



Understanding the Brain

The brain controls and coordinates everything we do - our movements, feelings, thoughts, and bodily functions.

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About the brain

The brain is made up of billions of nerve cells that communicate through electrical and chemical activity. Weighing around 1.5 kg the brain is cushioned within the skull by cerebrospinal fluid which circulates around the brain through a series of cavities called ventricles.

The brain makes up only two percent of the body's weight but uses 20% of the oxygen supply and blood flow. Brain cells are quite fragile and need protection from trauma, pressure, infection, poisoning or lack of oxygen. They begin to die if they do not receive oxygen after three to five minutes.

The brain is divided into many parts, which have specific functions and are designed to work together.

Hemispheres of the brain

The largest part of the brain is divided into left and right halves called cerebral hemispheres. Each hemisphere tends to specialize in certain functions but the two hemispheres work seamlessly together, sharing information:

The right hemisphere

The right hemisphere tends to be more visual, thinking in pictures. It sees, recognizes and organizes information for the left side to analyse and process further. Generally speaking, the right hemisphere controls muscles on the left side of the body.

The left hemisphere

The left hemisphere is mostly responsible for speech, language, calculations, maths and logical abilities. It generally controls muscles on the right side of the body.

Despite left and right hemisphere dominance, communication and collaboration between the two hemispheres is important for many brain functions. For example, while the left hemisphere processes information relating to the meaning of language, the right hemisphere adds important information about the emotional aspects of speech.

Lobes of the brain

Each hemisphere of the brain is divided into four lobes.

Frontal lobes

The frontal lobes are involved in problem-solving, planning, making judgments, abstract thinking. They also regulate how we act upon our emotions and impulses. Changes in a person's personality and social skills can occur from damage to this area.

Temporal lobes

The temporal lobes play a role in language, particularly in the ability to hear and understand it. They are also concerned with memory, the emotions, the ability to enjoy music and to recognize and identify things we see, such as faces or objects.

Parietal lobes

The parietal lobes are concerned with the perception of sensations, such as touch, pressure, temperature and pain. They deal with spatial awareness, such as our ability to find our way around a house, to drive a car and to reach for objects. They are also involved with the understanding of words and sentences, reading and writing and sometimes the ability to use numbers.

Occipital lobes

The occipital lobes are primarily concerned with vision but also with our ability to recognize what we see. Our ability to see objects accurately, identify colours and locate objects in the environment comes from the occipital lobes.

Other parts of the brain

The cerebellum

The cerebellum is involved in "doing" rather than "thinking" activities. It is located at the back and below the main hemispheres of the brain. It controls balance and the muscle coordination needed for large body movements. It lets a person know how fast, how hard, how far and in what direction his or her body parts are moving.

The brain stem

The brain stem connects the brain to the spinal cord and regulates basic activities. These include breathing, blood pressure, blood circulation, swallowing, appetite, body temperature and digestion, as well as the need for water, staying awake and sleeping.

The effects of brain injury

Each part of the brain deals with different aspects of what we think, feel and do so injury to specific areas can cause many different problems to arise. The good news is that the brain does have a some ability to heal itself. There are many rehabilitation strategies to compensate for the effects of brain injury.

References and Further Information

For a dynamic view of the brain take a look at InformED's Brain Map

<http://www.opencolleges.edu.au/informed/learning-strategies/>

Cherry, K. (2018) Left Brain vs Right Brain

Dominance: The surprising Truth <https://www.verywellmind.com/left-brain-vs-right-brain-2795005>