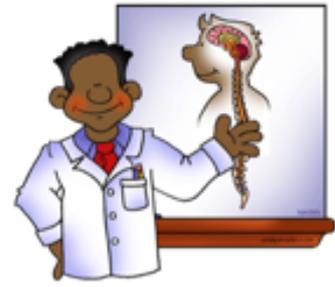


# Unit 1. The nervous system



## Interaction

We perceive the world through our senses. Sight, touch, smell, hearing and taste allow us to explore the environment around us. All the information received by our senses is processed by our most important organ, the brain.

1. Sensory neurons collect information from our sense organs (eyes, ears, nose, tongue, skin)
2. The brain interprets the information and send signals to the rest of the body
3. Motor neurons send messages from the brain to our locomotor system

## The nervous system

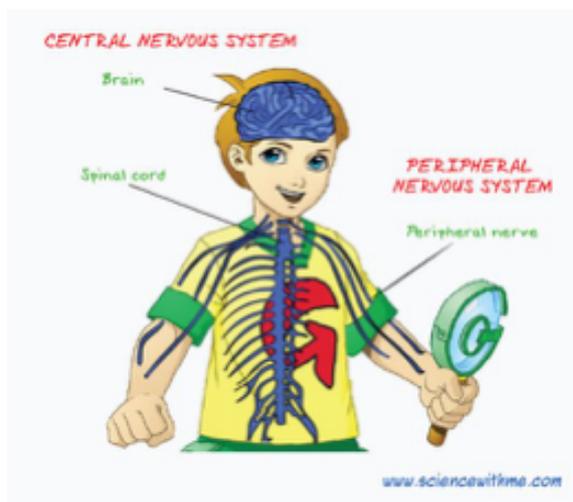
The nervous system receives and responds to information from the five sense organs. It controls the working of the internal organs and body systems, such as the circulatory and respiratory systems. It also produces reflex actions, spontaneous reactions that protect our bodies from danger.

## Parts of the nervous system

Our nervous system is made up of two parts: the **central nervous system**, which is made up of the brain and the spinal cord, and the **peripheral nervous system**, which is made up of the nerves in our body

### *The central nervous system*

1. Our **brain** is the control centre of the central nervous system and it is made up of three parts.  
The **cerebrum** is the biggest part of our brain and it controls voluntary movements.  
The **cerebellum** controls balance, movement and coordination.  
The **brain stem** controls involuntary movements such as respiration and digestion. The brain stem connects the brain to the spinal cord.
1. Our **spinal cord** is made up of nerve tissue and runs from our brain down the spine. Our spinal cord is protected by the vertebrae and controls reflex actions.



### *The peripheral nervous system*

Our nerves are made up of nerve cells call **neurons**.

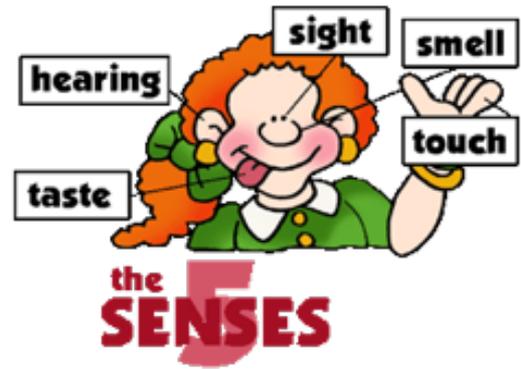
The millions and millions of neurons in our nervous system are all connected by tiny branches.

Messages travel along neurons **to** and **from** our brain.

- a The nerves carry messages to and from the brain
- b The cerebrum controls voluntary muscles
- c The cerebellum controls balance, movement and coordination
- d The brain stem controls involuntary muscles
- e The spinal cord controls reflex actions

## The 5 senses

Our sense organs detect information from the environment and neurons transmit this information to our brain.



### Sight

**Light** reflected from an object enters our **eye** through the **cornea** and the **pupil**.

The **iris** controls the amount of light that can enter our eye. It is a muscle that can make the pupil bigger or smaller.

The lens bends the light so that it makes an image on the **retina** at the back of your eye. Nerve receptors in the retina send this information along the **optic nerve** to our brain.

### Hearing

**Sound waves** enter our **ear** and make the **eardrum** vibrate.

This vibration also causes the three small bones in our ear to vibrate.

These vibrations reach the **cochlea** where they are changed into electrical signals. The **auditory nerve** sends these signals to our brain.

### Smell

The sense of smell is the ability to detect **chemicals** in the air.

When air enters our nose through our **nostrils**, chemicals come into contact with nerve receptors.

The nerve receptors send this information along the **olfactory nerve** to our brain.

### Taste

The receptor cells for taste are on the tongue inside each **taste bud**.

The nerve receptors can detect different tastes and send this information to our brain.

### Touch

The **epidermis** is the outer layer of **skin**, which covers and protects our body.

The **dermis** is the middle layer of skin and contains nerves and tiny blood vessels.

Nerves in the dermis can detect **sensations**, such as temperature and texture.

These nerves send information about what's happening on the surface of our body along the spinal cord to our brain.

*Sight:* eyes, cornea, pupil, iris, optic nerve, retina

*Hearing:* ears, eardrum, auditory nerve, cochlea

*Smell:* nose, nostrils, olfactory nerve

*Taste:* taste bud

*Touch:* dermis, epidermis



## Concussions

Seeing stars, feeling goofy or dazed for a little while, or being knocked out after getting hit in the head are all symptoms of a type of brain injury called a concussion.

## Stay safe when doing sport

helmet goggles elbow pad reflective clothing shin pad knee pad wrist guard closed shoes no earphones specific material sunglasses seatbelt