

# Neur<sup>o</sup> World

*Why do we rapidly move our hands when we accidentally touch something hot?*

## *Why do we feel miserable when failing an exam?*

*How do we have the ability to move, breathe, smell or even think?*

*We are capable of all these actions because of one thing,*

# **“The Nervous System”**

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# **Nervous System**

## 1. Definition

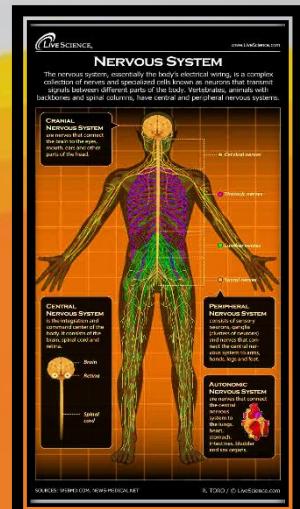
A nervous system is a very sophisticated network. It co-ordinates the actions and sensory information in the body by sending signals from many different areas.

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# Structure

## 1. Description

The system contains many crucial organs such as the (The brain and the spinal cord) which make up the center of the entire system and the (nerves) which make up the peripheral nervous system



## 2. Details

- **Brain:**

A complex organ that controls the thoughts, emotions and memory pf the body and regulates essential functions like breathing and heart rate.

- **Appearance:**

The brain's appearance is soft, with many layers of pink and grey tissues folded many times over

- **Structure:**

The brain consists of a (cerebrum, cerebellum and a brainstem)

- **Cerebrum:**

The Cerebrum is the largest part of the brain, it's divided into 2 hemi-spheres, and each hemi-sphere is divided into 4 lobes, The lobes are each associated with a specific job.

The Frontal lobe: controls the executive functions of the body such as

(planning, problem-solving and movement)

Parietal lobe: processes sensory information like (touch, taste and temperature change)

Temporal lobe: in charge of memory, language comprehension and visual recognition, which helps interpret complex stimuli

- **Occipital lobe**

primarily responsible for vision

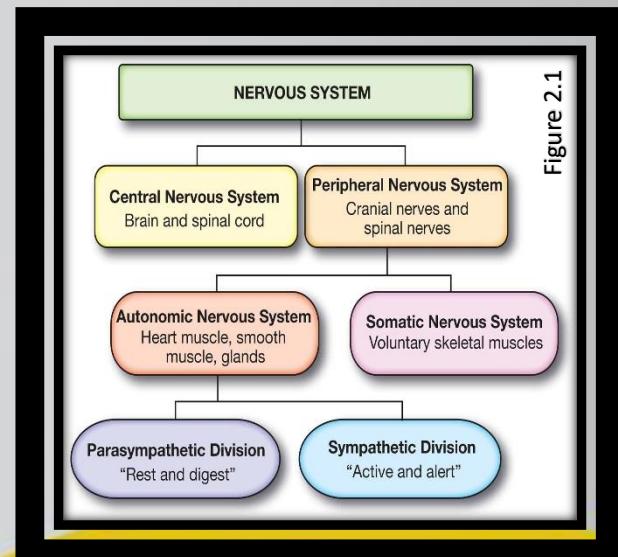


Figure 2.1

## **Cerebellum:**

The cerebellum is smaller than the Cerebrum and is located at the back of the brain right beneath it

Function: the cerebellum co-ordinates the muscle memory and maintains balance( if it is struck the person cannot be in equilibrium at all)

## **Brain stem:**

The base of the brain that connects the cerebrum to the spinal cord

Structure: consists of midbrain, pons and medulla oblongata

Functions: regulates essential automatic functions such as breathing, blood rate and sleep cycles

## **Spinal cord:**

A long essential column made up of several nerve tissues, extending from the brain stem all the way down to the hip bone

Function:

Central communication path way between the brain and the rest of the body

## **Nerves:**

Bundles of fibers that transmit electrical signals from the brain and throughout the whole body and back

Structure:

Cable like structure made of nerve fibers known as axons

## Protection:

As a very sensitive system it is only natural that each organ has a very complex line of protection for its organs

**Brain:** protected by the **skull**

**Spinal cords:** protected by the **vertebra** in the spine

**Brain stem:** protected by the **bone membranes** and **fluid**

## DISEASES:

The nervous system is a very sensitive thing and like every other system it is prone to various types of diseases

**Headache:** many people tend to get headaches for many different reasons some of which are:

### Causes:

**1: stress and emotional factors:** physical or mental stress or even depression can be the main cause of tension headaches

**2: sleep disturbance:** being deprived of sleep or getting woken up in the middle od your nap can act like triggers for common headaches

**3: physical dilemmas poor:** poor posture, eye strain or muscle tension cause the muscles in the neck to contract and tighten which causes headaches

### **Symptoms:**

#### **Muscle tension and strain:**

It strains the muscles and restricts blood flow to the affected areas ,the muscles release inflammatory mediators which activates pain sensitive nerve endings

#### **Nerve irritation:**

The irritation and compression of these nerves cause referred pain that radiates into the head, that pain is perceived as a headache often starting in the neck and spreads upwards

### **Alzheimer:**

Alzheimer's disease is a very critical condition where the victims of the disease tend to have memory loss or forget certain things such as people's names, important dates or other types of crucial information

### **Causes:**

**1: Age:** the factor with the highest risk rate of getting Alzheimer is age it is most common in individuals that are over the age of 65

**2: genetics:** a family history increases the risk and there are very specific genes that are major. Rare, deterministic gene mutations cause early Alzheimer

**3: lifestyle and environment:** physical inactivity , a unhealthy diet, smoking or excessive alcohol use also play a role in causing the disease

### **Symptoms:**

- . Forgetting recent conversations, events or objects
- . Misplacing items in unusual places
- . Difficulty with planning or organizing something

### **Brain Damage:**

Brain damage is a very critical and traumatic injuries involving the human brains it is rare but mostly found in people who had

**Falls:** it is the most common cause of having brain damage especially in older adults

There are also other reasons behind brain damage such as medical or internal factors

**Stroke:** occurs when blood flow to the brain is interrupted by a clot in the blood or by bleeding