

Tender Heart High School Chandigarh
Class-VI Subject - Biology
Chapter - 5 Respiratory System
Teacher : Mrs Nimrata

Date 28.10.24

Good Morning Children! This lesson is of Class-VI for the subject of Biology, Topic Respiratory System, Chapter no-5 of your textbook Concise Biology, Selina Publications. It is being submitted to you on - 28th October 2024. Today, we are going to discuss the phases of respiration, mechanism of breathing and some common respiratory diseases.

The process of respiration includes breathing, gaseous transport and cellular respiration.

➤ Breathing is a physical process:-

It involves taking in air rich in oxygen into the lungs called inhalation and giving out air rich in carbon di-oxide called exhalation. The ribs muscles and muscles of diaphragm work together to aid in breathing.

➤ Gaseous transport:- Oxygen of the inhaled air is absorbed by

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the blood in the lungs where it combines with haemoglobin present in the red blood cells.

The oxygen is carried from lungs to the body cells where the oxygen is utilised and carbon di-oxide is released.

The released CO_2 is transported back to the lungs for its removal.

→ Cellular respiration: It is the process of oxidation of glucose in the cell with the release of energy in the form of ATP (Adenosine triphosphate), along with CO_2 and H_2O .

Now, let us discuss the mechanism of breathing in detail.

During Inhalation:-

→ The ribs are raised upwards and outwards by the contraction of rib muscles and the diaphragm is pulled down.

→ The volume of thoracic cavity

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and lungs increases and the air pressure inside the lungs decreases.

→ Fresh air from the atmosphere having higher pressure rushes into lungs through nostrils and air passages and the lungs get filled with fresh air.

During Exhalation:-

→ The ribs move downwards and inwards and the diaphragm moves upwards.

→ The volume of thoracic cavity and lungs decreases and the air pressure inside the lungs increases.

→ Air from the lungs is pushed out through air passages and nostrils.

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We inhale and exhale air. But, the composition of air inhaled and exhaled is different. The air inhaled has more oxygen and less carbon-di-oxide, while the air exhaled has less oxygen and more CO_2 .

Inhaled AirExhaled Air

Oxygen - 21%	16.4%
Carbon-di-oxide - 0.03%	4.1%

Inhalation and exhalation occur continuously and alternately. The number of times a person breathes in a minute is called as breathing rate.

Normally, we breathe 16-18 times per minute.

Breathing rate increases upto 25 times per minute during fast running and heavy exercise.

Now, children let us discuss some common respiratory diseases.

1) Asthma - It is a chronic disease, in

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which airways get inflamed and produce extra mucus. Inflammation makes the airways swollen and narrow. This triggers coughing, wheezing and shortness of breath. Asthma is triggered by cold air, air pollutants and irritants like pollen, dust. Asthma cannot be cured. It can be prevented by avoiding the cause which induce asthma.

2.) Bronchitis - Bronchitis is inflammation or swelling of bronchial tubes that carry air to and from the lungs. It includes coughing, shortness of breath and chest discomfort. Bronchitis is caused by viral infection, dust, air pollution or some bacteria. It is also caused by smoking.

3.) Pneumonia - Pneumonia is a bacterial disease which causes an inflammation of lungs and affects alveoli. Its symptoms are cough with sputum, fast breathing, fever and chest pain during breathing and feeling of tiredness and weakness.

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Normally, antibiotics, cough suppressant and fever reducing medicines are given to cure pneumonia.

- 4) Tuberculosis → Tuberculosis is an infectious bacterial disease that affects lungs. The symptoms are coughing with mucus, fatigue, low grade fever, loss of appetite, and loss of weight. Tuberculosis can be completely cured by antibiotic treatment, rest and healthy diet. Spread of tuberculosis in the society can be prevented by giving B.C.G injections to children and vaccinating them against tuberculosis.

With this topic, we have completed our chapter. Before ending up today's interactive session, let us recapitulate the topic by answering the following questions.

- 1) The gas exhaled during respiration.
- 2) The number of breaths per minute.
- 3) Volume of lungs increases during this process.
- 4) The medium which transports

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oxygen to body cells.
5) Energy is released during this phase of respiration.

Answers are:-

- 1) CO_2
- 2) 16-18 per minute
- 3) Inhalation.
- 4) Blood.
- 5) Cellular respiration.

Thank you Children!

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