



Sports & Physical Education

Respiratory system







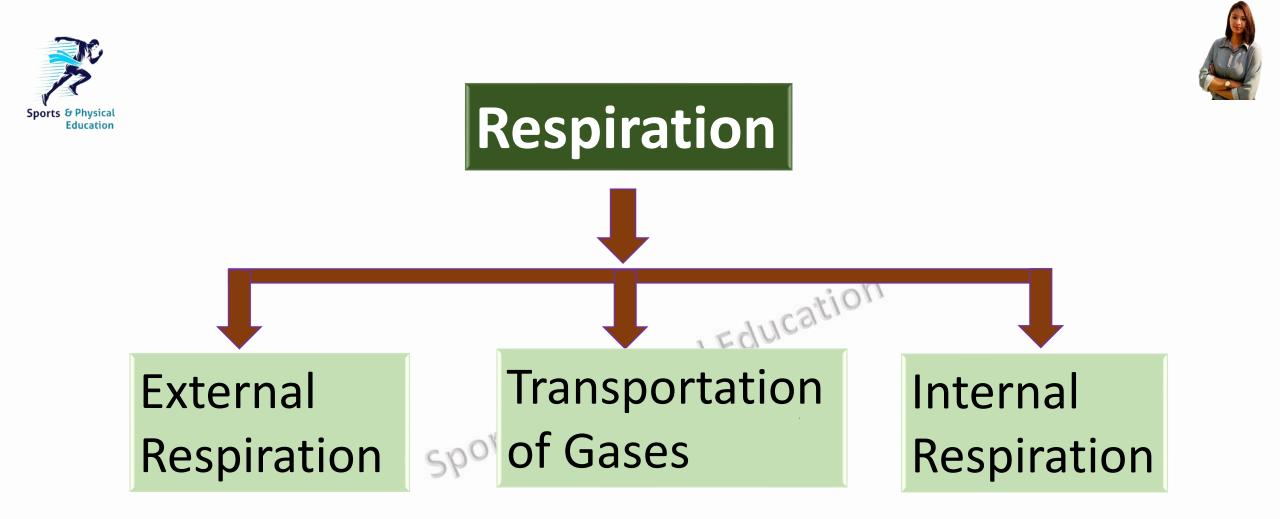
Involuntary Process-Control by brain(Medulla Oblongata)

- Respiration is the sequence of events that results in the exchange of oxygen and carbon dioxide between the atmosphere and the body cells.
- The process by which food is oxidized to produce energy is called respiration.
 Catabolic Process

C $_{6}$ H $_{12}$ O $_{6}$ + 6O $_{2}$ → 6CO $_{2}$ + 6H $_{2}$ O + ATP. Glucose + Oxygen → Carbon Dioxide + Water+ Energy)



Carbohydrate \longrightarrow **Glucose**

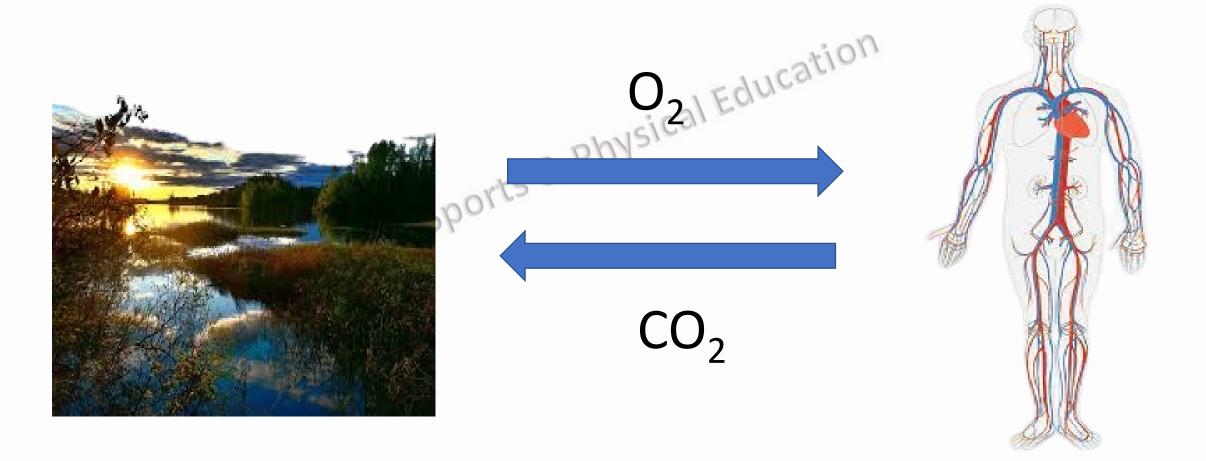




External Respiration



External respiration is the process of exchanging gases such as oxygen, carbon dioxide with the external environment





Inspiration-

CO₂ -0.03 %

Expiration-

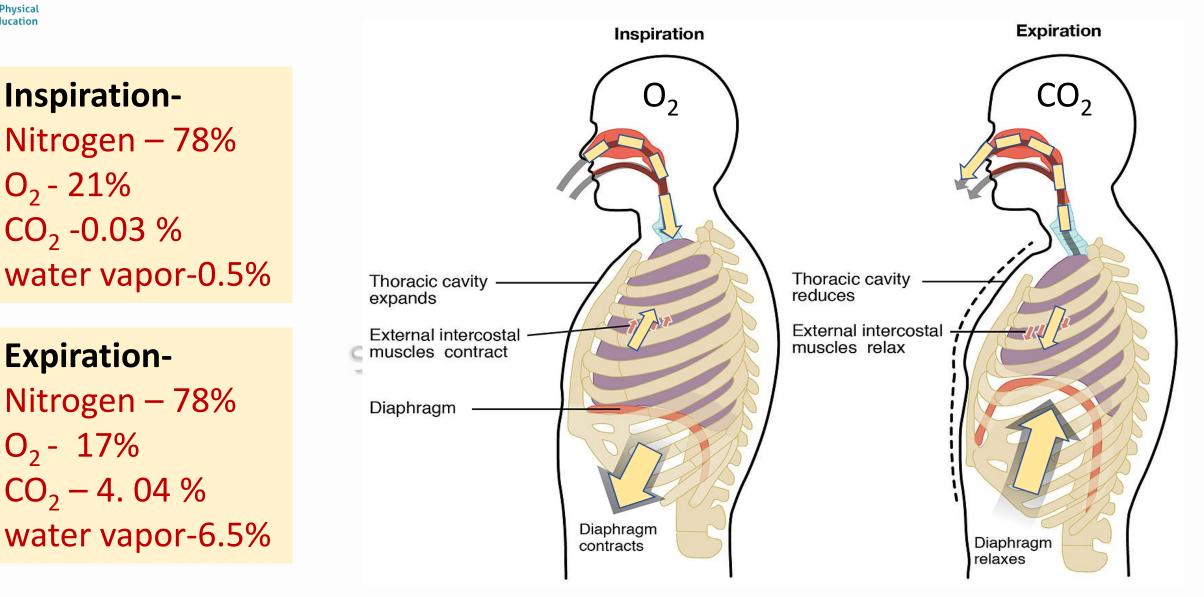
O₂ - 17%

CO₂ – 4. 04 %

O₂ - 21%

External Respiration







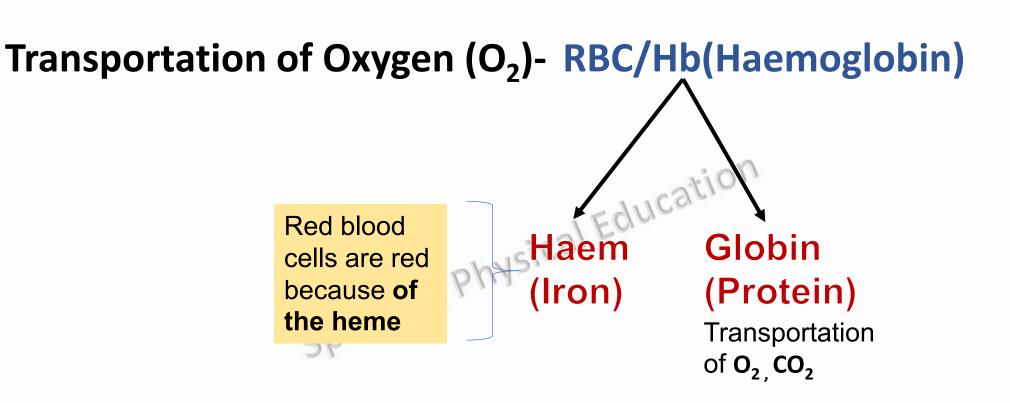
Transportation of Gases



Lunges Blood **Blood circulation** PhQoical Educ Cell O_2













Transportation of Carbon dioxide (CO₂)-

- Na, K- Bicarbonate (70%)
- **RBC/Hb)- (20-25%) Plasma- H₂O +CO**₂ $\xrightarrow{\text{Max}}$ H₂CO₃ (7%)

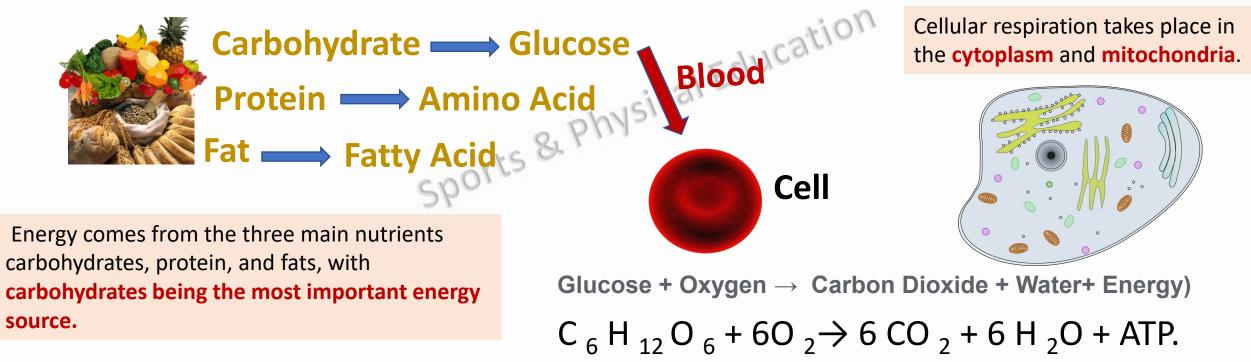


Internal Respiration



Internal respiration is also known as **cellular respiration** as it occurs inside the living cells.

Internal respiration is the process by which oxygen breaks down food into carbon dioxide and water in order to liberate energy in the form of ATP.





Cellular Respiration

Cytoplasm



Common between Aerobic and anaerobic

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Cytoplasm

Discovered by three scientist – Embden, Meyerhof, Parnas

Glucose → 2 Pyruvic Acid + 2 ATP Energy Currency

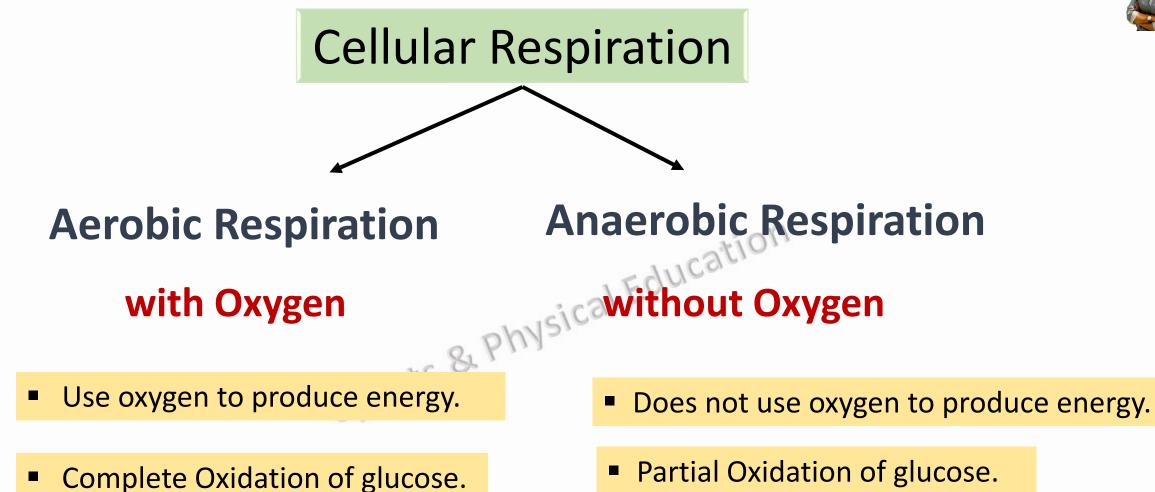
LEducation

Adenosine Triphosphate

(Energy-carrying molecule found in the cells of all living things.)



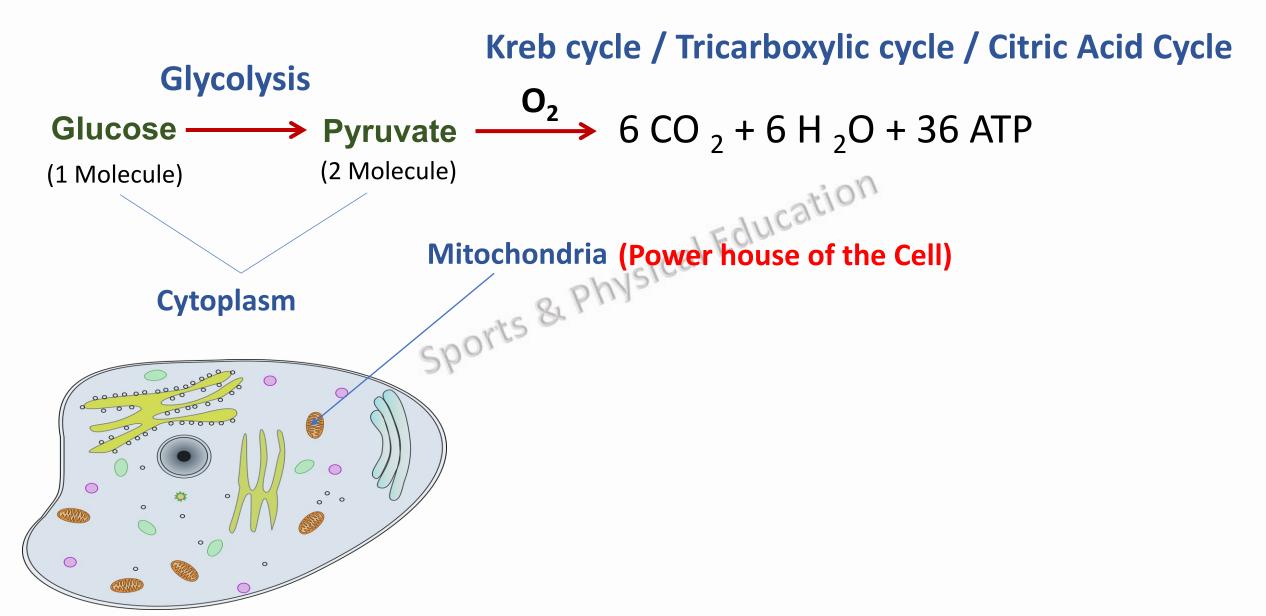






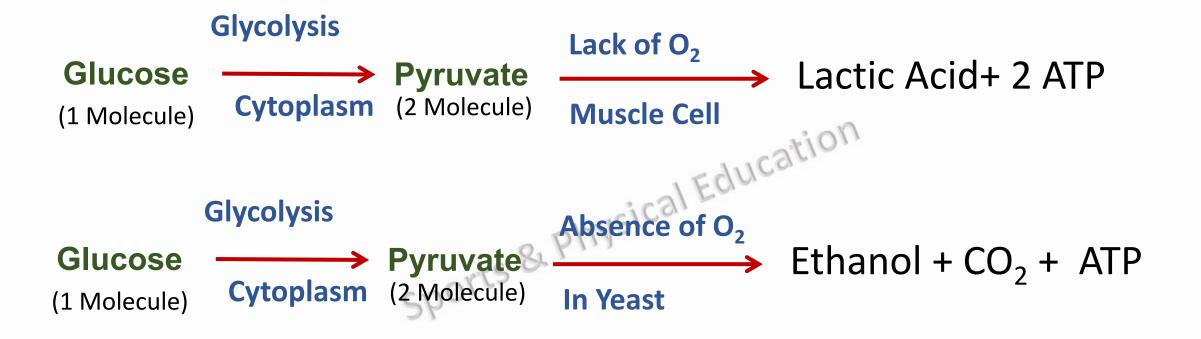








> Anaerobic Respiration







Oxygen debt is measured as the difference between the amount of oxygen required after a strong muscular activity or extensive exercising and the amount required of oxygen required in a resting state. Muscle recovery and repair is important to prevent cramping and infarction of * Second Wind –
when an athlete who is out of breath and too tired to continue

- suddenly finds the strength to press on at top performance with less exertion.
- Second wind is a phenomenon in endurance sports, such as marathons or road running as well as other sports.





Thank You for Watching



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