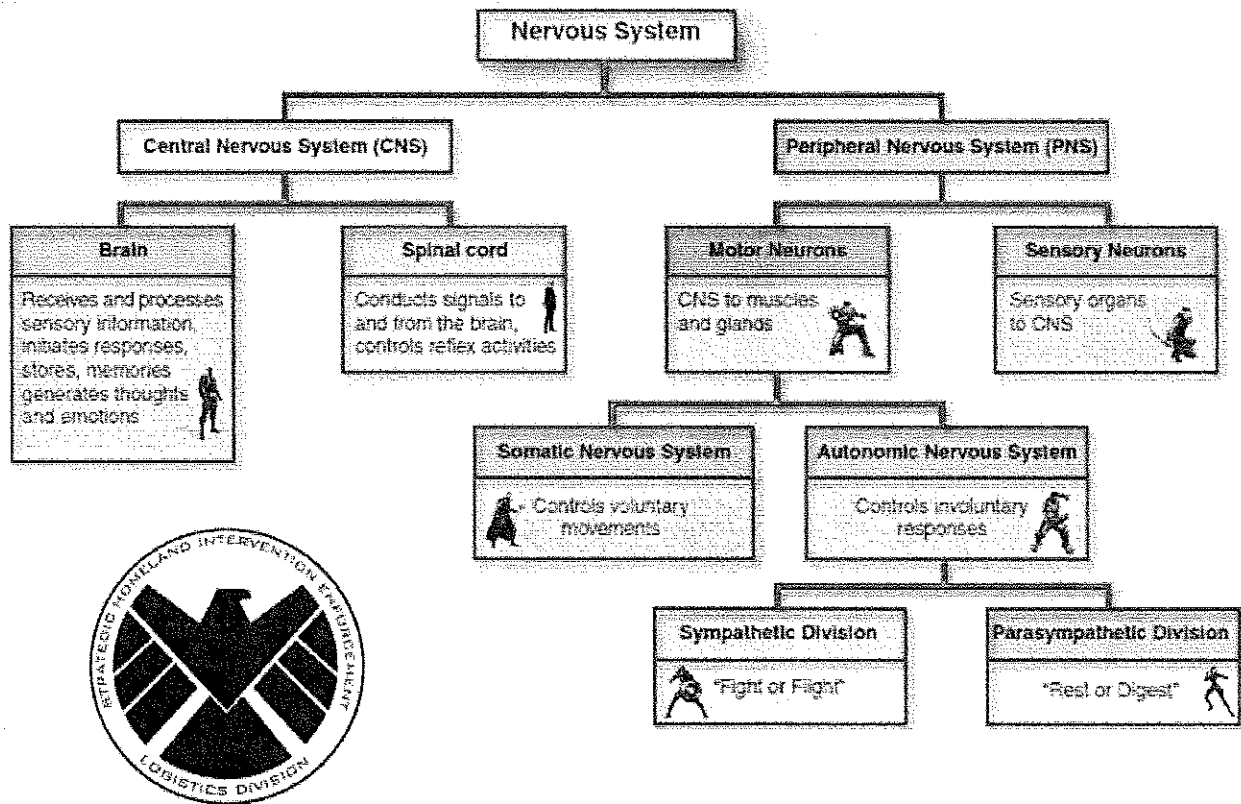


MODULE 10 THE NERVOUS AND ENDOCRINE SYSTEM



THE NERVOUS SYSTEM

- Our body’s **NERVOUS SYSTEM** is the speedy, electrochemical communication network, consisting of all the nerve cells of the peripheral and central nervous system. The **CENTRAL NERVOUS SYSTEM (CNS)** consists of the brain and spinal cord and is the body’s decision maker. The **PERIPHERAL NERVOUS SYSTEM** is responsible for gathering information and for transmitting. **NERVES** are electrical cables formed of bundles of axons, link the CNS with the body’s sensory receptors, muscles, and glands.
- **SENSORY NEURONS** carry messages from the body’s tissues and sensory receptors inward to the brain and spinal cord for processing. **MOTOR NEURONS** carry instruction from the central nervous system out to the body’s muscles and glands. The neurons within the brain and spinal cord that communicate internally and intervene between the sensory inputs and motor outputs are called **INTERNEURONS**.

THE PERIPHERAL NERVOUS SYSTEM

- Peripheral Nervous System has two components – somatic and autonomic.
- **SOMATIC NERVOUS SYSTEM** enables voluntary control of our skeletal muscles. **AUTONOMIC NERVOUS SYSTEM** the part of the peripheral nervous system that

controls our glands and the muscles of our internal organs, influencing such functions as glandular activity, heartbeat, and digestion.

- The **SYMPATHETIC NERVOUS SYSTEM** arouses and expends energy. SNS alarms or challenges you, accelerates your heartbeat, raises your blood pressure, slows your digestion, raises your blood sugar, and cools you with perspiration. The **PARASYMPATHETIC NERVOUS SYSTEM** produces the opposite effects. As the PNS calms you, your heartbeat decreases, lowering your blood sugar, etc.

THE CENTRAL NERVOUS SYSTEM

- Neurons that fire together wire together. Consists of the brain and the spinal cord. Think of the spinal cord as the highway from your body to the brain. The neural pathways governing our **REFLEXES**, our automatic responses to stimuli, illustrate the spinal cords work.

THE ENDOCRINE SYSTEM

- The **ENDOCRINE SYSTEM** is the second communication system in the body. Gland in the endocrine system secrete another form of chemical messengers, **HORMONES**, which travel through the bloodstream and affect other tissues, including the brain.
- Sex, food, and aggression.
- In a moment of danger, the ANS order the **ADRENAL GLANDS** on top of the kidneys to release epinephrine and norepinephrine. **PITUITARY GLANDS**, a pea-sized structure located in the core of the brain, where it is controlled by an adjacent brain area, the hypothalamus.
- Brain → pituitary → other glands → hormones → body and brain (connection of the nervous and endocrine systems).

BE ABLE TO ANSWER:

How does information flow through your nervous system as you pick up a fork? Can you summarize this process?

Why is this pituitary gland called the “master gland”?

PRACTICE FRQ'S: While walking barefoot, you step on a piece of glass. Before you have a chance to consciously process what has happened, you draw your foot away from the glass. Identify and explain the three types of neurons that deal with information regarding this painful stimulus.