



Nervous System coordination in Human body

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Introduction

The conditions are controlled in two ways with chemical and nervous responses. Cells called receptors which detect stimuli (changes in the environment). The coordination centre, such as the brain, spinal cord or pancreas, which receives and processes information from receptors around the body. Our nervous system allows us to detect and react to changes in the environment. Sense organs, like the eyes, detect changes and our central nervous system co-ordinates a response. The conditions inside our body must be carefully controlled if the body is to function effectively. The conditions are controlled in two ways with chemical and nervous responses.

The nervous system helps in controlling and coordinating various activities of the human body. The three types of nerves, cranial nerves, spinal nerves and visceral nerves run through the body and help in sending and receiving messages in the form of electrical impulses. The five sense organs in our body, eyes, ears, nose, tongue and skin are called receptors. This is because they receive information from the environment around us. Therefore, a receptor is a group of cells in sense organ which is sensitive to a particular type of stimulus like light, sound, smell, taste, heat, etc. All the receptors send message in the form of electrical impulses to spinal cord and brain through sensory nerves. Another type of nerves called motor nerves then

transmits response from brain and spinal cord to effectors. An effector is a part of the body which responds to a stimulus according to the instructions sent from the nervous system. The muscles and glands are effectors of the body. Nervous system coordinates the activities of our body. It controls all our behaviour, thinking and actions. It is through nervous system only that all other systems of our body work. It passes information from one internal system to another. For example, when we put food in mouth, it causes release of saliva from the salivary glands. The cells that make up the nervous system are called neurons. Neuron is the largest cell in the body. The structure of neuron is such that it can carry messages in the body quickly. These messages are in the form of electrical impulses or nerve impulses. There are three components of neurons. The cell body of a neuron contains cytoplasm and a nucleus. There are many long and thin fibres coming out of the cell body of a neuron. The short fibres are called dendrites and the long fibre is called axon. The axon is covered with an insulating and protective sheath called myelin. It is made of fat and proteins.

The messages transmit through nervous system is in the form of electrical impulses called nerve impulses. The dendrites pick nerve impulses or messages from receptors and send them to cell body and then to axon. The axon sends these impulses to another neuron through a junction called synapse. There are three types of neurons, sensory neurons, motor neurons and relay neurons. The sensory cells or receptors are in contact with dendrite of sense organs. When there is a stimulus which acts on the receptor a chemical reaction occurs which produces an electrical impulse in it. This impulse travels from dendrite of sensory neuron to its cell body and then along the axon. At the end of axon electrical impulse release tiny amount of chemical substance in synapse and similar electrical impulse is started in the dendrite of next neuron. In this way the electrical impulse is carried in neurons till it reaches the relay neurons in spinal cord and brain. The relay neurons and motor neurons are connected in the similar way and helps bring electrical impulses from brain and spinal cord to the effectors like muscles and glands. Synapse ensures that electrical impulse travel in one direction only. This is because the chemical substance is present on one side of the gap only.