C458 Health, Fitness, and Wellness

# Physical Health

* Creating Movement
  + The Skeletal System
    - Humans are considered vertebrates, meaning we have a vertebral column, or backbone, AKA a spine.
    - Our skeletal system consists of:
      * Bones
        + Create the rigid skeleton that makes up the internal framework for the body to stand.
        + Adults consist of 206 bones
        + 4 types: long, short, flat, and irregular.
        + Supports and protects soft organs
      * Joints
        + AKA an articulation; The location where two bones come together.
        + 3 categories: immovable, slightly movable, and freely movable
      * Cartilage
        + Tough yet flexible tissue that covers the ends of bones of the freely movable joints.
        + Helps protect the bones by preventing them from rubbing together.
        + Gives support and shape to other body parts (e.g., ears, nose, windpipe, etc.)
      * Ligaments
        + A connective tissue that binds one bone to another.
        + Helps hold structures together and allows for side-to-side stability.
      * Tendons
        + A connective tissue that attaches muscle to bone.
        + It aids in the movement of the bone or structure.
  + The Muscular System
    - Muscles work and move throughout the body even when standing still.
      * They enable the heart to beat, the chest to rise and fall, blood vessels to help regulate blood pressure and flow, and even allow you to smile and talk.
      * Muscles help with movement, and muscle contractions help with posture, joint stability, and heat production.
    - 3 Types:
      * Striated Muscle
        + AKA skeletal muscle; Helps move all bones and controls facial expressions and eye movements.
      * Smooth Muscle
        + AKA visceral muscle; lines the walls of internal organs.
      * Cardiac Muscle
        + A combination of striated and smooth muscles; only found in the heart.
  + The Nervous System
    - It can be viewed as the control center for all our actions, whether conscious or unconscious.
    - Major functions include:
      * Receiving sensory input
      * Sending signals to the brain
      * Regulating **Homeostasis**
        + The state of balance among all bodily systems is needed for the body to survive and function correctly.
      * Communicating throughout the body for movement
    - 2 Major Divisions:
      * Central Nervous System (CNS)
        + It consists of the brain and spinal cord.
        + Messages from the CNS travel through the spine to the brain, which then directs the body's functions.
      * Peripheral Nervous System (PNS)
        + It consists of all the nerves outside of the brain and spinal cord.

**Nerves**: Specialized cells that carry nerve impulses from one part of the body to another.

* + - * + They relay messages between the CNS and the rest of the body.
        + It also includes sensitive cells that capture information from the sense organs that can be communicated to the brain via the cranial nerves.
* Blood, Air, Food, and Water
  + The Respiratory System
    - The system that triggers the breathing process of the body.
    - Works with the cardiovascular system to provide cells with oxygen and remove waste products such as carbon dioxide.
    - Organs:
      * Lungs
        + The primary organs that exchange gases during breathing.
      * Respiratory Passages
        + Divided into the Upper Respiratory Tract, consisting of the nose, pharynx (throat), and larynx (voice box), and the Lower Respiratory Tract, consisting of the trachea (windpipe), bronchial tree, and lungs.
    - Function:
      * Respiration: The process that results in oxygen delivery into the body, followed by the excretion of carbon dioxide outside the body.
        + The exchange occurs in the alveoli, tiny air sacs in the lungs, where, after taking in oxygen, the alveoli push the oxygen into the bloodstream via the capillaries. Carbon dioxide then goes through the reverse process until expelled via the mouth and nose.
  + The Cardiovascular System
    - Organs:
      * Heart
        + It is the organ responsible for circulating blood throughout the body, and it can be found on the left side of the chest cavity between the lungs and beneath the sternum.
        + It consists of 4 chambers: two upper chambers called the atria, and two lower chambers called the ventricles.
      * Blood Vessels
        + Arteries

Carry blood away from the heart to the body tissues

The muscles on the left side of the heart pump blood through the largest single artery in the body, called the aorta.

Arteries get smaller as they approach the organ, and at the end, the oxygen-rich blood needs to pass through the tiniest of all blood vessels, called the capillary, to enter the organ.

* + - * + Veins

Carry oxygen-poor blood back to the heart.

* + - Function: Circulation
      * It provides a constant supply of nutrients and oxygen to the body’s cells through blood flow, known as circulation.
      * Oxygenated blood enters the left side of the heart, which then gets pumped out of the heart through the aorta. They are then delivered to the organs via the arteries and the capillaries. Finally. The veins carry the oxygen-poor blood and waste (carbon dioxide and water) from the cells back to the lungs, where the blood receives oxygen.
  + The Digestive System
    - This system includes the digestive tract and its accessory organs and plays a role in processing food into molecules small enough to be absorbed and eliminating waste products.
    - 4 Functions:
      * Ingestion
      * Digestion
      * Absorption
      * Elimination
    - Path of Food:
      * Ingested in the mouth and broken down by teeth and saliva
      * Swallowed and travels down the esophagus, connecting to the stomach
      * Digested in the stomach via the use of digestive juices
      * The partially digested food moves out of the stomach into the small intestine, where nutrient absorption occurs.
      * The undigested food and fluid exit the small intestines and go into the large intestine, where water, some nutrients, and electrolytes are removed to form concentrated, solid feces.
      * The stool passes from the large intestine into the rectum where it is stored and later eliminated from the body via the anus.
    - Accessory Organs:
      * **Salivary Glands**: Glands located in the mouth that moisten and lubricate food and are involved in the breakdown of carbohydrates.
      * **Liver**: Metabolizes macronutrients, produces bile, and detoxifies the body.
      * **Gallbladder**: Stores the yellow-green fluid called bile, which helps digest and absorb fats.
      * **Pancreas**: Secretes enzymes and hormones like insulin that help with digestion and the use of carbohydrates, proteins, and fats.
  + The Urinary System
    - AKA the renal system, this system balances the fluids in your body by stimulating thirst and producing, storing, and eliminating urine.
    - Organs:
      * **Kidneys**: The major bean-shaped organs of the urinary system are responsible for filtering out waste products from the bloodstream and removing them as urine.
        + **Also reabsorbs fluids and other substances back into the bloodstream so the body does not lose too much water or essential minerals.**
      * **Ureter**: Tubes connected to the kidneys allow urine to flow into the bladder.
      * **Bladder**: A temporary reservoir for urine.
      * **Urethra**: The tube used by the bladder to expel urine
* Protecting, Regulating, and Reproducing