

Programme: BSc Health and Social Care

Module: Introduction to Physiology

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Assignment section: Task 1 Part 1

Academic Poster: Respiratory System in Health and Social Care

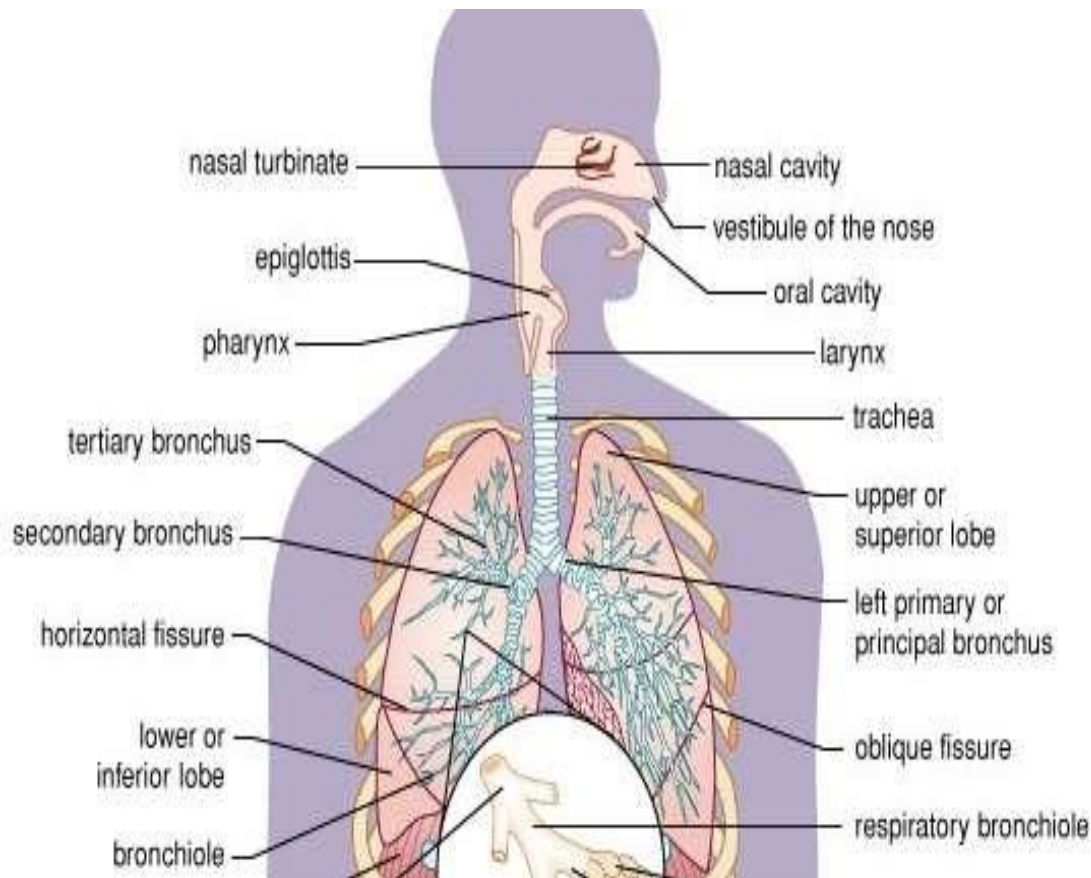
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Respiratory System- In Health and Social Care

Within health and social care, the respiratory system's network of organs and tissues allows one to breathe fresh air. This system helps the body absorb oxygen from the air, allowing the organs to function correctly. Waste gases like carbon dioxide are removed from the blood as well. Allergies, illnesses, and infections are common occurrences.

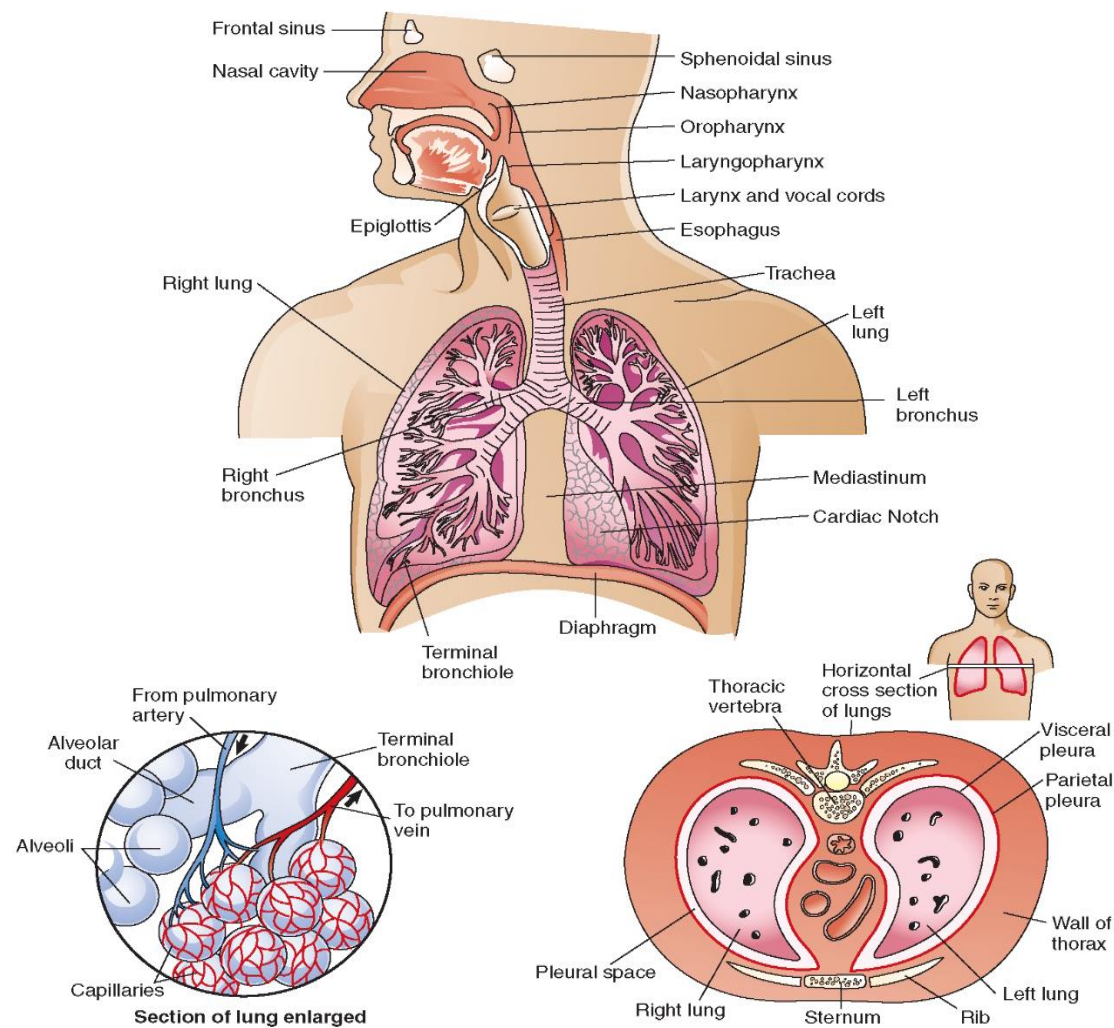
Anatomy and Physiology



Respiratory System: Functions, Facts, Organs & Anatomy (2021)

According to Patwa and Shah (2015) states the respiratory system can be divided into two functional zones, nose to bronchioles establish a conduit for inhaled gas conduction and respiratory zone alveolar duct to alveoli where gas exchange takes place; functionally, the two zones can be separated; Respiratory system organs are separated based on where they are located anatomically: higher organs are located outside the thorax such as the nose, pharynx, and larynx, while lower organs are located inside the thorax. Breathing in and breathing out is both considered forms of ventilation. In anaesthesia and critical care, respiratory physiology relies largely on lung volume, lung compliance, ventilation-perfusion, and bronchomotor tone.

Anatomical Structure & Function- In Health and Social Care



The Respiratory System Structure and Function, Nursing Part 1, (2021)

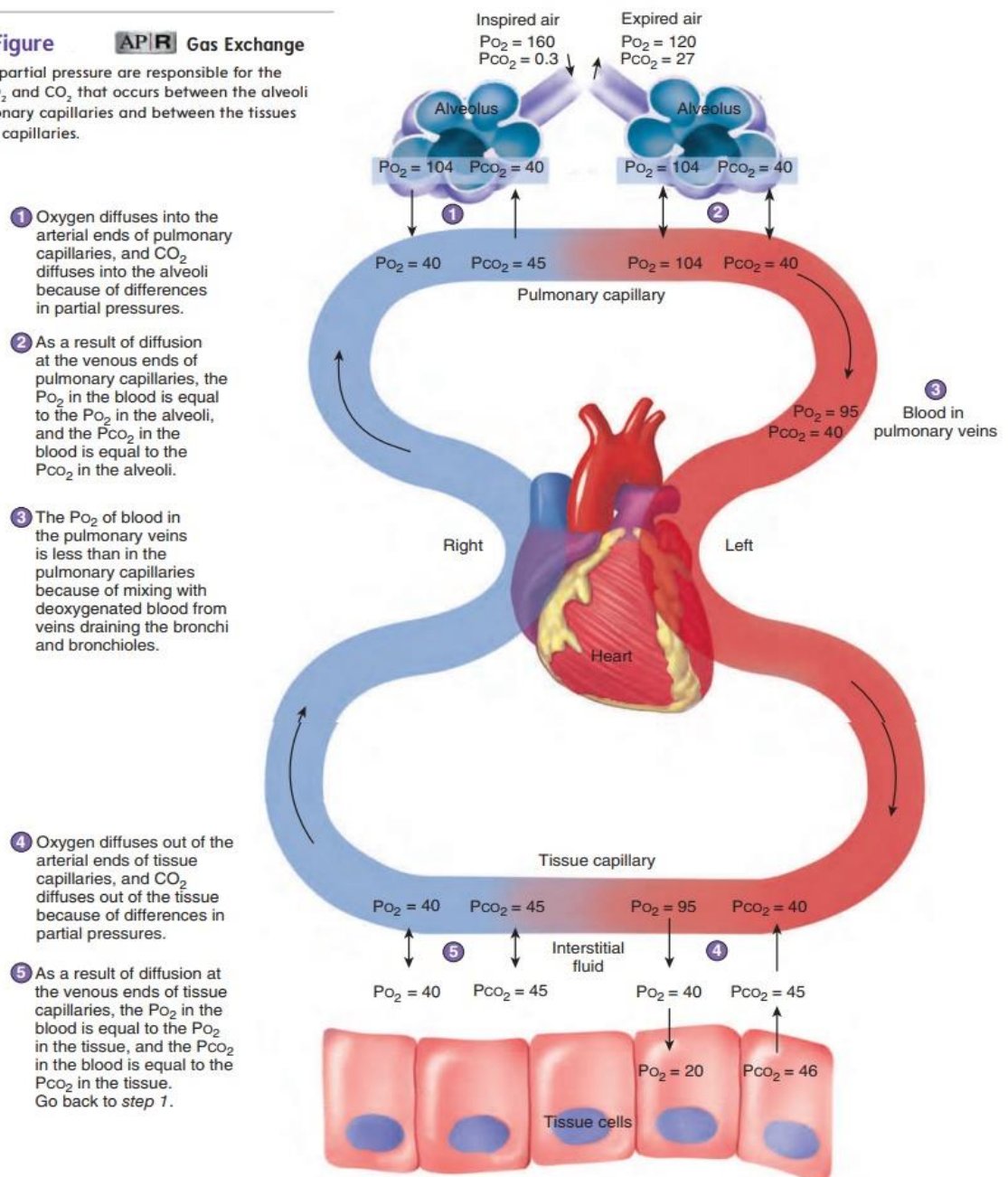
Bisgaard, O'Callaghan, and Smaldone, (2002), pg. 48. In the respiratory structure system, several structures circulate air into and out of the lungs. Blood vessels supply the lungs for both nutrition and gas exchange. The upper airways stretch from the external nares to the larynx, whereas the lower airways extend from the larynx to the respiratory bronchioli and alveoli. The lower airways branch efficiently to all lungs and provide the most surface area for gas exchange.

Functional residual capacity (FRC). In functional anatomy, the thoracic cage comprises the ribs and sternum and the diaphragm and intercostal muscles linked to the visceral and parietal pleura. The pleural fluid seals the two pleural membranes together, allowing the lungs, which contains no skeletal muscle, to expand and relax with chest wall movements. The volume remaining in the lung after expirational is determined by the inward and outward lung recoil balance.

Gaseous Exchange- In Health and Social Care

PROCESS Figure **APR** Gas Exchange

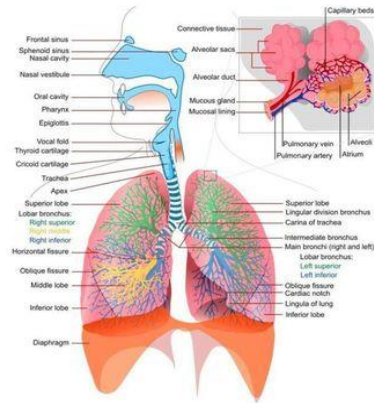
Differences in partial pressure are responsible for the exchange of O_2 and CO_2 that occurs between the alveoli and the pulmonary capillaries and between the tissues and the tissue capillaries.



Cinnamon VanPutte and System, (2021)

The alveoli receive atmospheric air through ventilation. The next step in the breathing process is the diffusion of gases between alveoli and blood in the pulmonary capillaries. The respiratory membrane in the lungs, as previously mentioned, serves as a gas exchange chamber for air and blood. A significant portion of gas exchange occurs in both the alveoli and the breathing bronchial tubes and ducts. Other respiratory routes, such as the bronchioles, bronchi, and trachea, do not exchange gas between blood and air. The volume of these channels is referred to as anatomical dead space. Cinnamon VanPutte and System, (2021)

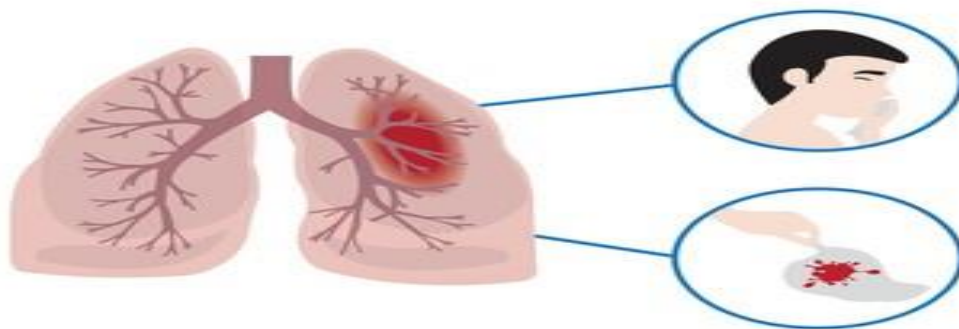
How the respiratory system maintains homeostasis in the body



The respiratory system helps maintain homeostasis by regulating the intake of air into the body and by removing carbon dioxide from the blood. This then aids the circulatory system's function and many other operations in the body. Without these internal systems being properly balanced it can lead to a number of issues in the human body, including death, depending on the severity of the imbalance.

Ethan, (2021)

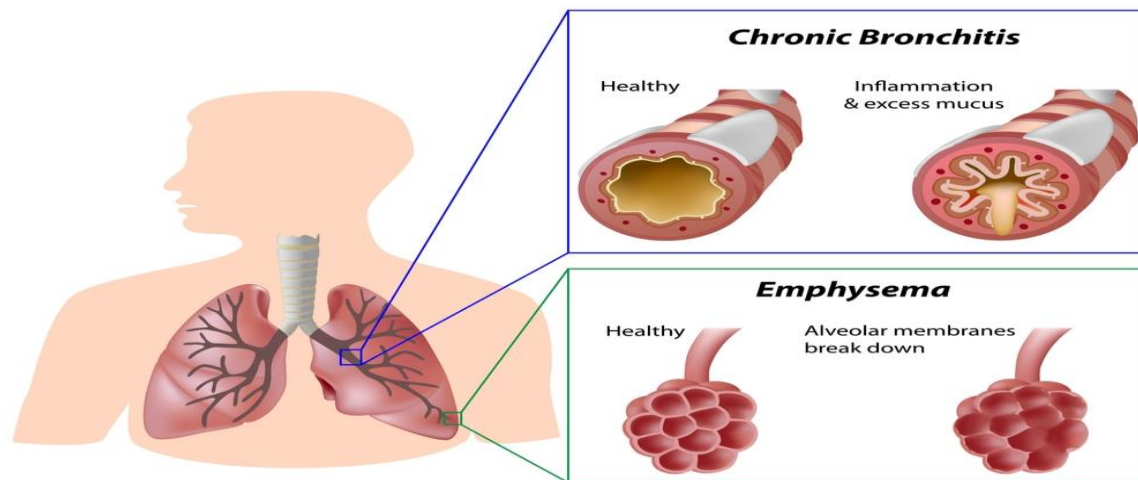
According to West (2021), the respiratory system, which comprises the nose, mouth, lungs, and other breathing organs, is vital to many aspects of homeostasis. The lungs take up oxygen and digest it. The carbon dioxide is then expelled from the body. The respiratory system is vital in homeostatic gas exchange. Furthermore, the respiratory system directly affects blood hydrogenation levels. Exhalation is how the body gets rid of excess heat to maintain equilibrium. The heat from the body warms the air that is exhaled. However, this, together with perspiration evaporation, keeps the body cool. Without sweat glands, cats and dogs cool themselves by panting or rapid in and out-breathing. The lungs produce Immunoglobulin (IGA) antibodies and cytokines such as interleukin and interleukin. White blood cells, such as lymphocytes line the lungs, ready to recognise and kill bacteria that enter the body via the lungs. Lung immune cells include alveolar macrophages.



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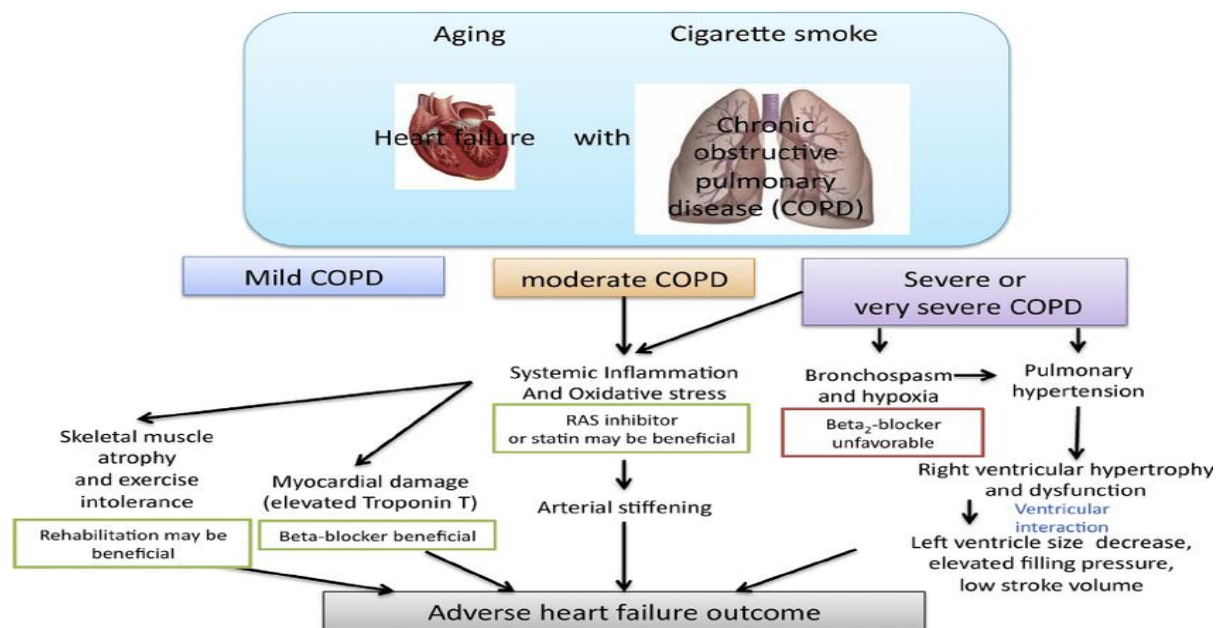
Hemoptysis Images, Stock Photos & Vectors | Shutterstock, (2021)

Chronic Obstructive Pulmonary Disease (COPD)



Oliver and Mine, (2014)

According to Gestel and Steier (2010), Chronic obstructive pulmonary disease is caused by frequent intake of toxic chemicals or particles, causing irreversible airways obstruction. (COPD) is becoming increasingly complex, according to a study. Chronic obstructive pulmonary disease, as previously indicated, has a negative impact on the cardiovascular system. Emphysema, caused by injury to the lungs' air sacs, can raise the blood pressure between the heart and the lungs. Group three causes excessive blood pressure in the arteries between the heart and lungs. Due to the lungs' inability to take in enough air, COPD affects the autonomic nervous system, causing low blood oxygen levels, neural brain damage, and memory difficulties. Lung inflammation causes difficulty breathing.



Ishizu, (2021)

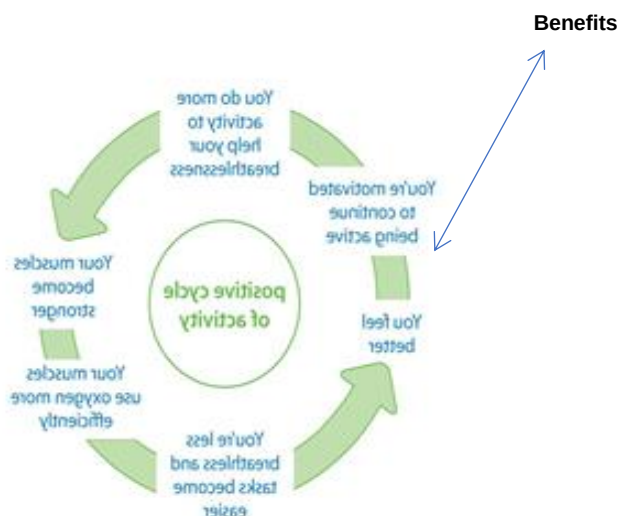
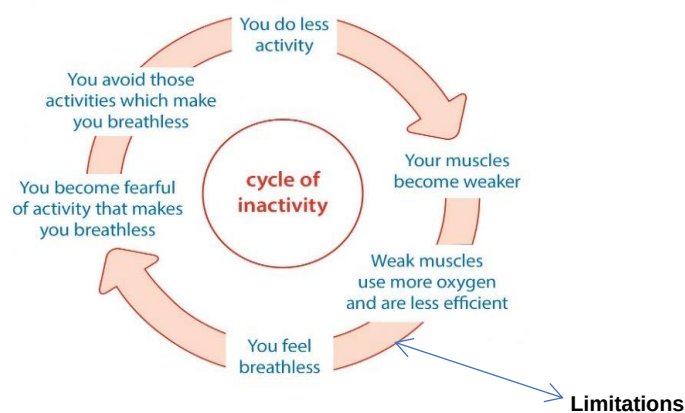
The limitation and benefits of the respiratory system in Health and Social Care

As stated by Hewlete and Hewlete (2021), the respiratory system obtains oxygen, excretes carbon dioxide (CO₂), and stimulates speech. The respiratory system is divided into zones. These include the nasal, throat, trachea, and bronchioles. It heats and

Limitation: During activity, muscle cells use up more oxygen and create more CO₂. The lungs and heart must work harder to supply CO₂. They breathe faster and deeper, consuming more oxygen and increasing CO₂ levels. More blood reaches the lungs for gas exchange, more oxygenated blood reaches the muscles, and more CO₂ is eliminated.

Benefits

1. Exercise keeps the lungs healthy.
2. Exercising the lungs
3. Exercise increases lung blood flow and oxygen.

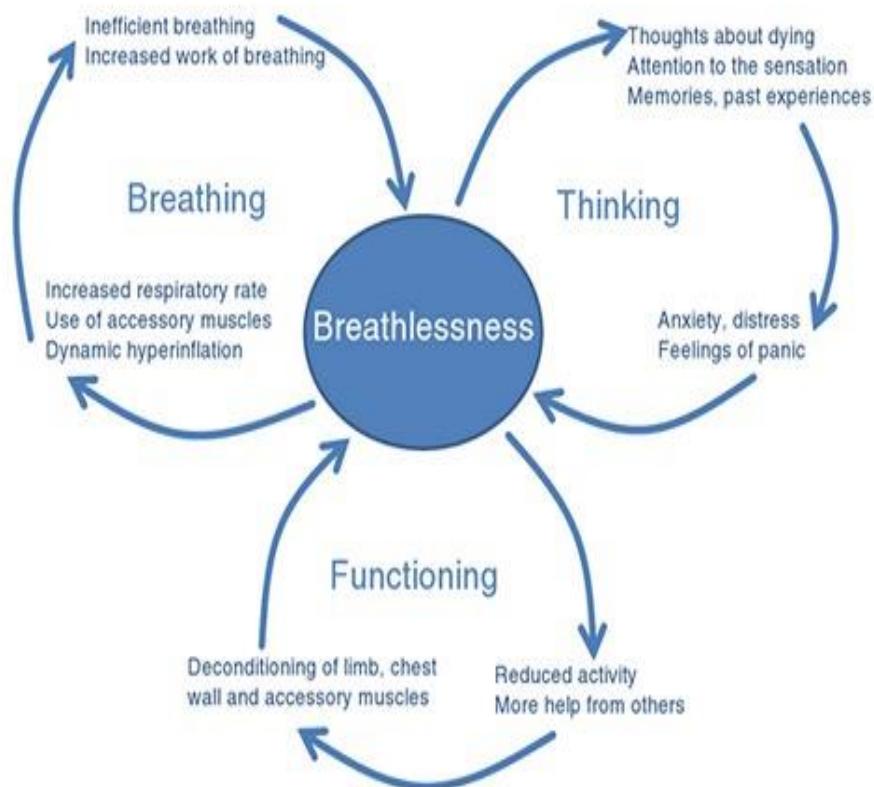


Intervention in Health and Social Care

According to Gosselink (2004), breathing techniques help patients with chronic obstructive pulmonary disease (COPD).

- 1) strengthening and enlarging their respiratory muscles.
- 2) Optimising thoracoabdominal motion
- 3) increasing gas exchange and minimising rib cage hyperinflation.

And not for diaphragmatic breathing, but pursed lips, forward-tilting, rapid exhalation, and inspiratory muscle exercise. Despite the evidence that breathing techniques work, significant issues remain. The minimal evidence for the transfer of resting breathing strategies to exercise raises various problems.



Bolzani et al (2017)

Healthy Living in Health and Social Care

A healthy way of life improves physical, mental, and social well-being. It is vital, as the COVID-19 has demonstrated that healthy persons have a better probability of recovery. Being healthy is a great way to treat your body well. Balanced nutrition and regular exercise are required. Getting enough sleep, avoiding alcohol, and living a healthy lifestyle decreases the risk of severe illness or death. All diseases are not the same. However, many deaths, especially from coronary heart disease, are preventable, avoidable Lung Cancer.

What is a healthy lifestyle | British Red Cross (2021)



NewMe Healthy Lifestyle | LBBD (2021)

Conclusion

An essential organ in the respiratory system is the lung that provides oxygen to the body. The respiratory system is also responsible for exhaling carbon dioxide, which shows the primary organs involved and illnesses and sicknesses that affect the respiratory system. However, explaining respiratory system functions serves specific purposes. On the academic poster, the respiratory systems and cardiovascular and autonomic nervous systems are discussed in detail.

Respiration and its importance in maintaining bodily homeostasis because of the requirement for oxygen delivery are discussed below. Recent research has focused on interventions to help those who are experiencing shortness of breath. Exercising has numerous health benefits and healthy living to maintain the body and prevent diseases to the body, which are discussed in detail in the academic poster.

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