

Figure 7.1.7 uses images of the brain created using both MRI and PET (positron emission topography). Together these scans reveal the parts of the brain that are active during various activities. They show that the left-hand side of the brain is active during activities that involve language. They also show that different parts are active when listening, speaking, reading or just thinking about words.

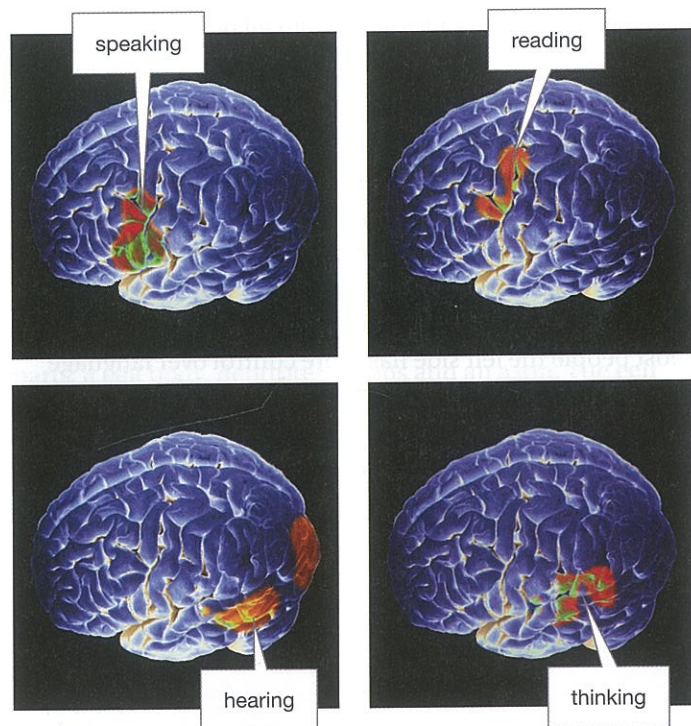


Figure 7.1.7 The red and green areas in these images show the areas of your brain that are active during various activities.

At the base of the cerebrum, where you can feel your skull curve inwards, is the **cerebellum**. Its position is shown in Figure 7.1.8. The cerebellum is responsible for coordination and balance. Without it, walking would be impossible.

The lower part of the **brain stem** or **medulla** can be seen where the spinal cord widens just after it passes into the skull. It controls the body's vital functions, such as breathing, blood pressure and heart rate. Damage to this area can be fatal.

Peripheral nervous system

The PNS has two separate parts: the somatic nervous system and the autonomic nervous system.

Somatic nervous system

All animals including humans need information about their surroundings. The **somatic nervous system** collects this information through sensory organs such as the eyes

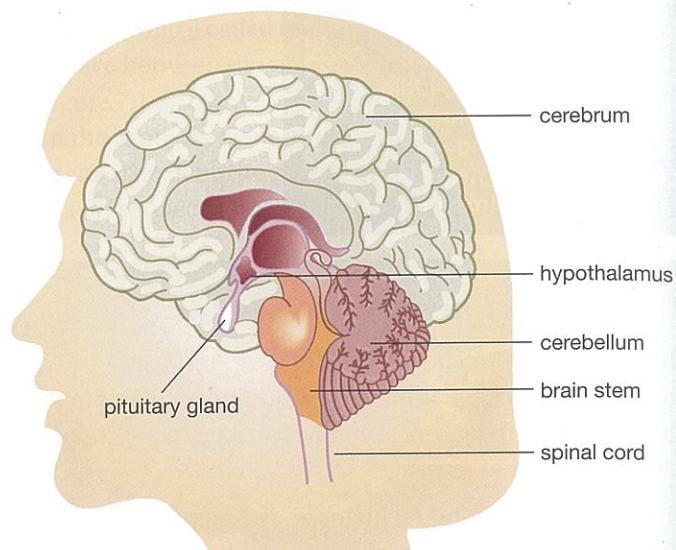


Figure 7.1.8 Vertical section through the brain

and ears. The somatic nervous system also coordinates movement of the body.

The somatic nervous system's sensory organs are **receptors**—special organs or tissues that have nerve endings that detect changes in the environment. The changes stimulate the nerve endings to send messages to your brain. Something that you can detect using your sense organs is a **stimulus**. Stimuli in your environment include temperature, light, touch, smell and sound.

In your body there are different types of receptors. Mechanoreceptors are sensitive to stimuli such as touch. They also make you aware of muscles being stretched, for example when your bladder becomes full. Photoreceptors in the eye are sensitive to light. Thermoreceptors respond to changes in temperature. Chemoreceptors are sensitive to chemicals, such as those found in food. Chemoreceptors tell you if food is sweet or bitter.

The sensitive skin

The skin responds to many different sensations, such as touch, pain and temperature. One of the ways that your body protects itself from the outside world is by being very sensitive to touch. Receptors in your skin alert you to a hot surface or a biting mosquito. You can see these receptors in Figure 7.1.9.

The sense of hearing

Sometimes receptors are grouped together to form a sense organ. An example is the receptors in the ear. The ear not only senses sound, but also helps you to keep your balance.

