

Introduction to the Structure and Function of the Body

Levels of Organization
and
Spatial Orientations

Structural Levels of Organization

- Cells- the smallest "living" units of structure and function in our body
- Tissues- an organization of many cells that act together to perform a common function
- Organs- a group of several different types of tissues that act together
- Systems- an organization of organs

Anatomical Position

- Body erect
- Upper limbs and hands to the side
- Palms facing toward front
- Fingers extended
- Thumbs pointing away from the centerline of body
- Feet are flat on the floor and parallel
- Eyes forward

REMEMBER:

Left versus Right is ALWAYS from the patients perspective!!!!

Anatomical Direction

Terms of Spatial Orientation

Superior	Nearer to head or toward the head	Heart is superior to the stomach
Inferior	Nearer to feet or toward the tailbone (coccyx)	Eye is inferior to eyebrow
Cranial	Nearer to head or toward the head	More preferable to "superior" when discussing brain and spinal cord
Caudal	Nearer to feet or toward the tailbone	More preferable to "superior" when discussing brain and spinal cord

Spatial Orientation (Cont'd)

Anterior (a.k.a. ventral)	Nearer to front (belly); before	Breastbone is anterior to heart
Posterior (a.k.a. dorsal)	Nearer to back; behind	Calf is posterior to shin
Medial	Nearer to median plane	Little finger is on medial side of hand
Lateral	Farther from median plane	An ear is more lateral than an eye

Spatial Orientation (Cont'd)

Median (a.k.a. midline)	An imaginary plane that divides the body into equal left and right halves	The median plane cuts the nose into equal L and R halves
Proximal	Nearer to the trunk	The elbow is proximal to the wrist
Distal	Farther from the trunk	The foot is more distal than the shin

Spatial Orientation (Cont'd)

Ipsilateral	On the same side with reference to a given point	The left upper limb and left lower limb are ipsilateral
Contralateral	On the opposite side with reference to a given point	The right eye and left big toe are contralateral
Central	Nearer or toward the center	The spinal cord is part of the CNS
Peripheral	Farther or away from the center	Neurons that sense pain are part of the PNS

Spatial Orientation (Cont'd)

Superficial	Nearer to or on the surface of the body or surface of organ	The skin is superficial to all internal organs
Intermediate	Between superficial & deep	Arm muscles are intermediate b/t skin & arm bone
Deep	Farther away from the surface of the body or organ	The gallbladder is deep to the skin
Orad	Traveling in the gut tube toward the mouth	Vomitus moves orad through the esophagus