

Nervous System

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The nervous system is a very complex system in the body. It has many parts. The nervous system is divided into two main systems, the central nervous system and the peripheral nervous system. The spinal cord and the brain make up the CNS. Its main job is to get the information from the body and send out instructions. The peripheral nervous system is made up of all of the nerves. This system sends the messages from the brain to the rest of the body.

The brain, the spinal cord and the network of nerves form the nervous system.

THE BRAIN

The brain is the most important organ of the nervous system. It is present inside the skull. It receives information from the nerves, processes it, and sends signals for actions to be taken. In this way, it coordinates almost all of our actions and reactions.

The brain has three parts : the cerebrum, the cerebellum and the medulla.

The Cerebrum : The cerebrum is the largest part of the brain. It is thus also called the big brain. It has many folds and grooves. It receives messages from the sense organs and decides what the body should do. It is responsible for our memory, intelligence, logic and learning.



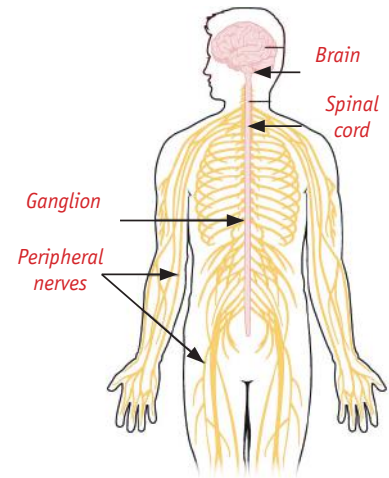
Parts of the Brain

The Cerebellum : It is a small part located below the cerebrum. It is responsible for the coordination of the actions of the muscles. It also helps in maintaining the balance of the body. It helps us to run, walk, play, etc.

The medulla : The bottom part of the brain that connects the brain to the spinal cord is the medulla. It controls all involuntary movements of the body. It controls the muscles for breathing, heartbeat, digestion, etc. It is also called brain stem.

SPINAL CORD

The spinal cord is a thick bundle of nerves that extends downwards from the base of the brain. It is enclosed and protected by the backbone. Nerves from the head region are

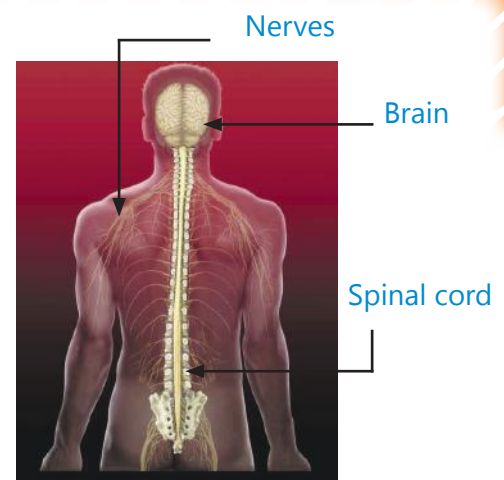


Nervous System

directly connected to the brain. Nerves from all other parts of the body are connected to the spinal cord, and the spinal cord is connected to the brain. So, the messages travel to and fro between the brain and rest of the body through the spinal cord.

NERVES

A network of nerves run throughout the body. Nerves link every part of the body to the brain through the spinal cord. Nerves are of three kinds – sensory nerves, motor nerves and mixed nerves.



Spinal Cord

- (i) **Sensory nerves** : Sensory nerves carry messages from the sense organs to the brain and spinal cord. These nerves carry messages from the sense organs to the brain helping us to see, hear, feel, smell and taste.
- (ii) **Motor nerves** : Motor nerves carry messages from the brain to the other parts of the body. All of the voluntary muscles in the body are controlled with motor nerves, which means that any time someone decides to move, a motor nerve is involved.
- (iii) **Mixed nerves** : Mixed nerves carry messages to and from the brain. They perform both functions:
 - Carry messages from our body parts.
 - Bring orders from the brain or spinal cord.

REFLEX ACTIONS

Some body movements are done automatically without thinking about them. This automatic response of body to an event is called reflex action. The reflex action involves only the nerves and spinal cord. A true reflex action is an automatic response over which the individual has no control. We are quite unconscious of most of our reflex actions.

Blinking of the eye, coughing, yawning, sneezing, etc., are some of the examples of reflex actions.



Coughing



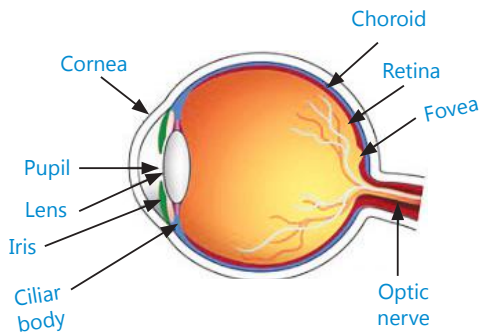
Yawning



Sneezing

SENSE ORGANS

The organs that help us to know about the outside world are called sense organs. Without them, our life would have been very dull. They help us to know and understand our surroundings better and respond appropriately. The five sense organs are eyes, ears, nose, tongue and skin.



Structure of Human eye

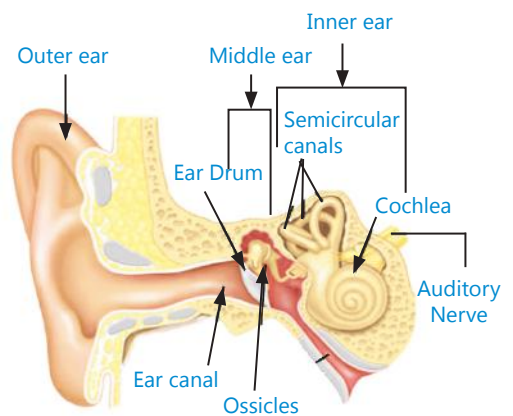
Eyes : The eyes are the most important sense organs. The eyeballs are set in sockets in the skull. The coloured circle in the eye is the **Iris**. The black spot in the centre of the Iris is the **pupil**. Light enters the eye through the pupil. The Iris makes the pupil larger or smaller to let in the right amount of light.

The lens forms images of objects you see on the screen called the **retina**. The pupil, lens and retina together act as a **camera**. The nerve cells in the eye send messages along the optic nerve to the brain. The front part of the eye is protected by a transparent covering called **cornea**. Eyelids and eyelashes also protect the eyes.

Care of the Eyes

- Wash the eyes with water every morning and evening.
- Do not rub your eyes with dirty handkerchief.
- Never read in dim light or bright light.
- Do not watch television for long.

Ears : Ears are the sense organs that help us to hear. When sounds are made, they set up movements in the air called sound waves. The outer ear acts like a funnel and collects the sound waves and sends them through the eardrum in the middle ear. From there, a system of bones sends the sound waves to the inner ear. These waves are converted into electrical signals by the nerves and sent to the brain, which interprets the message received.



Structure of Internal ear

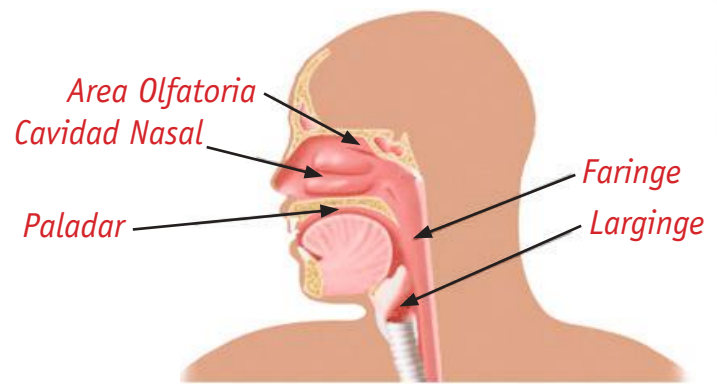
Care of the Ears

- Always use a clean handkerchief for cleaning your ears.
- Never use any pointed objects for cleaning your ears.
- Always listen music at a low volume. Loud music can harm your ears.

Nose : The nose helps us to smell a variety of objects from fragrant perfumes to stinking drains. The inner side is lined with small hair which act as filter trapping dust particles from entering.

Care of the Nose

- Always keep your nose clean.
- Always cover your nose while sneezing and use a clean handkerchief to blow your nose.



Structure of nose



Tongue showing taste buds

Tongue : The tongue helps us to taste. It has thousands of taste buds which have nerve endings that carry messages to the brain. We can sense four types of tastes – sweet, sour, salty, bitter.

Care of the tongue

- Use a tongue cleaner to clean the tongue.
- Be careful while eating or drinking any hot food item. It could burn your tongue and damage your taste buds.

Skin : The skin is the largest sense organ and covers the entire body. There are many tiny nerve endings in the skin which give us information about the things with which our body comes in contact. The sensations that we can feel through the skin are heat, cold, pressure and pain.

Care of the Skin

- Bathe daily.
- Wear clean and comfortable clothes.
- Treat any cuts on the skin with antiseptic lotion.



Skin

Know the Keywords :

Cerebrum	: The largest part of the brain
Cerebellum	: The part of the brain which coordinates the voluntary movements
Medulla	: The part of the brain which controls involuntary actions
Iris	: The coloured part of the eye
Pupil	: The small opening in the eye which lets light in

Point to Remember

- The nervous system is the control centre of our body.
- The cerebrum is the largest part of the brain.
- The Medulla controls all involuntary movements of the body.
- Spinal cord transfers information between the brain and the rest of the body through nerves.
- Blinking of the eye, coughing, yawning, sneezing, etc., are some of the examples of reflex actions.
- The front part of the eye is protected by a transparent covering called cornea.
- The outer ear acts like a funnel and collects the sound waves and sends them through the eardrum in the middle ear.
- Tongue has thousands of taste buds which have nerve endings that carry messages to the brain.
- The sensations that we can feel through the skin are heat, cold, pressure and pain.

EXERCISE TIME

A. Multiple choice questions (MCQs).

Tick (✓) the correct option :

- Which of the following is the master organ of the human body?
a. Spinal cord b. Brain c. Nerves
- Which part of the brain controls sense organs such as the eyes and ears?
a. Cerebrum b. Cerebellum c. Medulla
- Which of these carry messages from the brain to the other parts of the body?
a. Sensory nerves b. Motor nerves c. Mixed nerves
- The light enters the eyes through :
a. pupil b. cornea c. iris

B. Fill in the blanks :

- The _____ has many folds and grooves. (cerebellum/cerebrum)

