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PART B

The Human Body: An Orientation

PowerPoint® Lecture Slide Presentation by Jerry L. Cook, Sam Houston University



ESSENTIALS OF HUMAN ANATOMY & PHYSIOLOGY
EIGHTH EDITION
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Organ System Overview

- Cardiovascular
 - Transports materials in body via blood pumped by heart
 - Oxygen
 - Carbon dioxide
 - Nutrients
 - Wastes

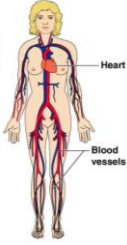


Figure 1.2f

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Organ System Overview

- Lymphatic
 - Returns fluids to blood vessels
 - Cleans the blood
 - Involved in immunity

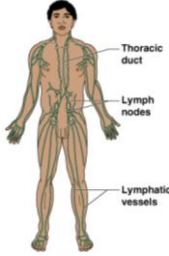


Figure 1.2g

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Organ System Overview

- Respiratory
 - Keeps blood supplied with oxygen
 - Removes carbon dioxide

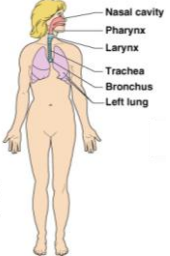


Figure 1.2h

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Organ System Overview

- Digestive
 - Breaks down food
 - Allows for nutrient absorption into blood
 - Eliminates indigestible material
 - Liver and Pancreas also part of the system

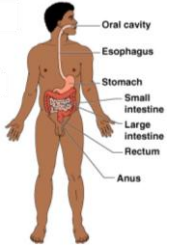


Figure 1.2i

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Organ System Overview

- Urinary
 - Eliminates nitrogenous wastes → urine
 - Maintains acid – base balance
 - Regulates water and electrolytes

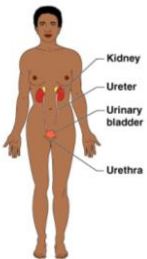


Figure 1.2j

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Organ System Overview

- Reproductive
 - Production of offspring

Figure 1.2k

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Necessary Life Functions

- Maintain Boundaries
- Movement
 - Locomotion
 - Movement of substances
- Responsiveness
 - Ability to sense changes and react
- Digestion
 - Break-down and delivery of nutrients

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Necessary Life Functions

- Metabolism – chemical reactions within the body
 - Production of energy
 - Making body structures
- Excretion
 - Elimination of waste from metabolic reactions

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Necessary Life Functions

- Reproduction
 - Production of future generation
- Growth
 - Increasing of cell size and number

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Survival Needs

- Nutrients
 - Chemicals for energy and cell building
 - Includes carbohydrates, proteins, lipids, vitamins, and minerals
- Oxygen
 - Required for chemical reactions

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Survival Needs

- Water
 - 60–80% of body weight
 - Provides for metabolic reaction
- Stable body temperature
- Atmospheric pressure must be appropriate

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Homeostasis

- Maintenance of a stable internal environment = a dynamic state of equilibrium
- Homeostasis must be maintained for normal body functioning and to sustain life
- Homeostatic imbalance – a disturbance in homeostasis resulting in disease

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Overview of Homeostasis

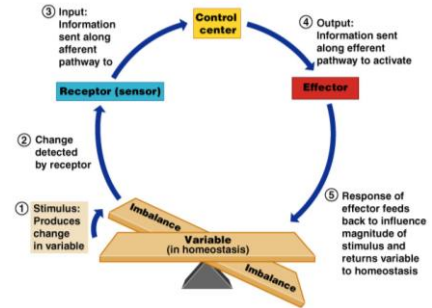


Figure 1.4

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Maintaining Homeostasis

- The body communicates through neural and hormonal control systems
 - Exercise → body temp. increases
- Receptor
 - Responds to changes in the environment (stimuli)
 - Sends information to control center

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Maintaining Homeostasis

- Control center
 - Determines set point (98.6°)
 - Analyzes information
 - Determines appropriate response (release heat)
- Effector
 - Provides a means for response to the stimulus (produce sweat)

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Feedback Mechanisms

- Negative feedback
 - Includes most homeostatic control mechanisms
 - Shuts off the original stimulus, or reduces its intensity
 - Works like a household thermostat (Once body temp. lowers, stop sweating)

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Feedback Mechanisms

- Positive feedback
 - Increases the original stimulus to push the variable farther
 - In the body this only occurs in blood clotting and birth of a baby
 - ex: labor pains increase

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