Overview of Organ Systems

Objective:

By the end of this lecture, student should understand :

- The major organ systems of the body, Major components and main function of each system

Major Organ Systems

There are 12 major organ systems of the body:

1. skeletal

2. muscular

3. Integumentary

4. nervous

5. **endocrine**

6. **cardiovascular**

7**.** **lymphatic**

8. **respiratory**

9. **digestive**

10**.** **urinary**

11. **reproductive (male and female genitalia**)

12. **immune**

1. Skeletal System

A. Major Components

    1. bone

    2. cartilages

    3. tendons

    4. ligaments

    5. joints

B. Major Functions

1. provide protection for internal organs (skull, ribs)

2. provide support for body

3. mechanical advantage for muscular actions

4. storage of vital minerals - calcium

5. site of blood cell formation (marrow)

2. Muscular System

A. Major Components

1. muscles of different type/function

a. skeletal muscles

b. smooth muscles

c. cardiac muscles

B. Major Functions

1. skeletal muscle

 a. allows voluntary motions such as walking, and moving in general, facial expressions

2. smooth muscle

a. contracts to allow involuntary motion

b. along arteries, digestive tract

3. cardiac muscle

a. propels blood through lungs and body

3. Integumentary System

A. Major Components

1. skin

2. hair

3. sweat and oil glands

4. sensory organs and glands

B. Major Functions

     1. helps to regulate body temperature

     2. protects against external injury .

     3. responds to temperature, pressure, and pain

4. Nervous System

A. Major Components
1. brain and spinal cord (Central Nervous System)
2. nerves and sensory organs (Peripheral N S)

B. Major Functions
1. detect changes in internal and external environment
2. respond to changes to keep body homeostatic
3. organize activities of muscles and glands

5. Endocrine System

A. Major Components
1. pituitary, thyroid, parathyroid, adrenal, pineal glands
2. ovaries, testes, pancreas

B. Major Functions
1. maintains body homeostasis, growth, development
2. produce hormones in response to a variety of stimuli

6. Cardiovascular System

A. Major Components
1. heart
2. blood vessels (arteries, veins, capillaries)
3. blood (serum, proteins, red & white cells)

B. Major Functions
1. primarily a transport system moving blood
a. oxygen, carbon dioxide, ions (salts Na,K,Ca,Cl)
b. nutrients and waste
c. hormones and proteins
d. white blood cells and antibodies

7. Lymphatic System

A. Major Components

1. lymph nodes and vessels
2. spleen
3. thymus
4. other scattered lymph tissue

B. Major Functions

1. location of lymphocytes involved in body immunity
2. remove pathogens and debris from blood
3. returns leaked fluid to blood vessels

8. Respiratory System

A. Major Components

1. nasal passages

2. pharynx, larynx, trachea, bronchi

3. lungs

B. Major Functions

1. remove carbon dioxide from blood

2. allow blood to uptake oxygen from environment

9. Digestive System

A. Major Components

1. oral cavity, esophagus
2. stomach
3. small and large intestine
4. rectum
5. other: teeth, salivary glands, liver, pancreas

B. Major Functions

1. breakdown foods into minute particles to be absorbed by the blood and delivered to body
2. remove unused foodstuff from the body as feces

10. Urinary System

A. Major Components

1. kidneys

2. ureters

3. bladder

4. urethra

B. Major Functions

1. remove nitrogen-based waste molecules (urea, uric acid, ammonia) from the blood and body

2. maintain water balance and ion/acid balance of blood

11. Reproductive System

A. Major Components

Male: testes, penis, and duct system for sperm

Female: ovaries, uterine tubes, uterus, vagina

B. Major Functions

1. produce gametes (sperm and egg)

2. provide environment for fetal development

12. Immune System (Special)

A. Major Components

1. white blood cells and other special immune cells

B. Major Functions

1. identify foreign material and eliminate it

Thank you