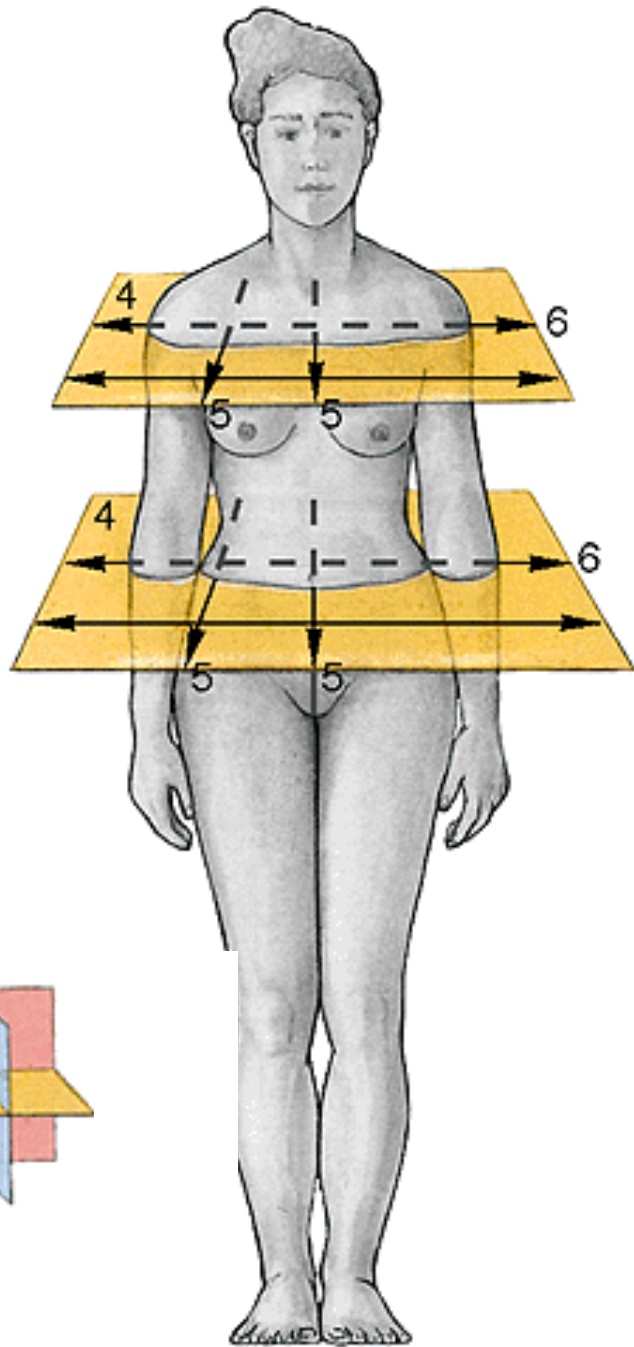
Transverse (or cross) section

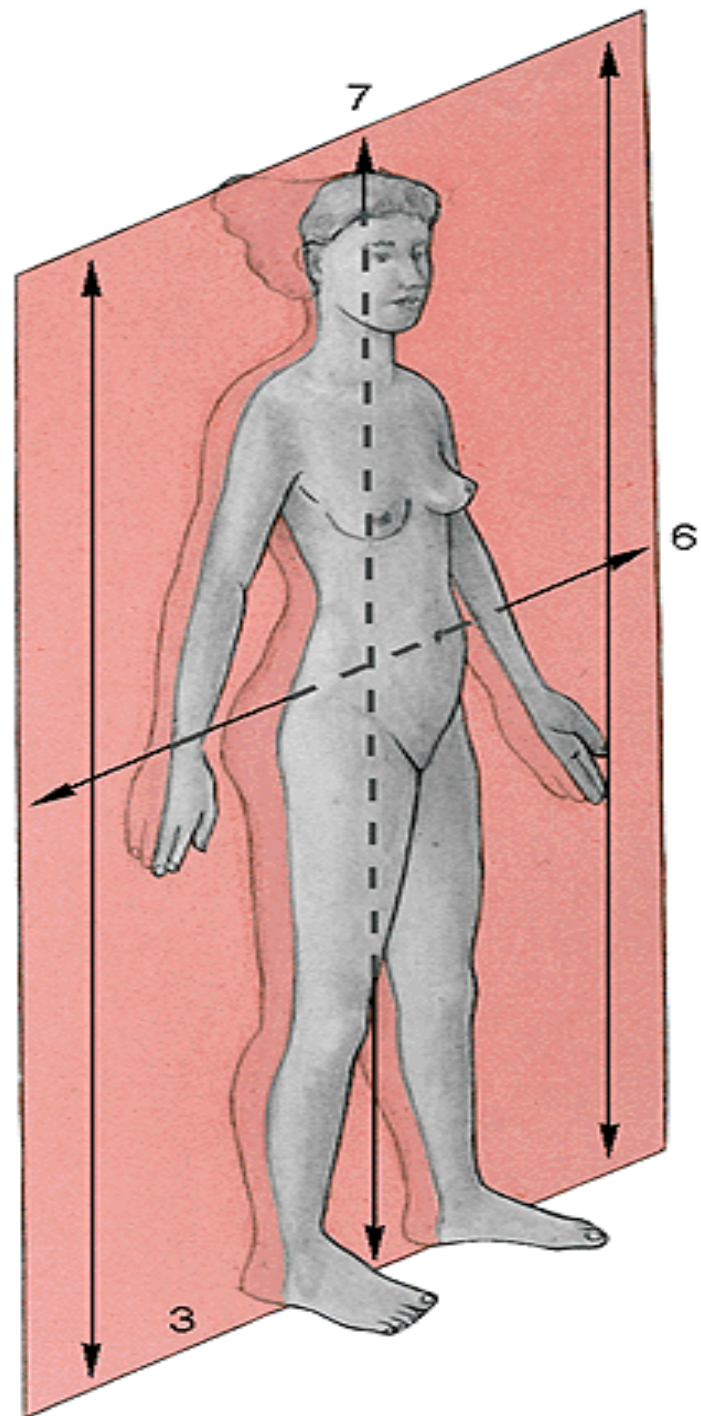


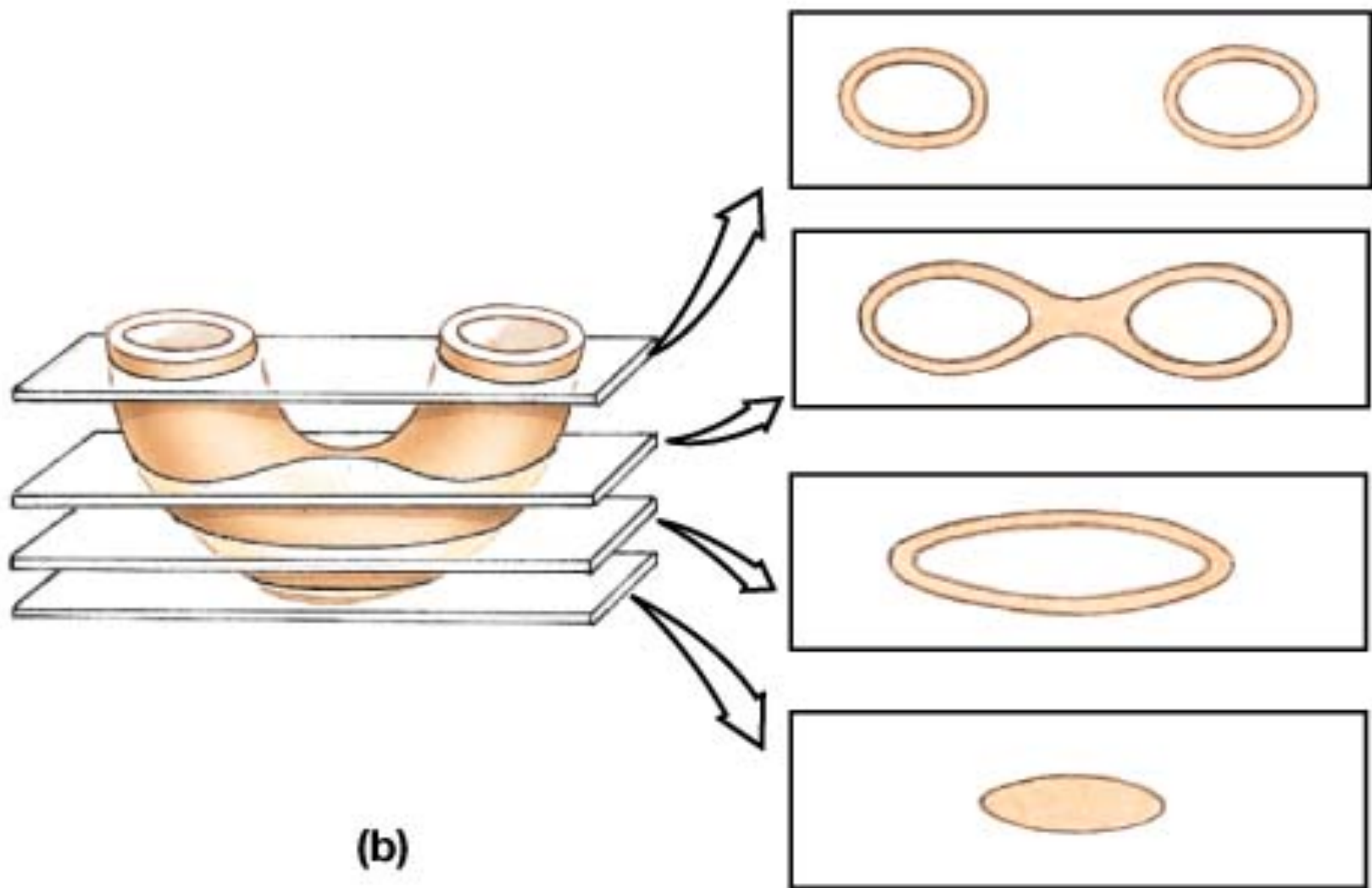
Coronal (Frontal) plane











• **FIGURE 1-11 Sectional Planes and Visualization.** (b) More complete pictures can be assembled by taking a series of sections at small intervals. This process is called serial reconstruction.

DIRECTIONAL TERMS

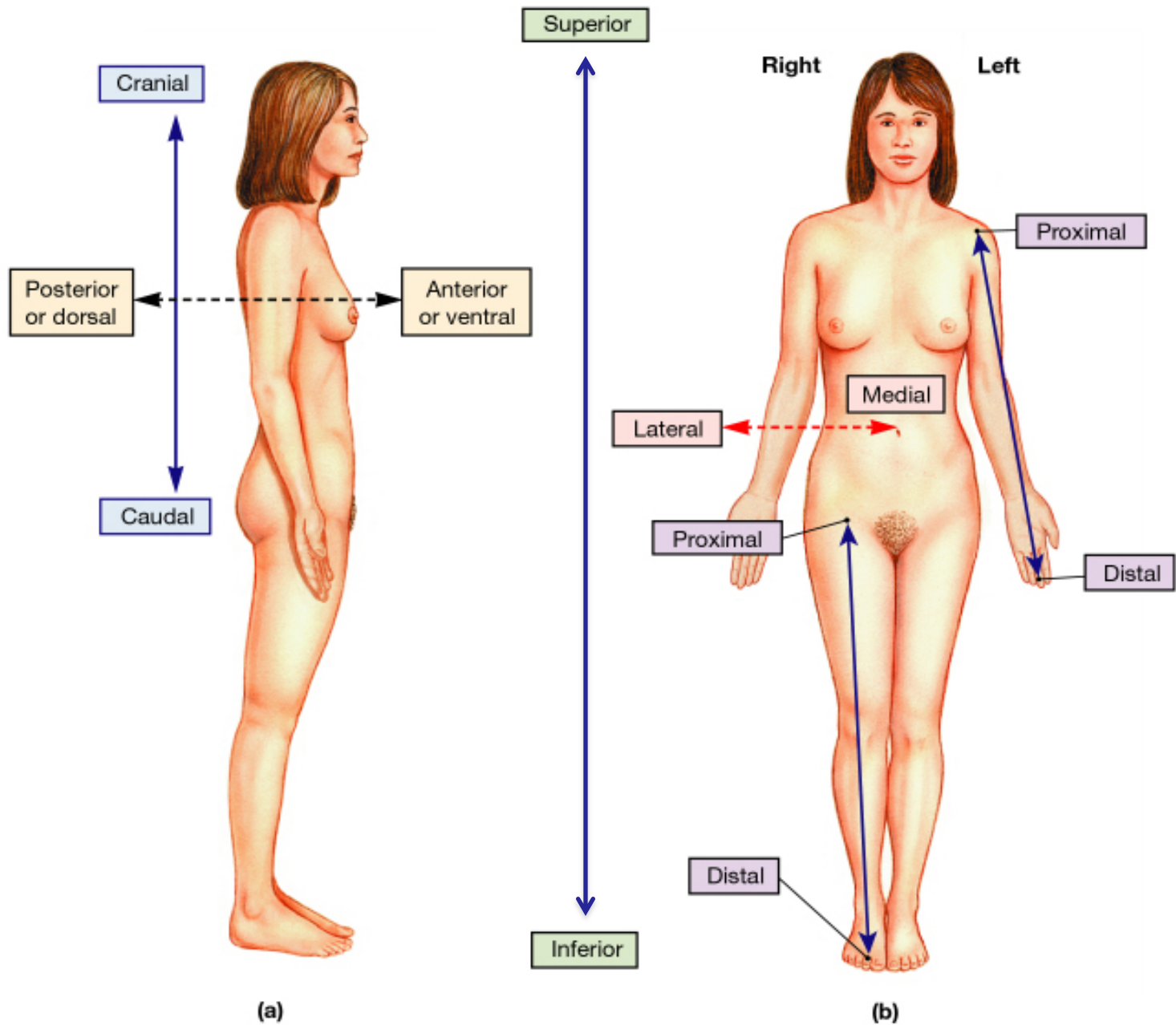
- Directional terms are used to precisely locate one part of the body *relative to another* and to reduce length of explanations.

DIRECTIONAL TERMS

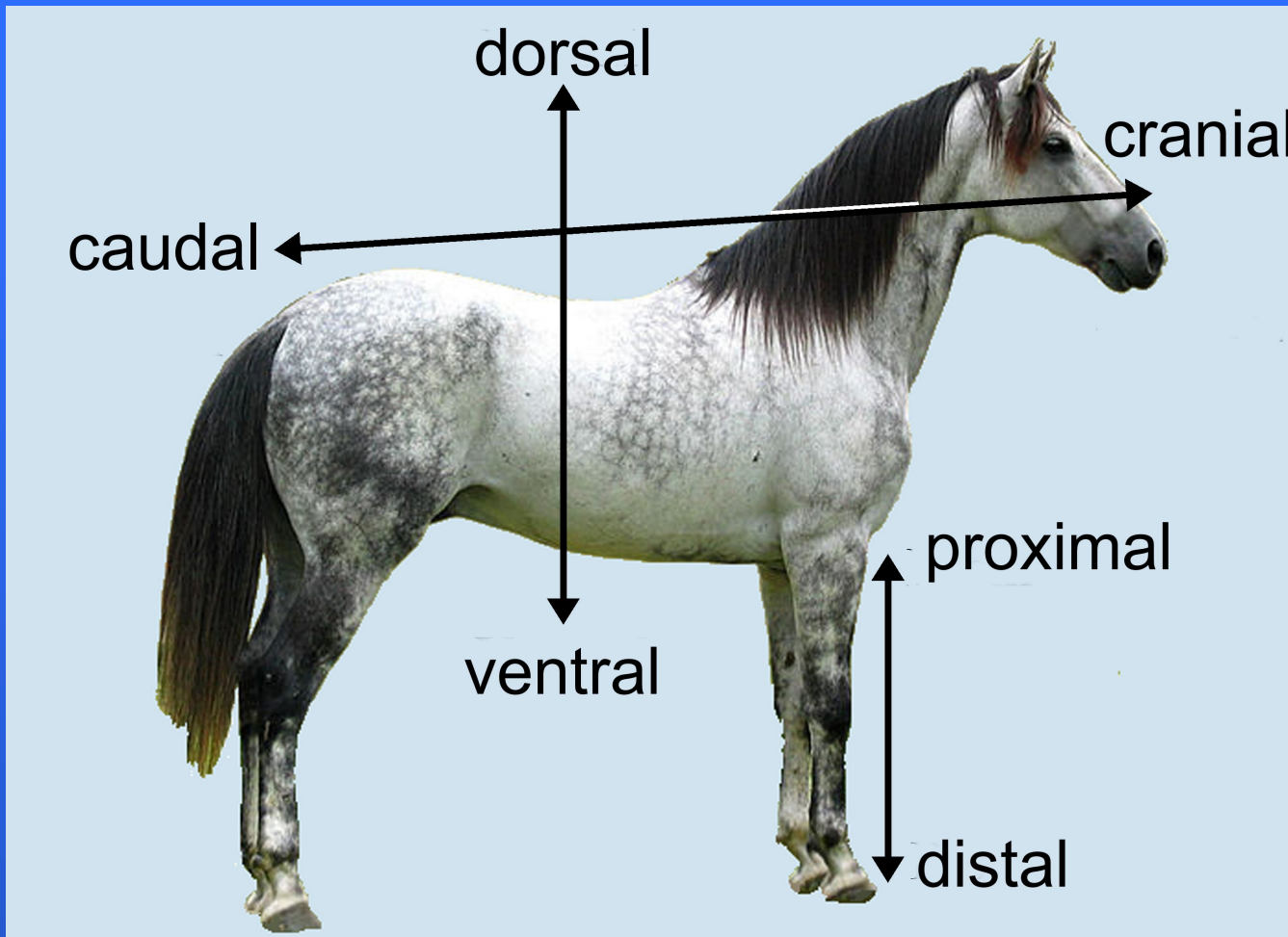
- Superior/Cephalic/Cranial-above
- Inferior/Caudal-below
- Anterior/Ventral/Rostral-front
- Posterior/Dorsal-back
- Superficial-toward surface
- Deep-toward viscera/internal

DIRECTIONAL TERMS

- Medial: toward midline
- Lateral: away from midline
- Intermediate: between 2 points
- Ipsilateral: same side
- Contralateral: opposite side
- Proximal: near origin
- Distal: away from origin



Four-footed body directions

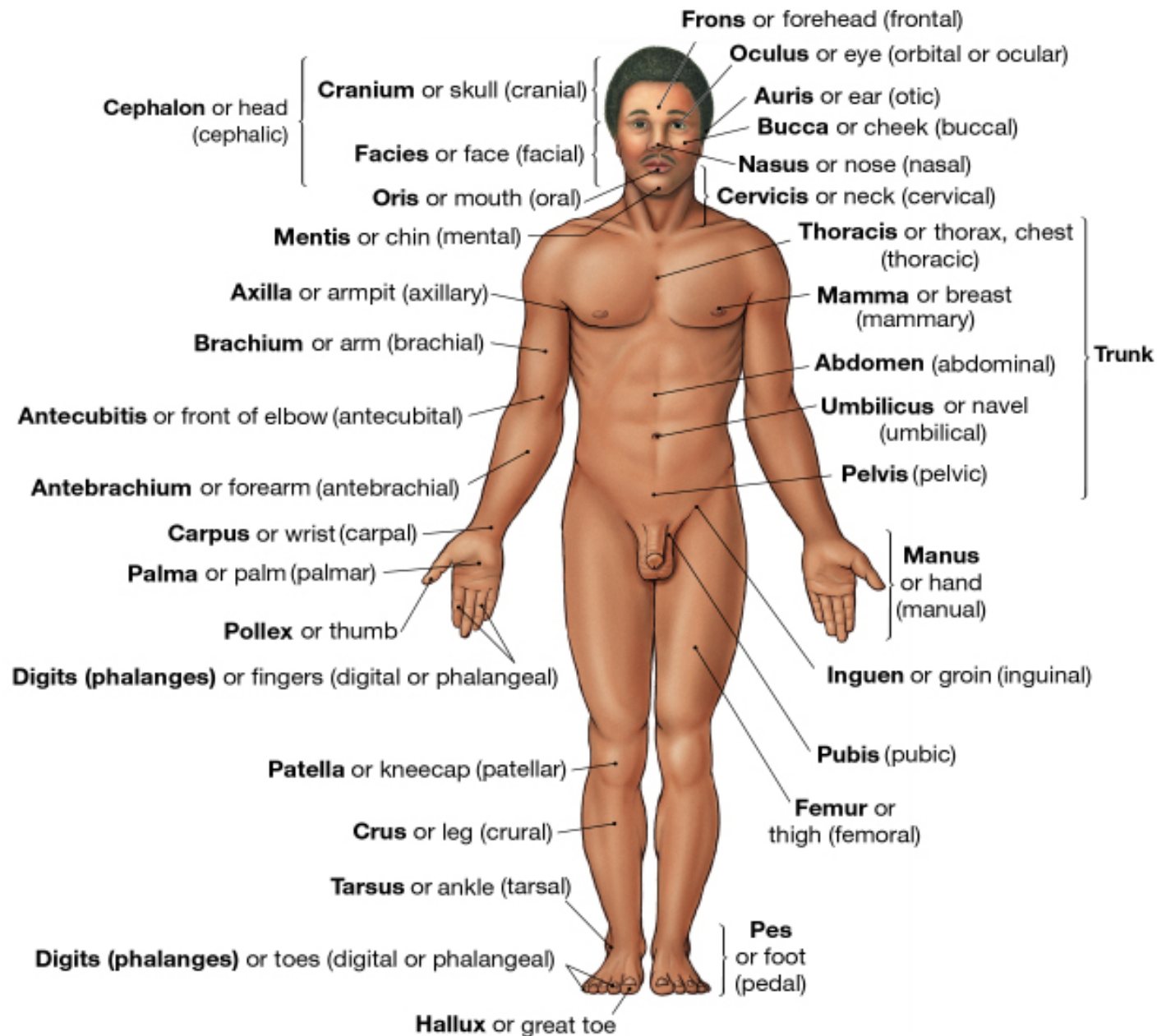


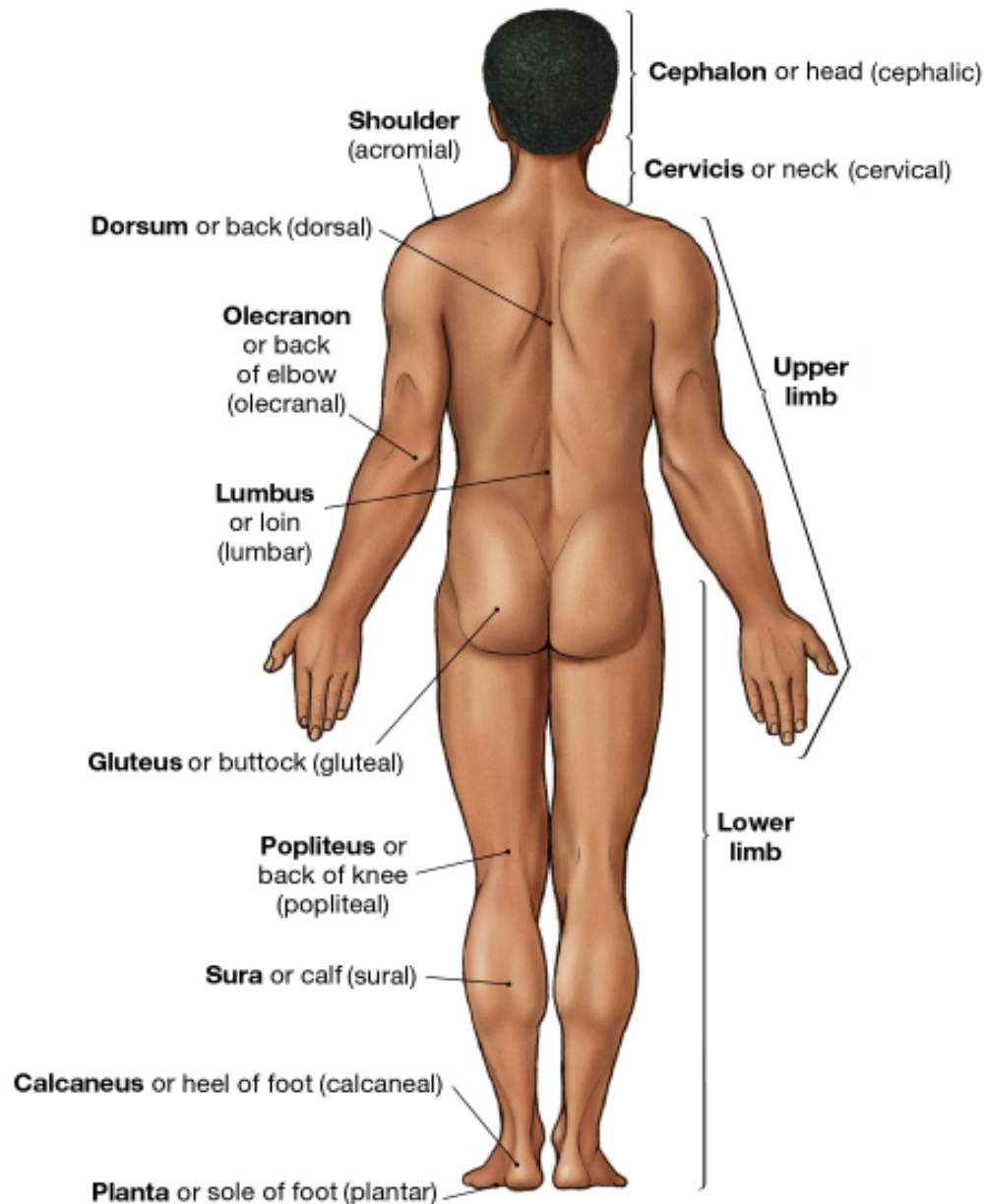
DIRECTIONAL TERMS

- External (Outer)
- Internal (Inner)
- Central
- Peripheral
- Parietal
- Visceral

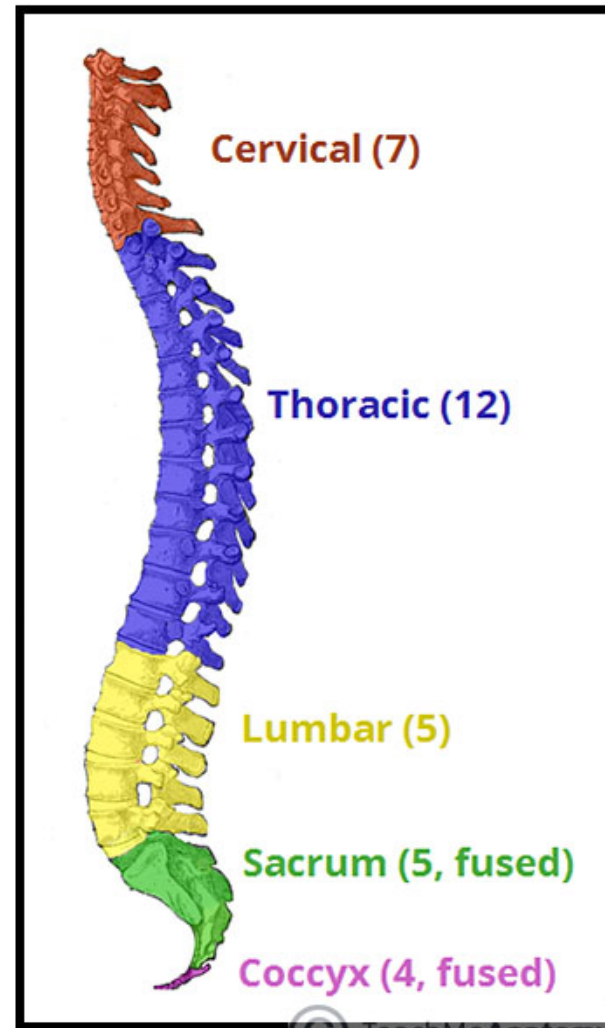
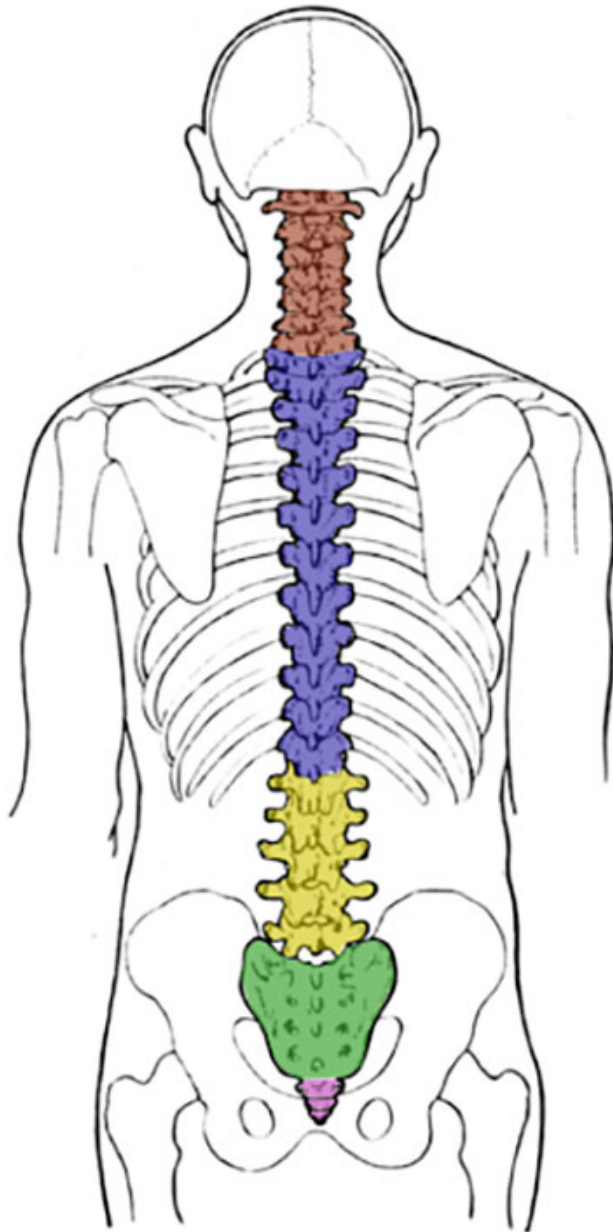
Body Regions

- Head & Neck
- Trunk
 - Thorax
 - Abdomen
 - Pelvis & Perineum
- Extremities (or limbs)
 - Upper
 - Lower





Spinal Regions

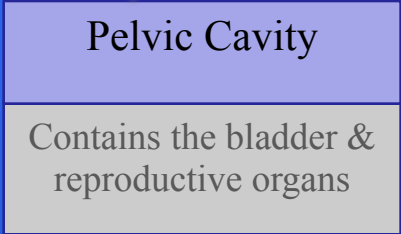
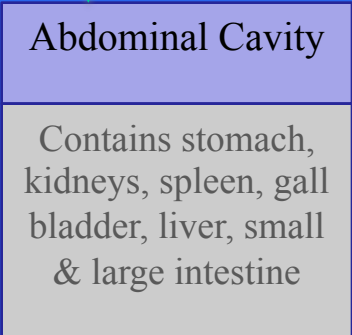
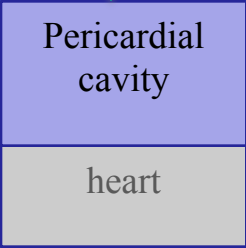
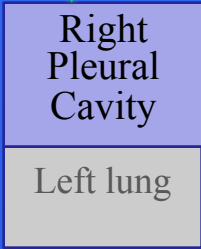
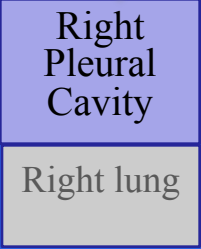
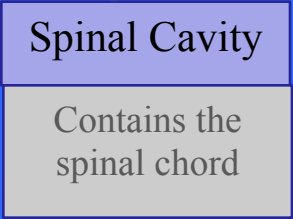
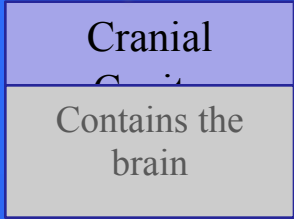
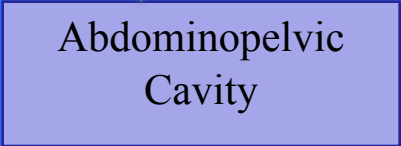
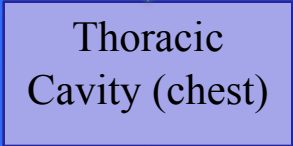
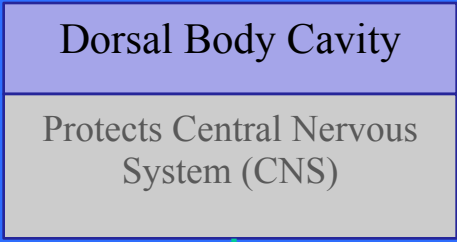
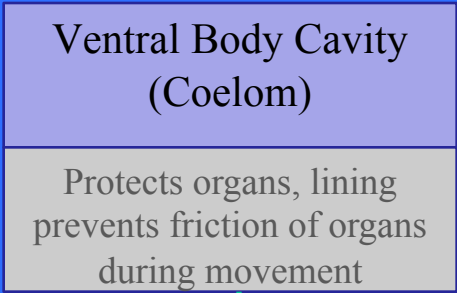


BODY CAVITIES

- Cranial
- Thoracic
- Abdominal
- Pelvic

BODY CAVITIES

- **Body Cavities** - Body cavities are spaces within the body that help protect, separate, and support internal organs.
 - Dorsal Body Cavity
 - Ventral Body Cavity



BODY CAVITIES

- **Dorsal Body Cavity** - located at back (dorsal) of body
- subdivided into cranial cavity and the vertebral canal.

BODY CAVITIES

- The **cranial cavity** is formed by the cranial bones and contains the brain.

BODY CAVITIES

- The **vertebral (spinal) canal** is formed by the bones of the vertebral column and contains the spinal cord.
- Three layers of protective tissue, called meninges, line the dorsal body cavity.

BODY CAVITIES

- **Ventral Body Cavity** - The ventral body cavity is subdivided by the diaphragm into an upper thoracic cavity and a lower abdominopelvic cavity.

BODY CAVITIES

- The thoracic cavity contains two pleural cavities, and the mediastinum, which includes the pericardial cavity.

POSTERIOR ANTERIOR

Cranial cavity

Thoracic cavity

Pericardial cavity

Spinal cavity

Diaphragm

Abdominal cavity

Pelvic cavity

Abdominopelvic cavity

FIGURE 1-13 Body Cavities. (a) The dorsal body cavity is bounded by the bones of the skull and vertebral column. The muscular diaphragm divides the ventral body cavity into a superior thoracic (chest) cavity and an inferior abdominopelvic cavity. The pericardial cavity is located inside the chest cavity. (b) The heart is suspended within the pericardial cavity like a fist pushed into a balloon. The attachment site, corresponding to the wrist of the hand in the model, lies at the connection between the heart and major blood vessels.

Pericardial cavity

Heart

Visceral pericardium

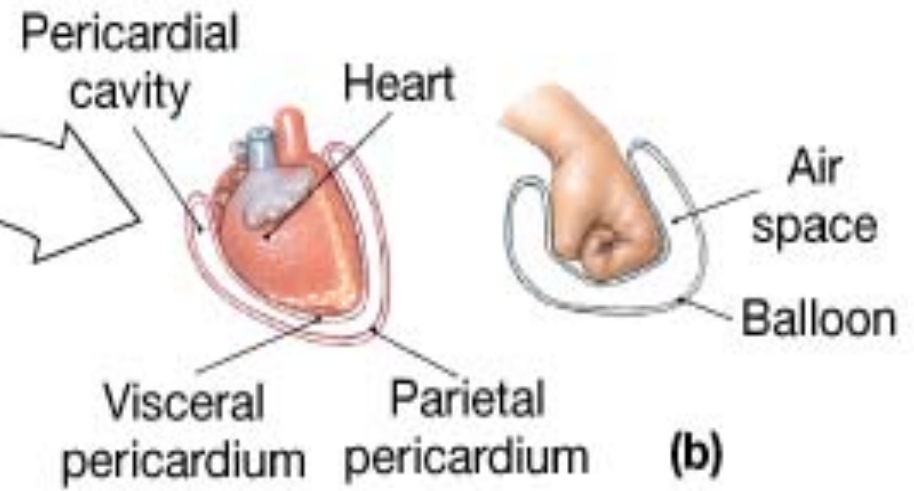
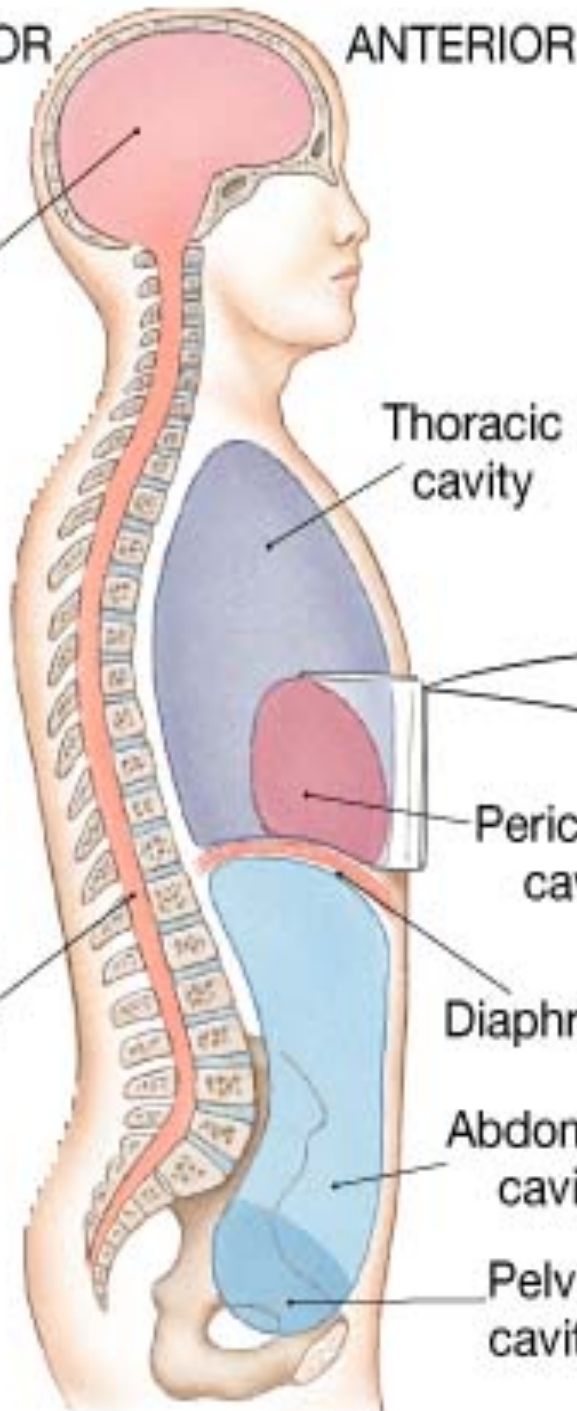
Parietal pericardium

Air space

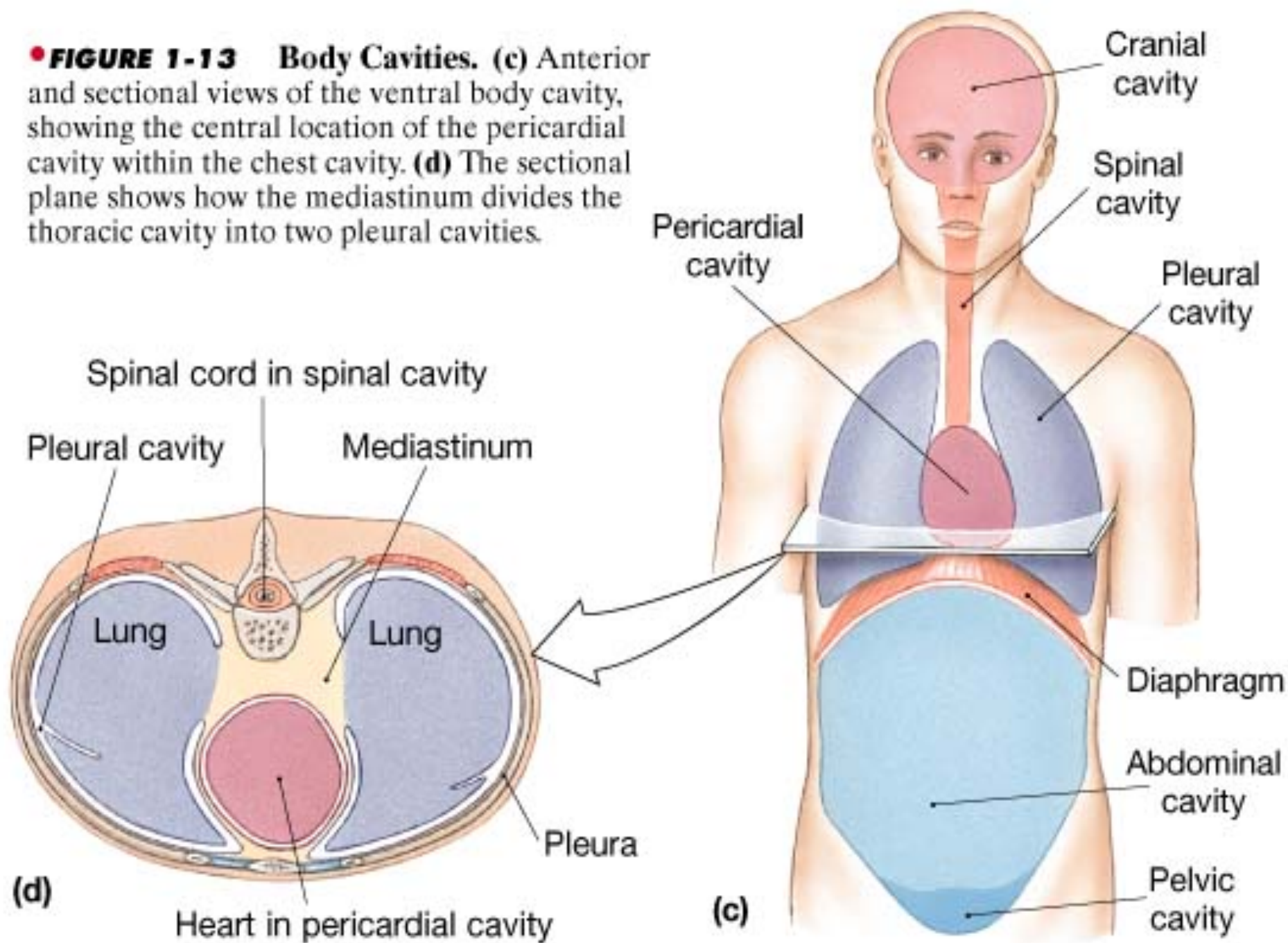
Balloon

(b)

(a)



• **FIGURE 1-13 Body Cavities.** (c) Anterior and sectional views of the ventral body cavity, showing the central location of the pericardial cavity within the chest cavity. (d) The sectional plane shows how the mediastinum divides the thoracic cavity into two pleural cavities.



UPPER THORACIC CAVITY

- The **pleural cavities** enclose the **lungs**, while the **pericardial cavity** surrounds the **heart**.

UPPER THORACIC CAVITY

- The **mediastinum** is a broad, median partition between the lungs that extends from the sternum to the vertebral column, it contains all contents of the thoracic cavity except the lungs.
- The **pericardial cavity** encloses the heart and great vessels.

ABDOMINOPELVIC CAVITY

- The abdominopelvic cavity is divided into a superior abdominal and an inferior pelvic cavity.

ABDOMINOPELVIC CAVITY

- **Viscera*** of the **abdominal cavity** include the kidneys, stomach, spleen, pancreas, liver, gallbladder, small intestine, and most of the large intestine

*internal organs

ABDOMINOPELVIC CAVITY

- **Viscera** of the **pelvic cavity** include the urinary bladder, portions of the large intestine and internal female and male reproductive structures.

ABDOMINOPELVIC CAVITY

- Thoracic and Abdominal Cavity Membranes:
 - A thin, slippery **serous membrane** covers the viscera within the thoracic and abdominal cavities and also lines the walls of the thorax and abdomen.

ABDOMINOPELVIC CAVITY

- Parts of the serous membrane are the **parietal layer** which lines the walls of the cavities and the **visceral layer** which covers and adheres to the viscera within the cavities.

ABDOMINOPELVIC CAVITY

- **Serous fluid** between the two layers reduces friction and allows the viscera to slide somewhat during movements.
- The serous membranes include the **pleura**, **pericardium** and **peritoneum**.

PLEURAL MEMBRANE

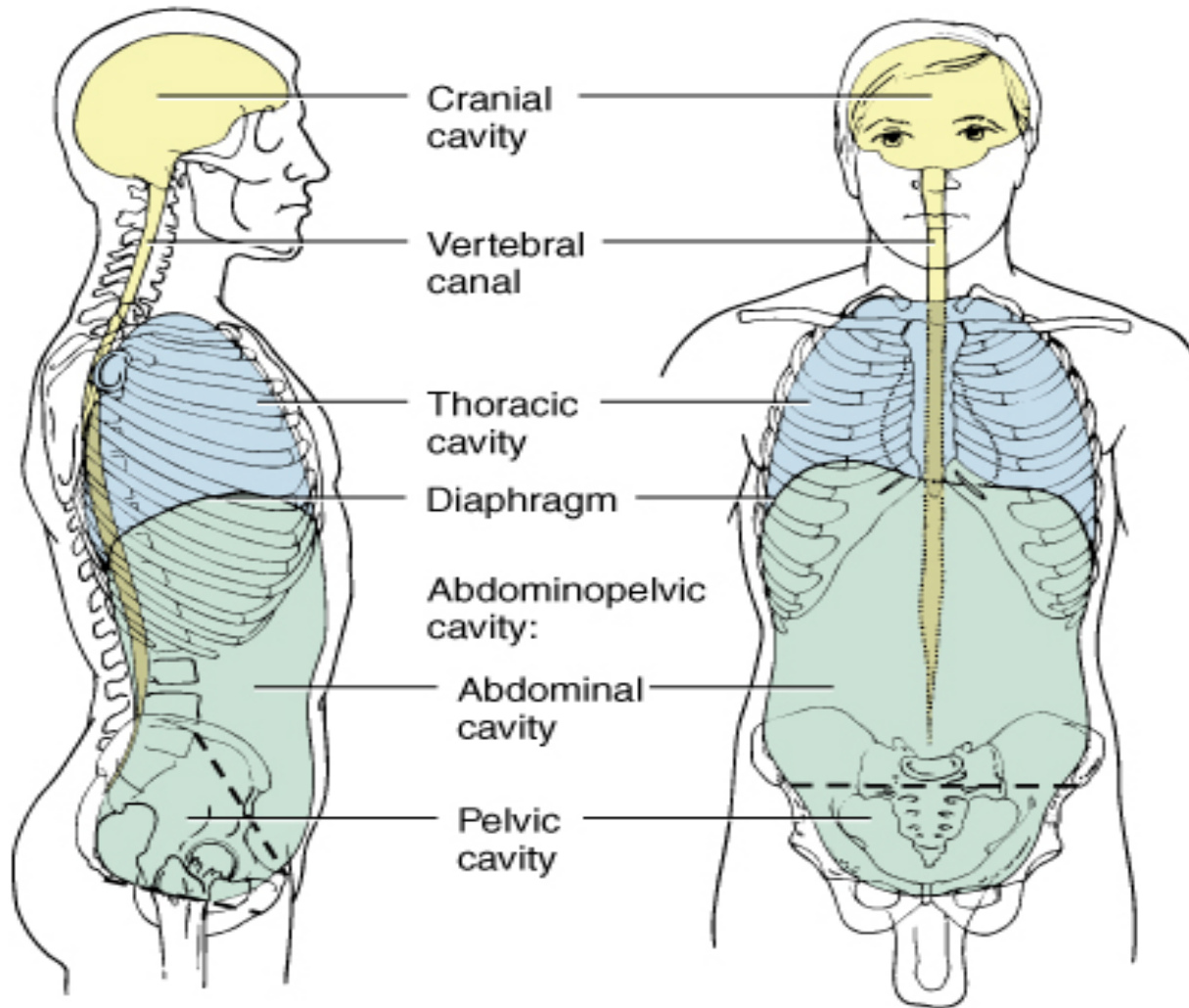
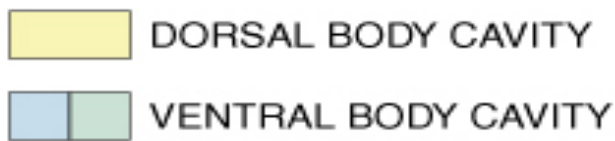
- The **pleural membrane** surrounds the **lungs**, with the **visceral pleura** clinging to the surface of the lungs and the **parietal pleura** lining the chest wall.

PERICARDIUM

- The serous membrane of the **pericardial cavity** is the **pericardium**, with visceral pericardium covering the surface of the heart and the parietal pericardium lining the chest wall.

PERITONEUM

- The **peritoneum** is the serous membrane of the abdominal cavity, with the visceral peritoneum covering the abdominal viscera and the parietal peritoneum lining the abdominal wall.



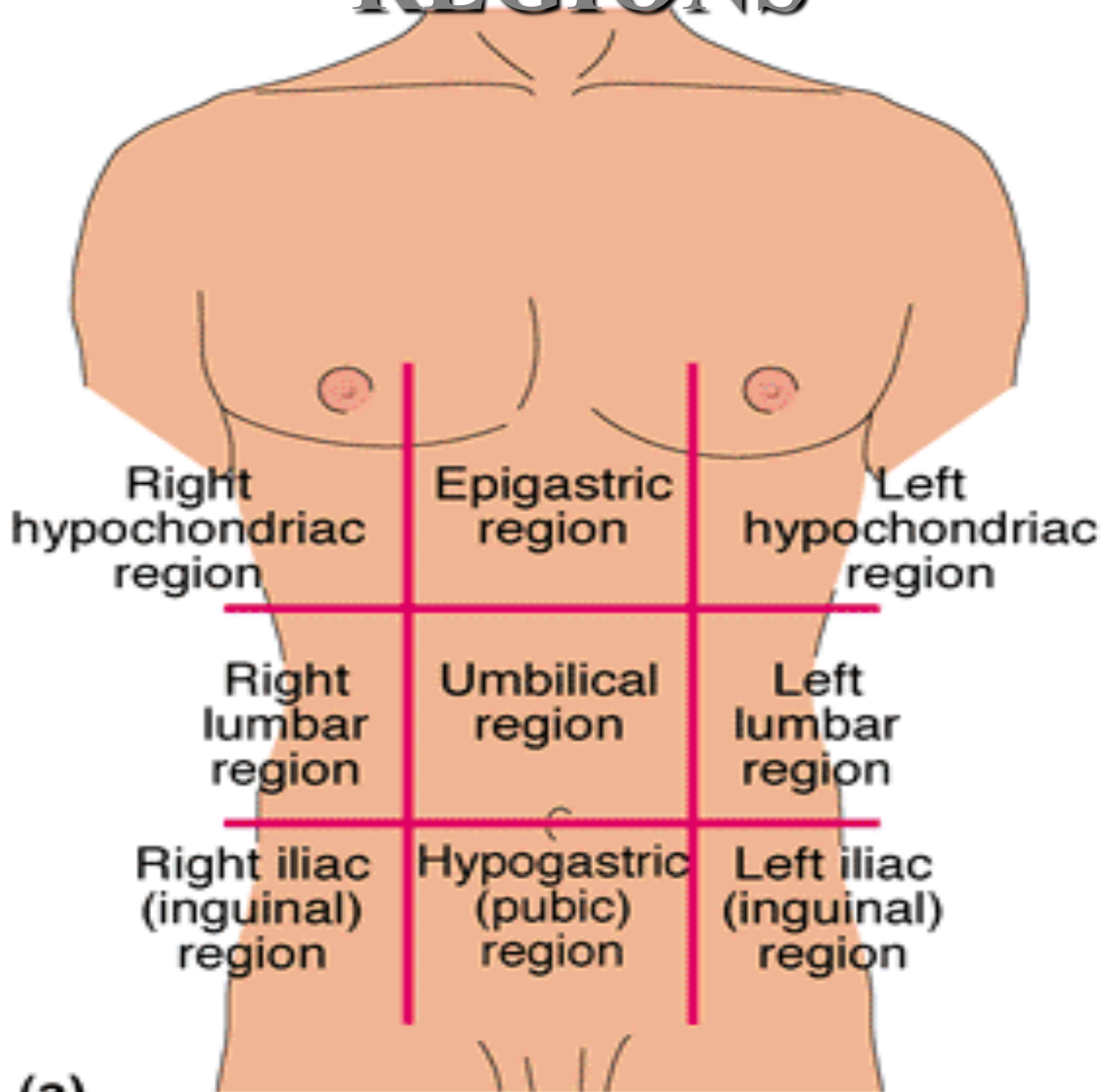
(a) Right lateral view

(b) Anterior view

ABDOMINOPELVIC REGIONS

- To describe the location of organs easily, the abdominopelvic cavity may be divided into **nine regions** by drawing four imaginary lines

REGIONS

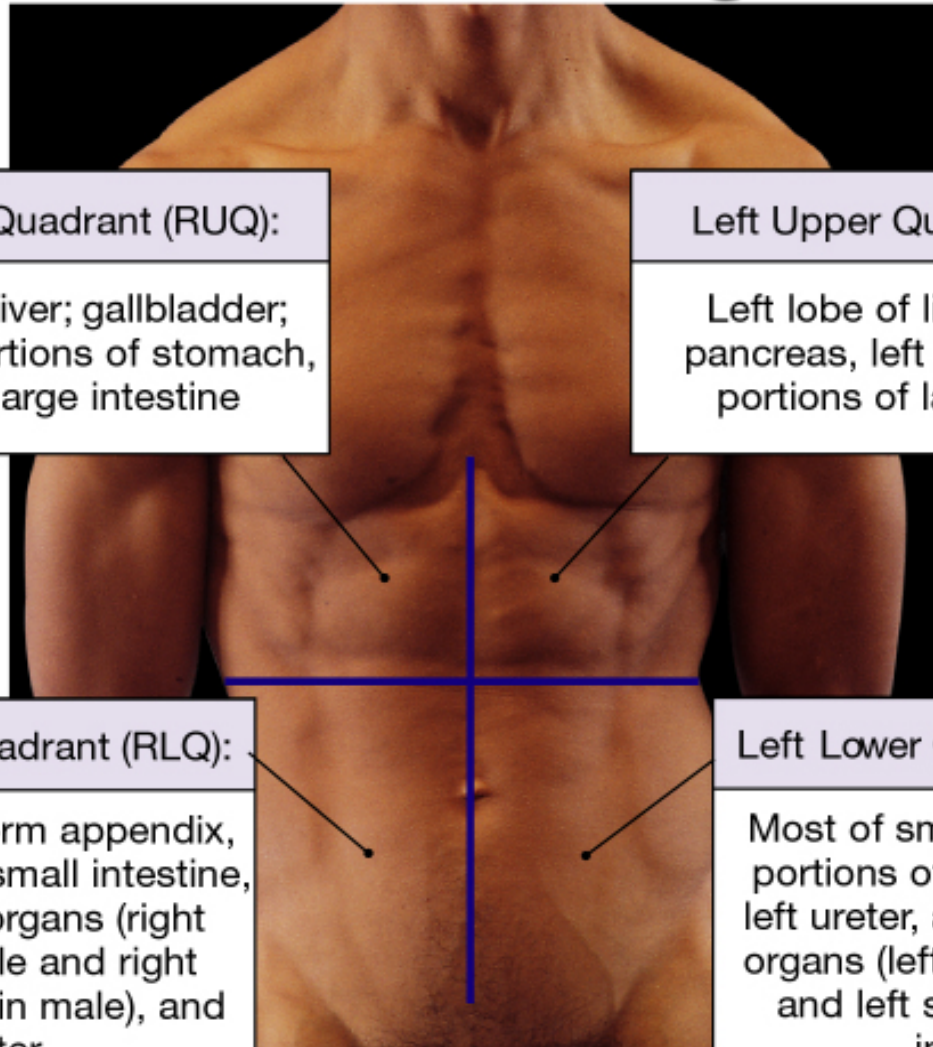


(a)

ABDOMINOPELVIC QUADRANTS

- To locate the site of an abdominopelvic abnormality in clinical studies, the abdominopelvic cavity may be divided into **quadrants** by passing imaginary horizontal and vertical lines through the umbilicus.

ABDOMINOPELVIC QUADRANTS



Right Upper Quadrant (RUQ):

Right lobe of liver; gallbladder; right kidney; portions of stomach, small and large intestine

Left Upper Quadrant (LUQ):

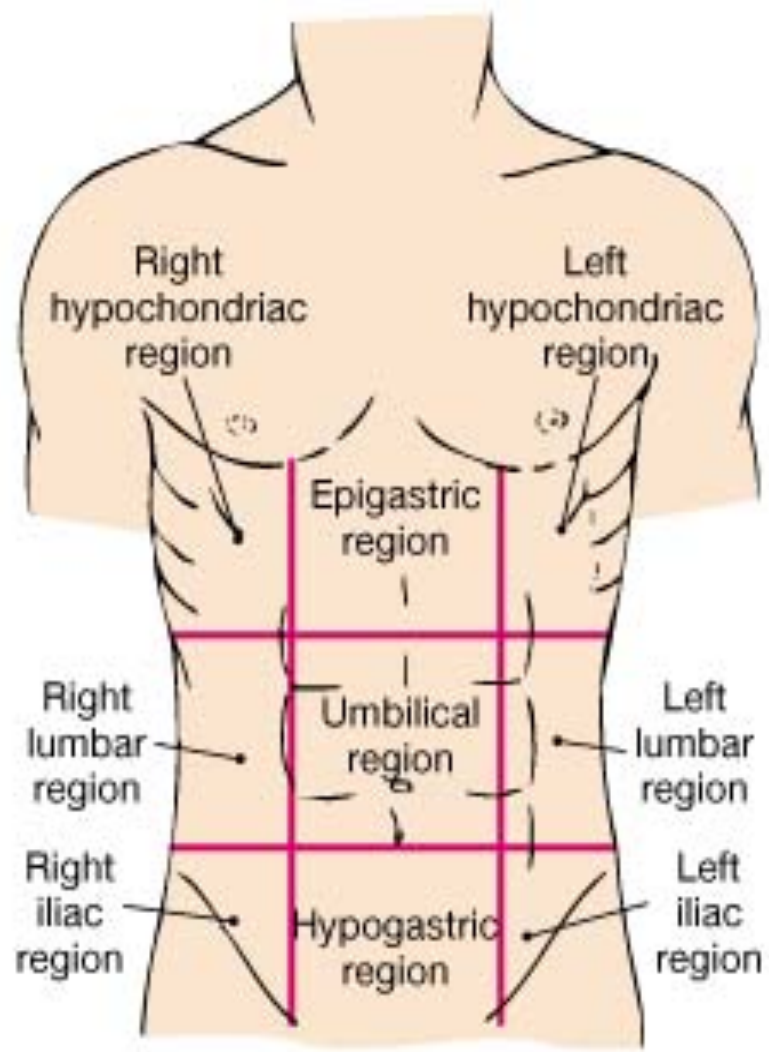
Left lobe of liver; stomach, pancreas, left kidney, spleen; portions of large intestine

Right Lower Quadrant (RLQ):

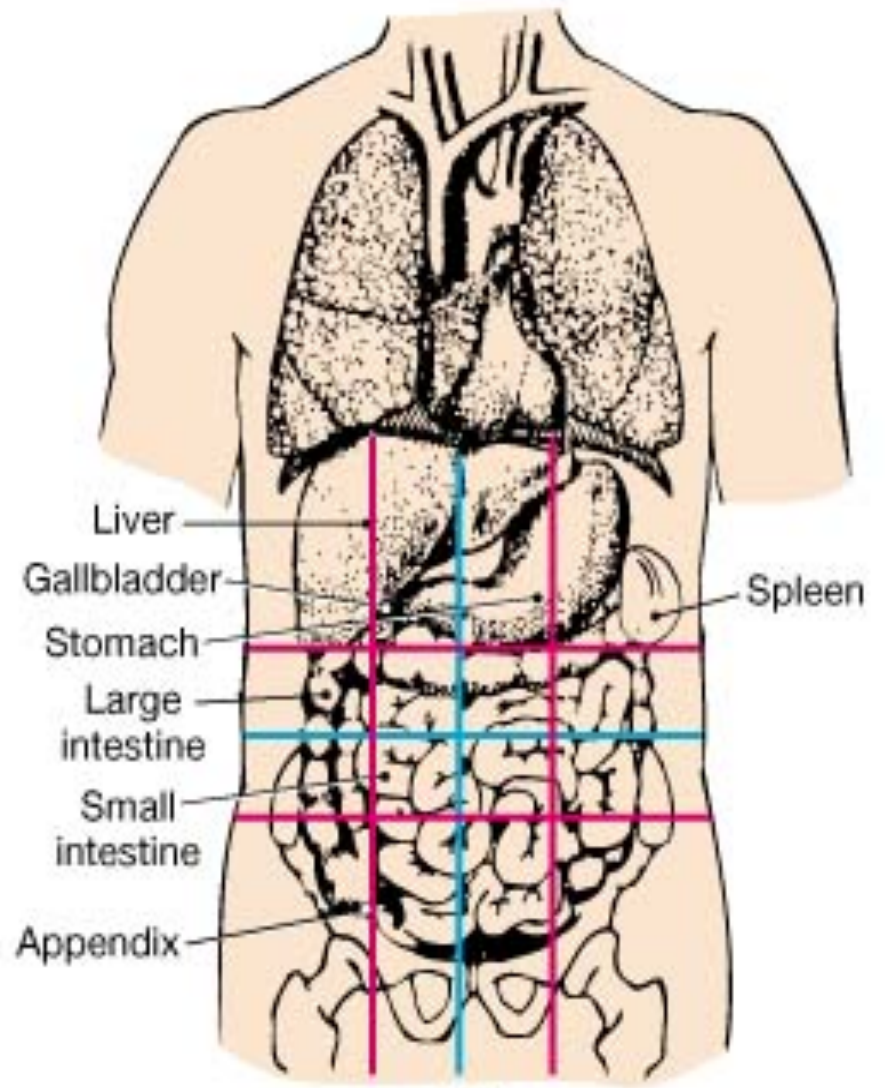
Cecum, vermiform appendix, and portions of small intestine, reproductive organs (right ovary in female and right spermatic cord in male), and right ureter

Left Lower Quadrant (LLQ):

Most of small intestine, and portions of large intestine, left ureter, and reproductive organs (left ovary in female and left spermatic cord in male)

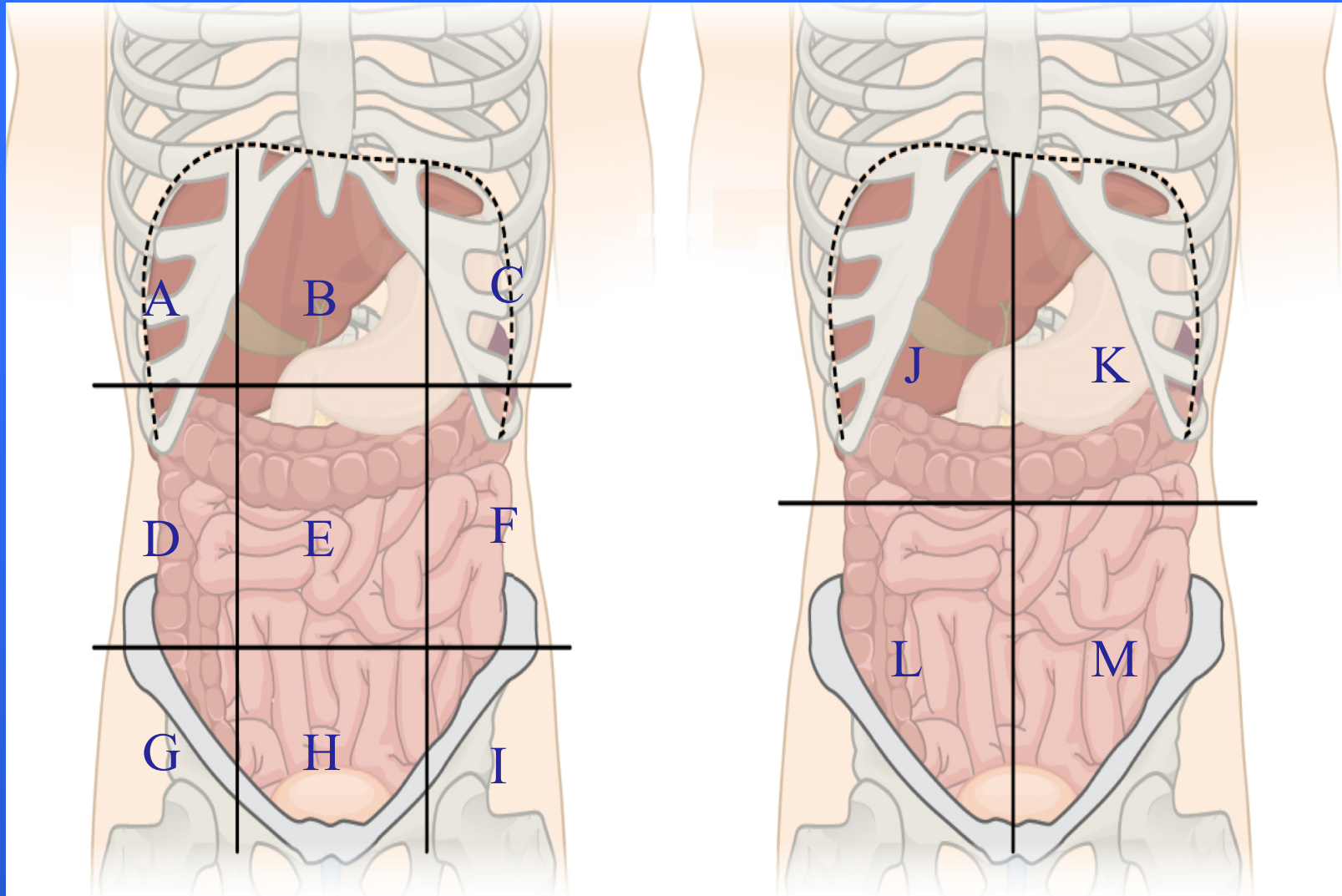


(b)



(c)

• **FIGURE 1-8 Abdominopelvic Quadrants and Regions.** (b) More-precise regional descriptions are provided by reference to the appropriate abdominopelvic region. (c) Quadrants or regions are useful because there is a known relationship between superficial anatomical landmarks and underlying organs.



Body Movements

Types of Ordinary Body Movements

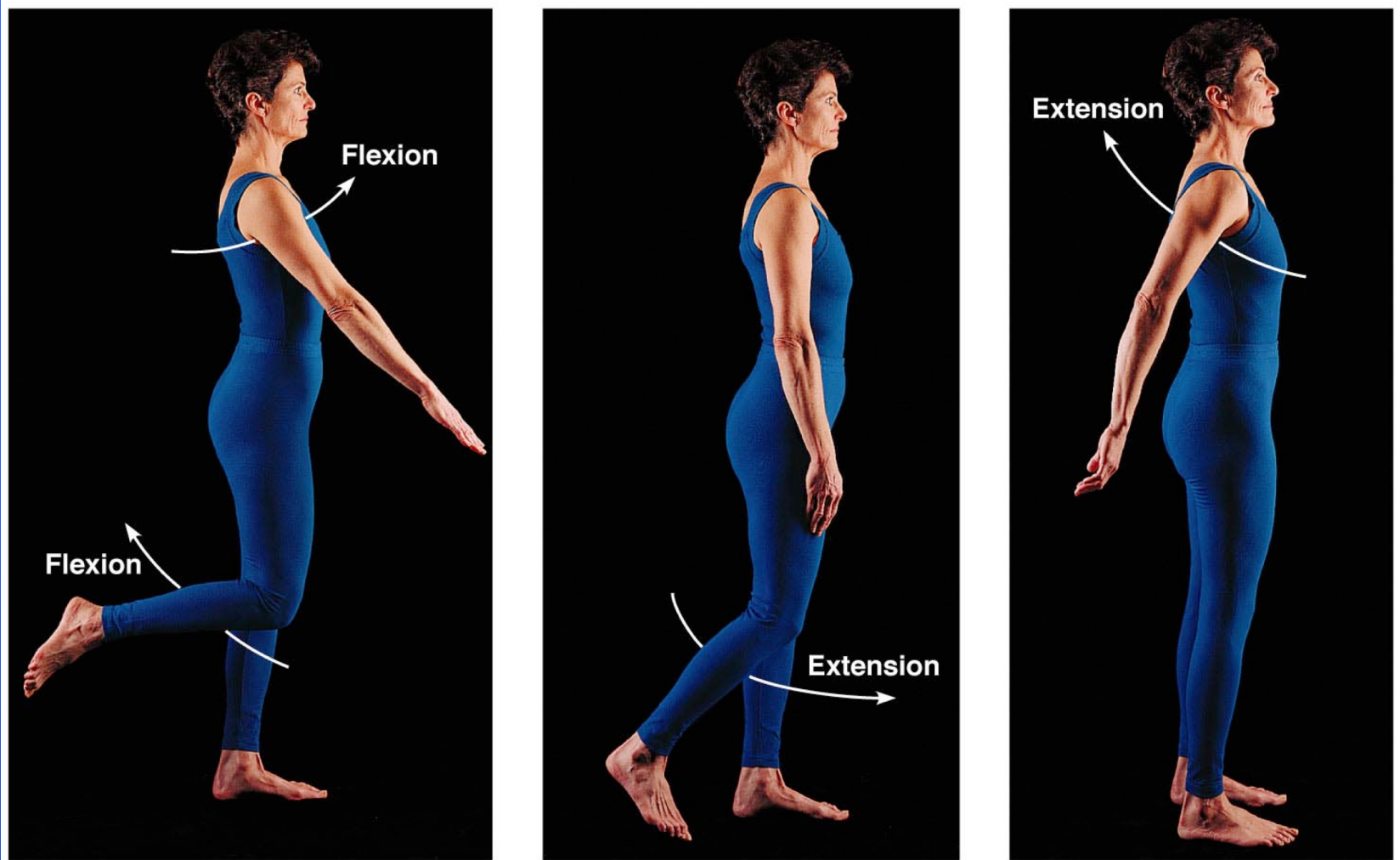
- Flexion

- **Decreases** the **angle** of the joint
- Brings two bones closer together
- Typical of hinge joints like knee and elbow

- Extension

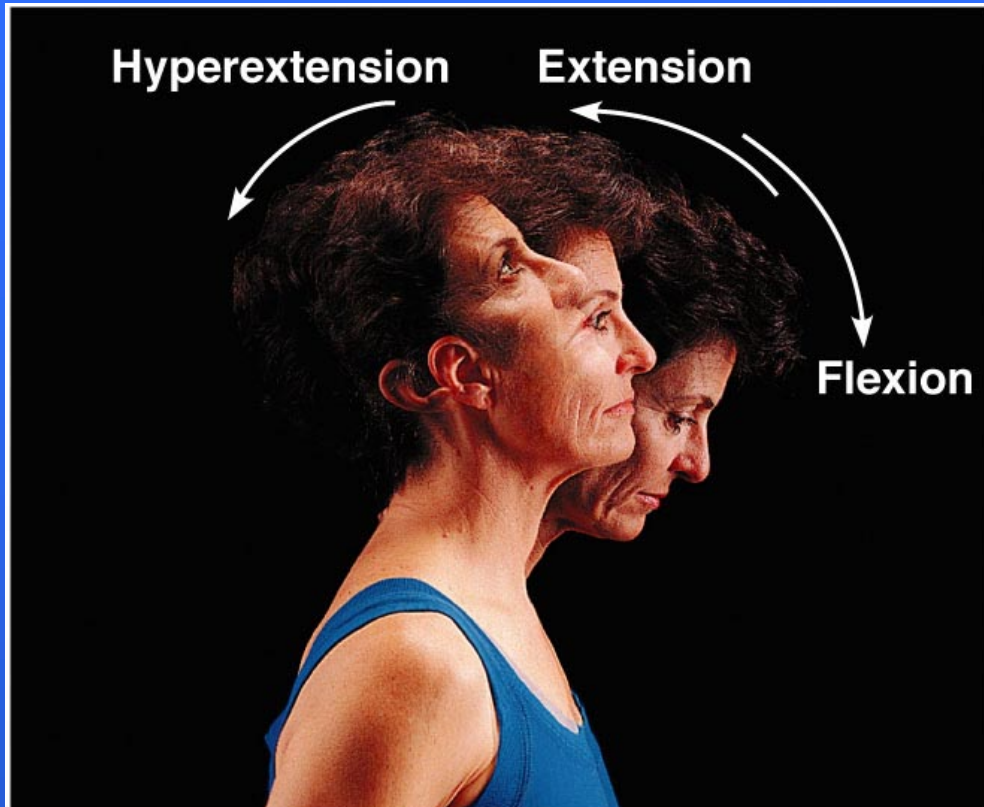
- Opposite of flexion
- **Increases angle** between two bones

Types of Ordinary Body Movements



(a) Flexion and extension of the shoulder and knee

Types of Ordinary Body Movements



(b) Flexion, extension, and hyperextension

Hyperextension: results when angle is $> 180^\circ$

Types of Ordinary Body Movements

- Adduction
 - Movement of a limb **toward** the midline
- Abduction
 - Movement of a limb **away** from the midline



(d) Abduction, adduction, and circumduction

Types of Ordinary Body Movements

- **Circumduction**

- Combination of flexion, extension, abduction, and adduction
- Common in ball-and-socket joints

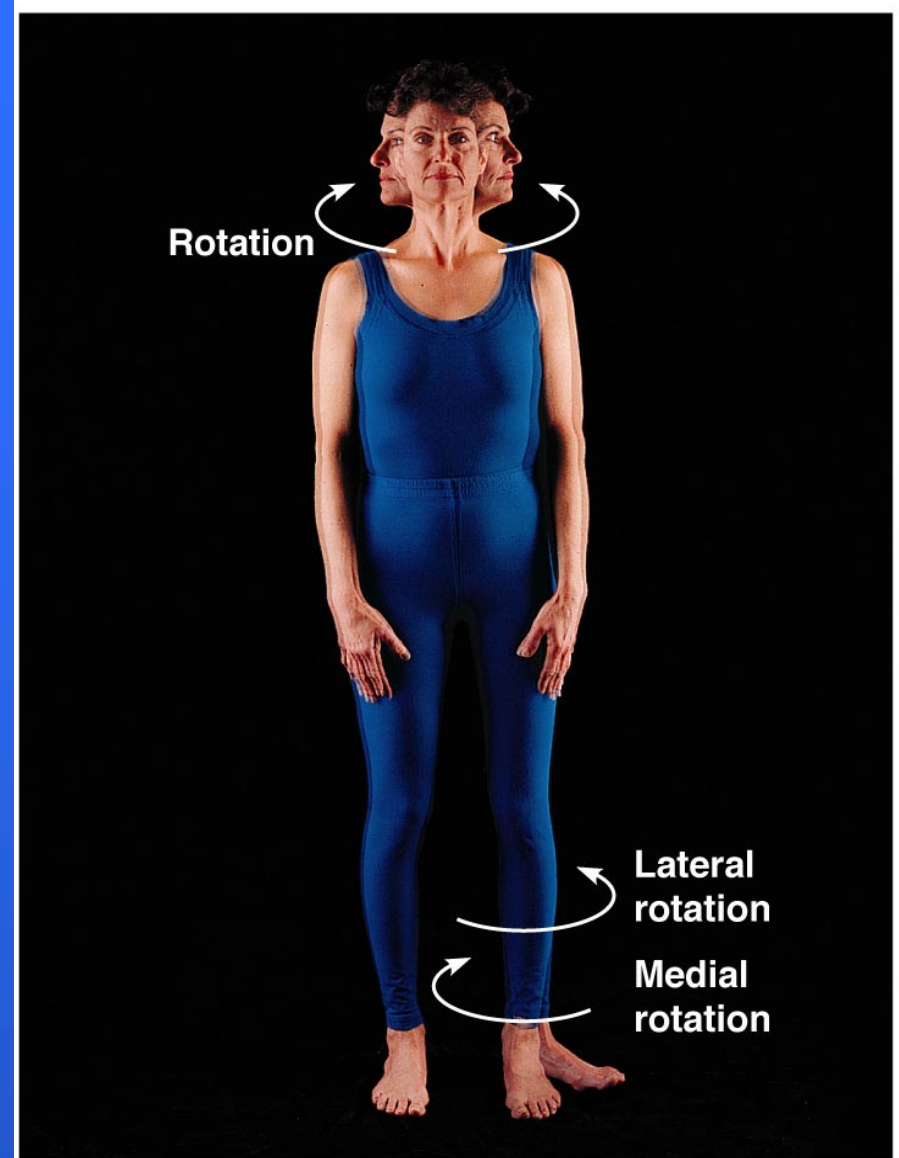


(d) Abduction, adduction, and circumduction

Types of Ordinary Body Movements

- **Rotation**

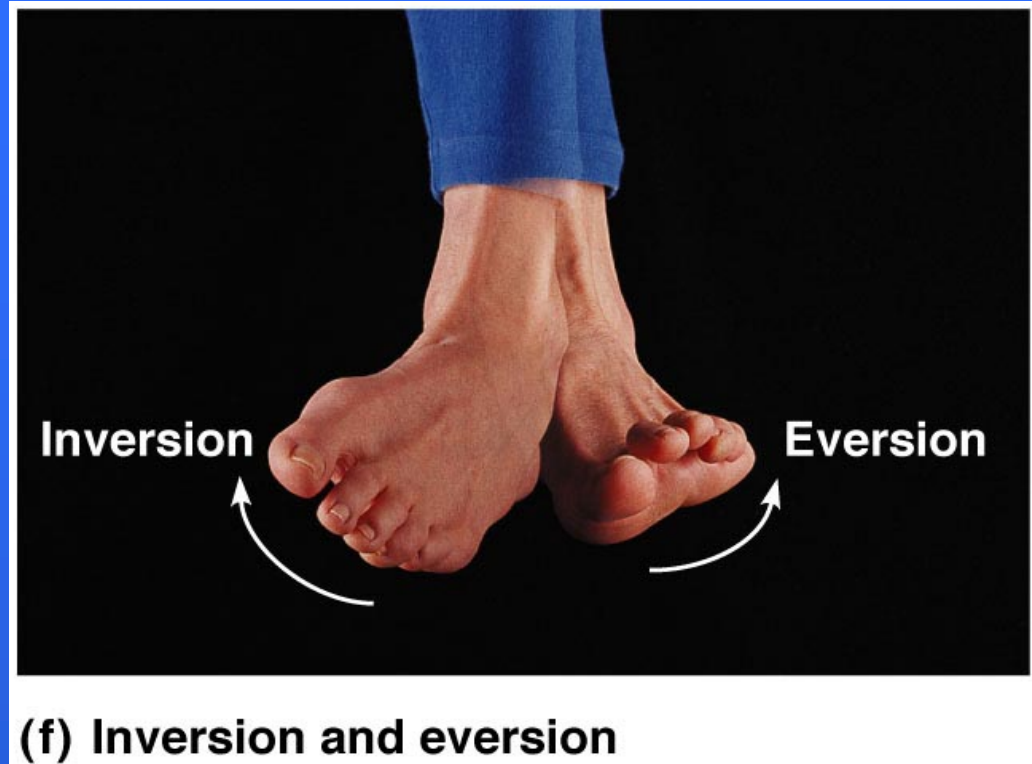
- Movement of a bone around its longitudinal axis
- Common in ball-and-socket joints
- Example is when you move atlas around the axis vertebra (shake your head “no”)



(c) Rotation

Special Movements

- **Inversion (in)**
 - Turn sole of foot medially toward body
- **Eversion (out)**
 - Turn sole of foot laterally away from body



Special Movements

- Dorsiflexion
 - Lifting the foot so that the superior surface approaches the shin
- Plantar flexion
 - Depressing the foot (pointing the toes)

