Introduction to Anatomy and Physiology

Anatomy: the study of the structure of body parts and their relationships to one another.
Physiology: concerns the function of the body's structural machinery.

Divisionary topics of anatomy
Gross (macroscopic) anatomy
- regional anatomy
- systemic anatomy
- surface anatomy

Microscopic anatomy
- cytology
- histology

Developmental anatomy
- embryology

Principle of Complementarity of Structure and Function:
Function always reflects structure, what a structure can do depends on its specific form.

Organization of the Body: Levels of Structural Organization
1) Chemical
2) Cellular
3) Tissue
4) Organ
5) System
6) Organismal

Body Systems
There are 11 systems in the body:
1) Integumentary
2) Skeletal
3) Muscular
4) Nervous
5) Endocrine
6) Cardiovascular
7) Lymphatic/Immune
8) Respiratory
9) Digestive

10) Urinary
11) Reproductive

Body Planes and General Directions

Anatomical Position and Directional Terms

Anatomical Position: standard body position used as a reference point, the body is erect with feet together, the palms face forward, and the thumbs point away from the body.

Directional terms:

- Superior (cranial)
- Inferior (caudal)
- Anterior (ventral)
- Posterior (dorsal)
- Medial
- Lateral
- Intermediate
- Proximal
- Distal
- Superficial
- Deep

Regional Terms: two fundamental regions of the body

1) Axial
2) Appendicular

Regional terms designate specific areas within the major body divisions.

Body Planes and Sections

1) Sagittal plane = right and left parts
   - midsagittal (median) plane
   - parasagittal planes
2) Frontal plane = dorsal and ventral parts
3) Transverse planes (cross sections)
   - oblique sections

Body Cavities

Two main body cavities

I) Dorsal body cavity
   A) cranial cavity
   B) vertebral (spinal) cavity
II) Ventral body cavity: houses viscera
   A) thoracic cavity
      1) pleural cavities (lungs)
      2) mediastinum (encloses esophagus, trachea)
         pericardial cavity (heart)
   B) abdominopelvic cavity
      1) abdominal cavity
      2) pelvic cavity
III) Other body cavities
   A) oral and digestive cavities
   B) nasal cavity
   C) orbital cavities
   D) middle ear cavities
   E) synovial cavities

<u>Abdominopelvic Regions and Quadrants</u>
(as seen from subject's point of view)
9 Regions of the abdominopelvic cavity:

1) umbilical
2) epigastric
3) hypogastric (pubic)
4) right and left iliac (inguinal)
5) right and left lumbar
6) right and left hypochondriac

4 Quadrants of the abdominopelvic cavity

1) right upper quadrant (RUQ)
2) left upper quadrant (LUQ)
3) right lower quadrant (RLQ)
4) left lower quadrant (LLQ)

Homeostasis: the body's ability to maintain relatively stable internal conditions.

Homeostatic imbalance: a disturbance in the homeostasis of the body, most disease is regarded as a result of this condition.

Membranes of the Ventral Body Cavity

Serosa = serous membrane: thin, double layer membrane that covers the cavity wall and organs.

- Parietal serosa: membrane lines cavity walls
- Visceral serosa: membrane covers organs in the cavity

Serous fluid = lubricating fluid found in between serous layers.

Major Tissues

Epithelial
Connective
Muscular
Nervous

Qualities of Life (Table 1.1)

- every cell in the body exhibits these

1) Growth
2) Reproduction
3) Responsiveness
4) Respiration
5) Digestion
6) Absorption
7) Circulation
8) Assimilation
9) Excretion