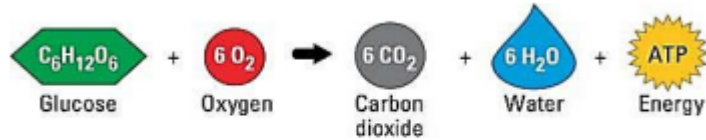


## AEROBIC RESPIRATION



- Occurs inside the mitochondria.
- A chemical reaction that transfers energy from organic molecules in food to your cells. The waste products are carbon dioxide and water.
- NOTE: Respiration is NOT breathing.

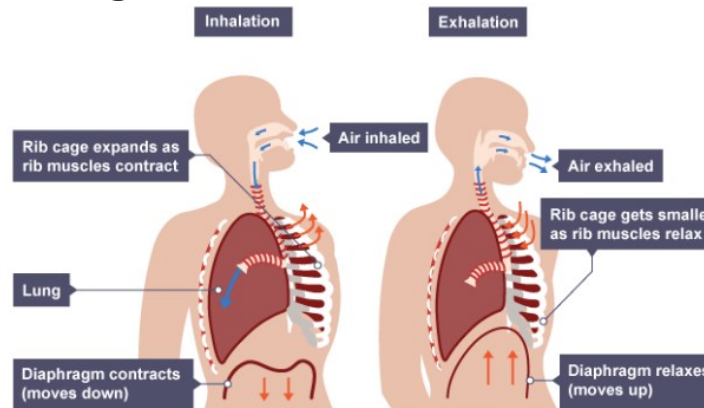
## ANAEROBIC RESPIRATION



- Anaerobic respiration takes place when there is not enough oxygen for aerobic respiration.
- It happens during strenuous exercise like sprinting.
- The lactic acid produced causes painful cramps in the muscles.
- Breathing heavily after exercise, allows extra oxygen to break down the lactic acid (oxygen debt).
- Energy from anaerobic respiration is LESS than the energy from aerobic respiration.

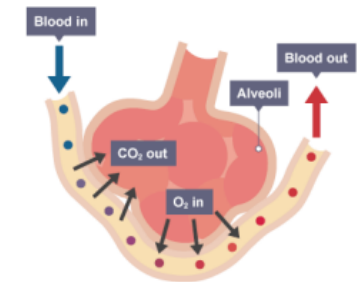


## Bioenergetic

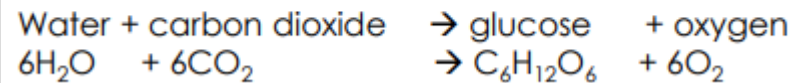


Muscles need energy to contract. While exercising, the muscles need additional energy as the breathing rate and volume of each breath increases to bring more oxygen into the body and remove the carbon dioxide produced. The heart rate increases, to supply the muscles with extra oxygen and remove the carbon dioxide produced.

Gas exchange occurs at the alveoli in the lungs and takes place by diffusion. The alveoli are surrounded by capillaries so oxygen and carbon dioxide diffuse between the air in the alveoli and the blood in the capillaries. Diffusion is the movement of gas from an area of high concentration to an area of low concentration.



### Equation for photosynthesis:



	Aerobic	Anaerobic
Needs oxygen?	Yes	No
Needs glucose?	Yes	Yes
Product(s) formed	Carbon dioxide and water	Lactic acid

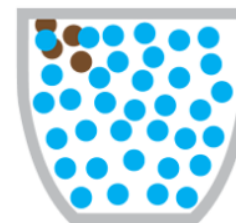
### Immediate effects when first exercising

- Muscles contract more often.
- Blood flow to muscles increases.
- Muscle temperature rises.
- Little effect on bones and joints.

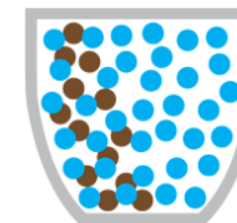
### Key words:

**Chloroplast** – part of the cell where photosynthesis occurs  
**Chlorophyll** – green pigment which absorbs light for photosynthesis

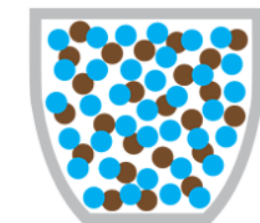
### Diffusion



1. Highly concentrated coffee molecules enter the cup of hot water.



2. Coffee molecules begin to spread out in between the water molecules.



3. Coffee molecules are now in a lower concentration than they started in.