

The Nervous System

The nervous system is the control and message center of the body. It controls and coordinates all body functions. The nervous system also senses and interprets information from outside the human body.

The neuron, or nerve cell, is the basic unit of the nervous system. Neurons send messages or sensations from the receptors in different parts of the body, through the spinal cord, to the brain.

The nervous system has two main parts: the central nervous system (CNS) and the peripheral nervous system (PNS). The CNS is the brain and spinal cord. The PNS deals with the outer part of the body via the nerves that extend throughout the body.

The brain is housed within the skull. The spinal cord is housed within the spinal column. The spinal column extends from the brain into the trunk of the body. Both the brain and the spinal cord are covered by a protective membrane made up of three layers. Between two of these layers is the cerebrospinal fluid. This fluid circulates around the brain and spinal cord. It provides a cushion against injuries.

The brain has three main sections: the cerebrum, the cerebellum, and the brainstem. The largest section of the human brain is the cerebrum. The outside layer of the cerebrum is the cerebral cortex. The cerebral cortex is the part of the brain in which thinking, analysis, association of ideas, judgment, emotions, and memory occur. The cerebral cortex also:

- directs speech and emotions
- interprets messages from the eyes, ears, nose, tongue, and skin
- controls voluntary muscle movement

The cerebrum is divided into right and left hemispheres. The right hemisphere controls movement and function in the left side of the body. The left hemisphere controls movement and function in the right side of the body. Any illness or injury to the right hemisphere affects functions on the left side of the body. Illness or injury to the left hemisphere disrupts function on the right side.

The cerebellum controls balance and regulates the body's voluntary muscles. It produces and coordinates smooth movements. Someone who has a problem in the cerebellum will be uncoordinated and have jerky movements and muscle weakness.

The cerebrum and cerebellum are connected to the spinal cord by the brainstem. The brainstem contains a kind of regulatory center. It controls heart rate, breathing, swallowing, coughing, vomiting, and closing or opening of blood vessels.

The spinal cord is connected to the brain. It is protected by the bones of the spinal column. Nerve pathways run through the spinal cord. They conduct messages between the brain and the body.