Age-Related Changes

Gastrointestinal Aging Changes:
- Poor dentition
- Number of taste buds
- Muscle strength for chewing
- Saliva production
- Pharynx is saliva
- Weakened gag reflex
- Gastric acid secretion
- Emptying of esophagus and stomach
- Intrinsic factor
- Thickened bile
- Thinened gastric muscosa
- Ability of small intestine to absorb sugars and lipids
- Hepatic enzymes and storage capacity

Consequences:
- Taste sensation
- Appetite
- Chewing ability
- Digestion of starch
- Possible swallowing difficulty
- Indigestion, flatulence
- Risk of pernicious anemia
- Problems with elimination
- Tolerance for fats
- Possible change in drug metabolism
- Difficulty gaining weight

Musculoskeletal Aging Changes:
- Muscle cells atrophy
- Generalized symmetrical muscle wasting
- Demineralization of bones
- Deterioration of cartilage surface of joints
- Thinning of intervertebral discs
- Loss of cartilage in vertebral column
- Loss of elastic fibers in muscle tissue
- Kyphosis

Consequences:
- Muscle strength after age 70
- Two-inch loss of height between ages 20 and 70
- Incidence of osteoporosis
- Joint range of motion
- Flexibility
- Mobility
- Risk of falls
- Gait changes
- Changes in body image

Cardiovascular Aging Changes:
- Amount of collagen and fat in cardiac muscle
- Thickening and rigidity of valves
- Oxygen utilization
- Myocardial infarct
- Myocardial hypertrophy, but over-all heart size is not affected by age
- Coronary artery blood flow decreased
- Peripheral resistance
- Myocardial instability
- Blood flow to all organs

Consequences:
- Susceptibility to infection, trauma, malignant lesions, pressure ulcers
- Skin is dry, scaly, wrinkled
- Edema
- Ability to maintain body temperature and homeostasis; baseline temperature may be lower than normal
- Slower rate of healing
- Slower absorption of drugs by subcutaneous route
- "Liver Spots"
- Nails thicken, grow slowly, become brittle and yellowed
- Risk of splitting, infections of the nails

Neurological Aging Changes:
- Number of neurons
- Weight of brain
- Histological changes in brain;
  - Intracellular pigments
  - Protein synthesis, senile plaques
- Rate of conduction in peripheral nerves
- Change in sleep patterns
- Depletion of dopamine and some of the enzymes in the brain
- Accumulation of lipofuscin
- Querky diminished brain cholinergic reserve

Consequences:
- Adaptability
- Slower response to stimuli
- Sensation
- Improved proprioception
- Gait changes
- Deep tendon reflexes
- Slower voluntary movement
- Sleep pattern disturbances
- Susceptibility to environmental temperature changes
- Short-term memory

Visual Aging Changes:
- Yellowing, opacity, rigidity of the lens
- Pupil size
- Accommodation
- Less efficient absorption of intracellular fluid
- Narrowing of visual field
- Lacrimal secretions
- Number of cones in retina

Consequences:
- Presbyopia — inability to focus properly
- Distorted depth perception
- Colour discrimination
- Need for stronger light
- Increased sensitivity to glare
- Drier cornea

Respiratory Aging Changes:
- 50% increased residual capacity
- Vital capacity
- Mobility of bony thorax
- Arterial blood oxygen level
- Oxygen uptake during exercise
- Risk of infection
- Amount of dead air space
- Exercise tolerance
- Gas exchange

Consequences:
- Number of neurons
- Weight of brain
- Histological changes in brain;
  - Intracellular pigments
  - Protein synthesis, senile plaques
- Rate of conduction in peripheral nerves
- Change in sleep patterns
- Depletion of dopamine and some of the enzymes in the brain
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Consequences:
- Adaptability
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