

Oxygen

Oxygen includes 21% of the atmosphere at all altitudes. The remaining atmosphere consists of 78% nitrogen and 1% traces of other gases. Oxygen under normal conditions is an odorless, colorless, tasteless, non-combustible gas. It is the single most important element of our planet.

At each breath we fill our lungs with air. Millions of tiny sacs (known as 'alveoli') in our lungs inflate like tiny balloons. In the minutely thin walls enclosing each sac are microscopic capillaries through which blood is constantly transported, from the lungs to every cell in the body. The blood carries the oxygen extracted from the air in the lungs to every part of the body. Because the body has no way to store oxygen, it leads to breath-to-breath existence.

The human body must have oxygen to convert fuel (the carbohydrates, fats, and proteins in our diet) into heat, energy, and life. The conversion of body fuels into life is similar to the process of combustion; fuel and oxygen is consumed, while heat and energy is generated. This process is known as 'metabolism'.

The rate of metabolism, which determines the need for and consumption of oxygen, depends on the degree of physical activity or mental stress on the individual. Not all people require the same amount of oxygen. A man walking at a brisk pace will consume about four times as much oxygen as he will while sitting quietly. Under severe exertion or stress, he could possibly be consuming eight times as much oxygen as resting.

Why do our bodies actually need oxygen?

In the cells of our body are lots of organelles (cell organs). One of these is called "mitochondria." They are in every cell and are known as the powerhouses of the cell. Mitochondria take different elements and nutrients from the cell (the cell gets them from your blood and your blood gets them from your food, which is why we eat) and sends them through a mitochondrial factory. This "assembly line" is called the **Krebbs Cycle**. At the end of this assembly line, you can find the most basic source of (animal) energy. It's called **ATP** (this is a short name for Adeninetriphosphate).

So here we are, with a bunch of ATP. Now what? Well, you need to burn it and get all the energy out of it! In order to do that, guess what we need (this is where you scream "**OXYGEN!!**") Yep, just like burning a piece of wood, any type of burning takes oxygen. So we breathe. We make a lot of ATP (I don't know exactly how much, but to give you an idea, it's like millions per second. A lot), so we need to get a lot of oxygen in there to get the energy from our little ATP's.