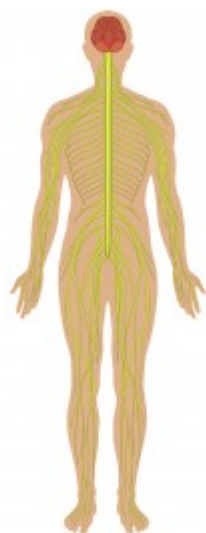


The Nervous System



The nervous system is a network of nerves and other cells.

The Nervous System

The **nervous system** is the network of nerves and other specialized cells that work together to carry information between the brain and spinal cord and the other parts of the body. These signals are used for three broad tasks: obtaining information from the outside world (**sensory input**), processing that information (**data integration**), and performing some action in response to the information once it's processed (**motor output**). These three tasks allow you walk, run, talk, see, hear, feel, think, and even breathe.

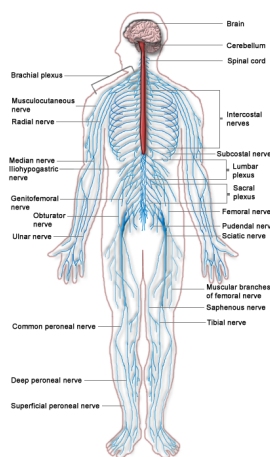
The Parts of the Nervous System

There are two parts of the nervous system, the **central nervous system** (CNS) and the **peripheral nervous system** (PNS).

The CNS consists of the brain and spinal cord. This is where most of the thinking and handling of information happens. Your brain takes in information from the outside world (e.g., a ball is coming towards you), figures out what to do (catch the ball), and then sends the message where it needs to go (to your arms and hands). In the example scenario, the sensory input is the information – coming from your eyes (the nerves of which are part of the peripheral nervous system) – that a ball is approaching. The data integration stage includes figuring out that you need to raise your arms and open your hands to catch the ball. The motor output will be actually moving your muscles to catch the ball, but that is carried out by your peripheral nervous system, which we'll cover next. The spinal cord is essentially the middleman. It receives information from the brain and sends it out to the body through the nerves that attach to it. It also receives information from the body (via nerves) and sends that information to the brain for processing.



The CNS is the brain and spinal cord.

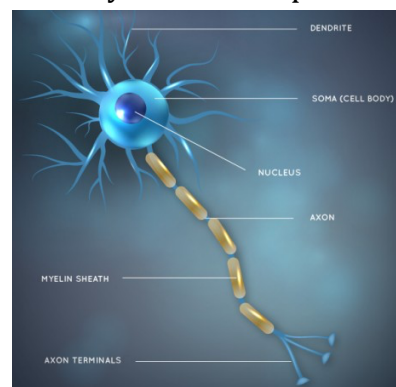


The PNS is all the nerves running from the spinal cord to the rest of the body.

They are responsible for the sensory input and motor output stages of a nervous response.

Nerves (Neurons)

Nerve cells, or neurons, are the workhorses of the nervous system. They are the cells that carry the messages around the body. Nerves



Neurons are the workhorses of the nervous system.

are made up of the **cell body**, the **neuronal membrane**, **dendrites**, and the **axon**. The cell body takes in information and makes

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TWF

Nervous System Disorders

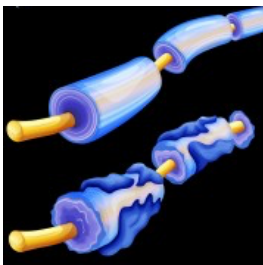
Each part of the nervous system and each part of the brain itself has a job. If part of the nervous system is damaged by impact or disease, it may not be able to do its job anymore and this can lead to sometimes dramatic negative effects.

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In multiple sclerosis, the insulation around axons becomes hardened.

Multiple sclerosis affects the nerves of the central nervous system by causing the insulation around them to harden, which prevents signal conduction. It can lead to blindness, difficulty in sensing stimuli, and paralysis. The cause of multiple sclerosis remains unknown.

Epilepsy is a condition characterized by intense, long-lasting, recurring seizures. **Seizures** are the result of bursts of electrical activity within the brain. They can be caused by injury or can simply be part of an inherited condition.

A transient ischemic attack occurs when the blood supply to the brain is reduced for a short time. It is similar to a stroke, but the effects are over in less than 24 hours. Transient ischemic attacks can be precursors to full strokes, however.

Reading Comprehension Questions

1. What is the nervous system?
2. What
3. What
4. What are the parts of a neuron?
5. What
6. What are
7. Briefly
8. Briefly describe neurotransmission.
9. What is a concussion? List 3 symptoms.
10. What is
11. How are strokes and transient ischemic attacks similar? How are they different?

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Extension Questions

12. Come up with
13. What are neurodegenerative diseases? Provide four examples and include the main cause, symptoms, and treatment for each.
14. What are

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