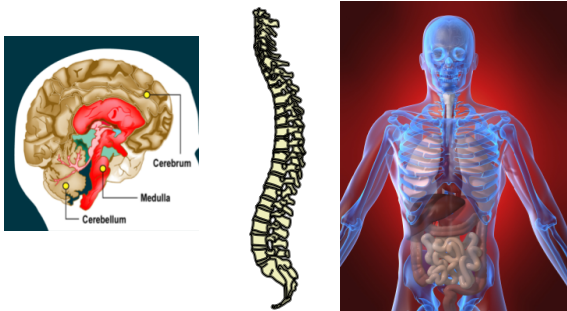


Divisions of the Nervous System

The human nervous system can be divided in three sections:

- 1) The brain
- 2) The spinal cord
- 3) The peripheral nervous system (somatic and autonomic)



The brain itself is made up of many parts:

- a) the cerebrum
- b) the cerebellum
- c) the brain stem
- d) the thalamus and hypothalamus

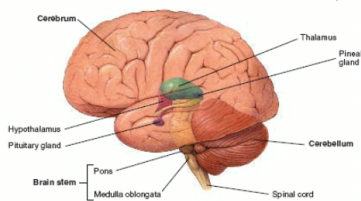


Figure 13 - 9, p. 901

1) The Brain

The brain is wrapped in a triple layer of connective tissue called the meninges.

Between this and the brain is found the cerebrospinal fluid.

The fluid is in place to allow for small movements of the brain when the head is rattled (shock absorber) and to exchange nutrients and waste from the blood to the brain.

a) The cerebrum

- largest region
- controls voluntary actions
- houses the centers for intelligence, learning and judgement.
- divided into two hemispheres, right and left, connected by the corpus callosum. Each hemisphere controls the opposite side of the body.
- made of 2 layers:
 - i) Outermost layer called cerebral cortex (gray matter)
 - controls body movements and receives info from senses.
 - ii) Innermost layer made of white matter
 - connects brain to brain stem

b) The cerebellum

- near the back of the brain
- coordinated fine motor skills

c) The brain stem

- connects brain to spinal cord
- made up of pons and medulla oblongata
- controls many involuntary actions (ex: heart rate, breathing, etc..)

d) Thalamus and Hypothalamus

- found between cerebrum and brain stem.
- Thalamus receives info from senses and sends to correct area
- Hypothalamus controls many aspects of homeostasis (ex: hunger, fatigue, body temperature, etc...) and coordinated with endocrine system.

2) The Spinal Cord

- Connects brain to the rest of the body.
- Has the ability to process certain reflex actions.

3) The peripheral nervous system

- everything outside the brain and spinal cord.
- two parts:
 - a) somatic nervous system
 - b) autonomic nervous system

a) Somatic nervous system

- coordinates voluntary actions (including some reflexes)
- The path information takes is as follows:
 - sensory receptors receive info from environment
 - info sent to sensory neuron of spinal cord, through interneuron and back down through motor neuron.
 - Info received and acted upon by effector.

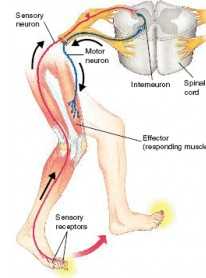


figure 35 - 11, p. 904

b) Autonomic nervous system

- Coordinates involuntary actions
- divided in sympathetic and parasympathetic nerve systems that have opposite effects on the same organs.
 - ex: one acts to speed up heart, the other to slow it down.