The Human Body: An Orientation

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Anatomy & Physiology

- anatomy (structure)
  - study of body structures & their relationships
- physiology (function)
  - study of how body structures & their relationships function
  - explainable only in terms of anatomy

Levels of Structural Organization

- from simpliest to the most complex
  - (six)
    - chemical
    - cellular
    - tissue
    - oran
    - organ system
    - organismal

Metabolism

- chemical rxns
  - occur in body cells
- two parts
  - catabolism
    - breaking down of complex substances into simpler ones
  - anabolism
    - building up of complex substances from simpler ones

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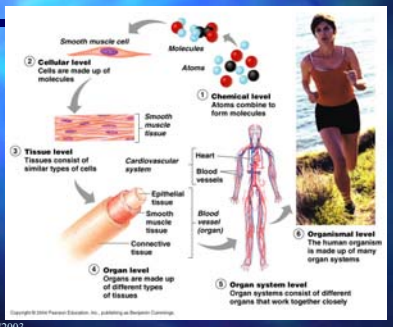
Levels of Structural Organization (Fig 1.1)



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Homeostasis

- term coined by Walter Cannon
  - American physiologist
- the ability of the body to maintain relatively stable internal environment
- state of dynamic equilibrium
  - internal body conditions vary
    - always within relatively narrow range
- all body systems contribute
  - most importantly - nervous & endocrine

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Homeostatic Imbalances

- conditions
  - inefficient control system
    - less stable internal environment
- usually result in disease

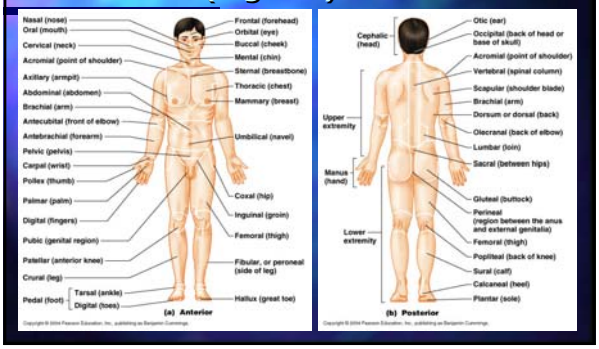
Anatomical Position

- anatomical reference point
- standard body position
  - erect body
  - arms at sides
  - palms face forward
  - feet together and flat on floor

Terms

- directional
  - allow us to explain where one body structure is in relation to another
  - allow body parts to be located precisely
- regional
  - designate specific areas within the body

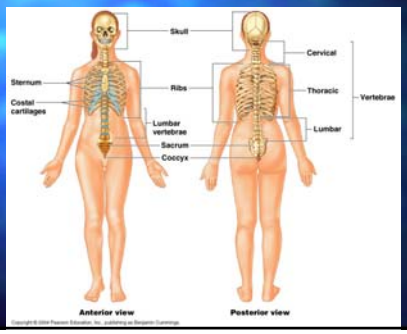
Regional Terms (Fig 1.7)



Fundamental Body Divisions

- axial
  - makes up the main axis
  - includes the trunk, neck and head
- appendicular
  - consists of appendages or limbs
    - attached to body's axis

Axial Skeleton (fig 7.1)



Appendicular Skeleton (fig 7.21)

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Body Planes

- imaginary lines that divide the body into different sections
  - sagittal
  - midsagittal (median)
  - frontal (coronal)
  - transverse (horizontal)

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Body Planes

- sagittal
  - vertical plane
  - right and left parts
- midsagittal (median)
  - vertical plane
  - right and left halves
- frontal (coronal)
  - vertical plane
  - anterior and posterior parts
- transverse (horizontal)
  - horizontal plane
  - superior and inferior parts

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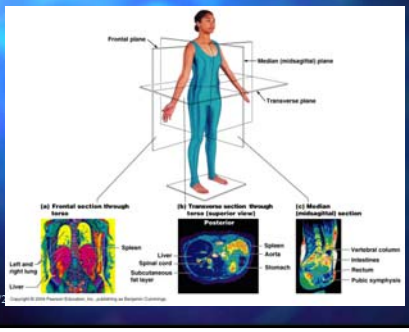
Body Planes (fig 1.8)



Body Cavities

- contain internal organs
- two major closed divisions
  - dorsal
  - ventral

Dorsal Body Cavity

- cranial
  - brain
- vertebral
  - spinal cord

Ventral Body Cavity

- thoracic
  - heart
  - lungs
- abdominopelvic
  - liver
  - digestive organs
  - reproductive structures

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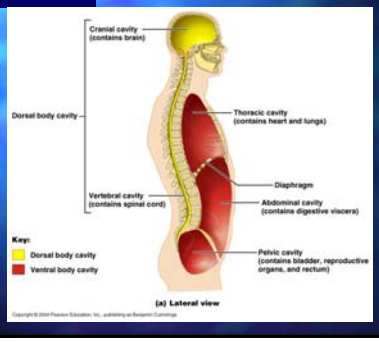
Dorsal & Ventral Cavities (fig 1.9)



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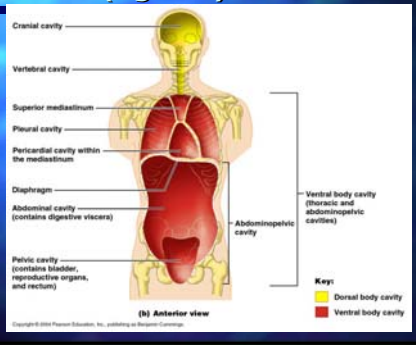
Dorsal & Ventral Cavities (fig 1.9)



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Ventral Body Cavity Membranes

- aka serosa or serous
- covers walls and outer surfaces of organs
- thin, double-layered
  - parietal
    - line cavity walls
  - visceral
    - covers the internal organs

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Abdominopelvic Quadrants

- division method
  - divides the region into four parts
  - RUQ
  - RLQ
  - LUQ
  - LLQ
- used by medical personnel

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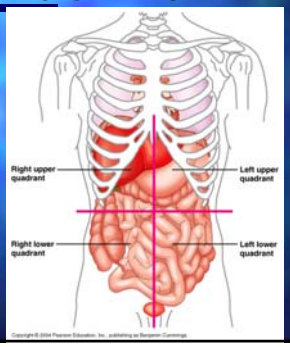
Abdominopelvic Quadrants (fig 1.12)



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