

# The role of energy in the body

[Business, Industries](#)



M1- Discuss the role of energy in the body, describe the process of cell respiration and give three examples of how energy is used in the human body. Every living cell needs energy. The form of energy that we use is chemical energy in the form of glucose that we get in our food, mainly from carbohydrates such as bread, pasta and potatoes. Living cells cannot function without energy, which can then lead to death. To release the energy from glucose, oxygen is added (oxidise glucose) by breathing continuously to supply to the millions of cells that undertake cell respiration, this is also known as internal respiration.

The rate that glucose is used at depends on the individuals' metabolism (B. M. R). The basal metabolic rate depends on the amount of thyroid hormone that is produced. A person that has a fast metabolism then it is less likely that they will put on weight whereas if a person has a slow metabolism then they may tend to put weight on. A factor that can influence metabolism rate is age. This is because as you get older your metabolism will be likely to slow down. Cell respiration: The word equation for cell respiration is:

Glucose + Oxygen = Energy + Carbon Dioxide + Water  
Chemical equation:  
 $C_6H_{12}O_6 + 6O_2 = Energy + 6CO_2 + 6H_2O$   
Waste products of carbon dioxide and water can be excreted through the lungs and kidneys as expired air and urine; otherwise the chemical atoms (carbon, hydrogen and oxygen) can be recycled to reform glucose ( $C_6H_{12}O_6$ ). Cell respiration happens in the mitochondria in cells and tissues, e. g. the skeletal muscle, which has millions of mitochondria for increased energy demand. Three examples of how energy is utilised by the body:

Muscles use a lot of energy in order for movement to happen. When the muscle tissues contract they will need a good supply of glucose and oxygen. ? Movement: The contraction of skeletal muscles attached to the bones and joints uses energy ? Breathing: Intercostal muscles and the diaphragm relax and contract which increases and decreases the internal volume of the lungs for breathing. This involves energy ? Peristalsis: The slow movement of food through your digestive system allows digestion to occur (smooth muscle) uses energy