

Respiratory System Work Book

Aim of the workbook

This workbook has been designed to direct you to key literature and electronic resources about the respiratory system, as a preparation for the lectures on the topic later in the course.

Study Method

This workbook is designed for use in conjunction with text books and internet sources on the subject.

It will take approximately 1.5 hours to complete this workbook. You may wish to complete it over two or more study sessions.

Sections of the text are marked with icons which represent the task required, as follows:



Read text (the books we recommended earlier: Anatomy and Physiology for

Dummies by Maggie Norris & Donna Rae Siegfried (2011) or the Anatomy Colouring Book by Wynn Kapit & Lawrence M. Elson (2013) and the Physiology Colouring Book by Wynn Kapit, Robert I. Macey & Esmail Meisami (1999) may be useful here).



Access the internet resource



Write/draw the information required

Introduction

Respiration is a physical and a chemical process through which oxygen is provided to the cells of the body, as required for metabolism and carbon dioxide is removed from the body. Oxygen is required for the process of metabolism.



https://www.youtube.com/watch?v=hc1YtXc_84A

AND/ OR: <https://www.visiblebody.com/learn/respiratory/5-functions-of-respiratory-system>



Read a textbook of your choice, about the respiratory system.



List two functions of the respiratory system

1.

2.



<https://www.youtube.com/watch?v=h-wATTsMBBA>



Write a definition of the following terms in your own words:

Breathing/Ventilation

Respiration

Inspiration

Expiration

Diffusion (in relation to the respiratory process)

External Respiration

Internal Respiration

Cellular Respiration

Dyspnoea

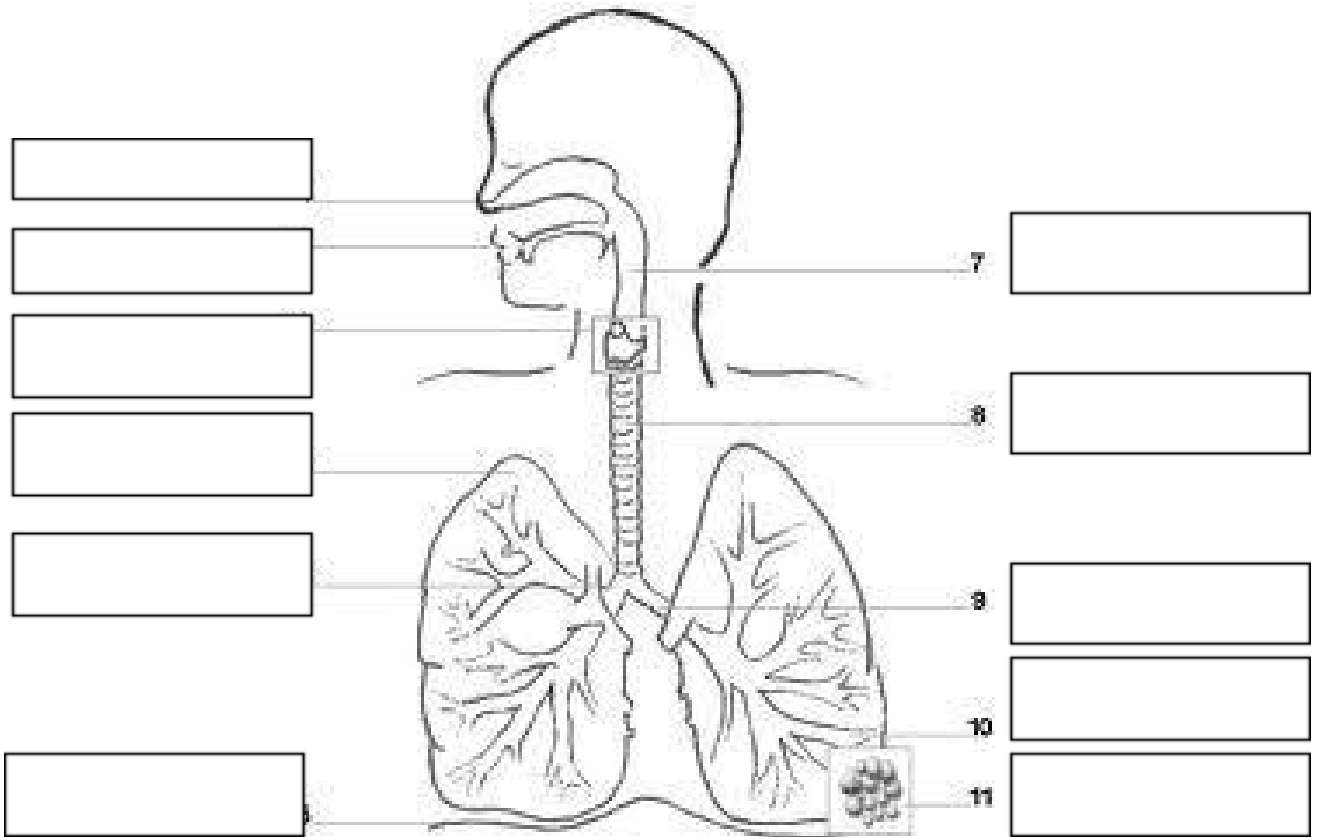
The Anatomy and Physiology of Respiration



<https://www.nhlbi.nih.gov/health-topics/how-lungs-work>



Label the numbered parts on the diagram below.



List the functions of each part identified:

1.

2.

3.

4.

5.

6.

7.

8.

9.

10.

11.



<https://www.teachpe.com/anatomy-physiology/the-respiratory-system-breathing/the-respiratory-system>



Fill in the blanks with the appropriate words in the following paragraphs.

The Nasal Cavity

The nasal cavity is divided into two parts, the and by a partition named the . The cavity is lined by . As air moves through the nasal cavity it is , and by the cilia and mucous membrane, the mucus and the blood vessels supplying the nasal cavity. The nerve endings that enable us to smell are located in the mucous membrane. These are called the nerves.

List the nasal sinuses:

1.
2.
3.
4.

The Pharynx

The pharynx is about 5 inches long. It has three parts – the the and the . Air moves from the nasal cavity and mouth through the pharynx. This is also the route that travels to the stomach. The is a flap of cartilage at the entrance to the larynx that prevents food and drink from entering the .



http://www.clemc.us/images/Airway_Anatomy.pdf

The Larynx

Also known as the . Found below the pharynx. The walls of the larynx consist of 9 fibrocartilaginous plates, the largest of which is called the .

The larynx contains the also known as the glottis, which are responsible for sound production.

The Trachea

Also known as the , is approximately 4.5 inches long and extends from the larynx, in front of the and divides to form two .

It is composed of C shaped rings of between bands of membranes which ensures the trachea remains open. The walls of the trachea are lined with and whose function it is to trap and sweep upwards (towards the



pharynx) any dust that may enter the trachea. Coughing can dislodge and eliminate dust particles.

The Bronchi and the Bronchioles

The trachea splits to form the and . The right is generally shorter, wider and more vertical than the . The walls of these structures are similar to the trachea, with C shaped rings of and lined with .

As the bronchi enter the lungs they split further to form the and . These splits are shaped.

Each bronchiole ends in an which then ends in an .

The Alveoli



Draw a picture of an alveolus surrounded by capillaries and label the diagram.

Through the wall of the alveoli and the surrounding capillaries, exchange of and occurs.

The Lungs

The cavity is filled with the lungs

The base of each lung sits on the and the apex lies underneath the clavicle. Each lung is surrounded by an airtight space called the . The lungs are separated from each other by the and the .

List three ways in which the right lung differs from the left:


1.
2.
3.





In your own words describe the pleura.

The Mechanism of Respiration


Breathing (ventilation) occurs because of the changes of pressure in the thoracic cavity. Explain how this works:

 List the muscles involved in inspiration:

 List the muscles involved in expiration:

 The normal rate of breathing for an adult is breaths a minute. This rate is changeable by gender, age, the body's position in space and emotional state.

Gaseous Exchange

 <http://www.le.ac.uk/pa/teach/va/anatomy/case2/frmst2.html>



http://www.bbc.co.uk/schools/gcsebitesize/pe/appliedanatomy/1_anatomy_respiratorysys_rev1.shtml

Control of Respiration

 Neural and chemical factors control the rate of breathing.

The primary respiratory centre in the brain is located in the . A decrease in or increase of in the blood will activate the respiratory centre.

An increase in carbon dioxide or decrease in oxygen in the blood will cause the respiratory rate to .

Impact of Respiratory Dysfunction on Normal Life

The following links give the experiences of people who live with respiratory conditions.



<https://www.youtube.com/watch?v=LideJIY9cAk>



<https://www.youtube.com/user/BritLungFoundation>

The following exercises will help you to think about breathing in everyday life:

Exercise 1

- Take a breath in, then a deeper and a deeper breath.
- Explain what is happening.
- What is this process called?

- Breathe out, then breathe out with more force.
- Explain what is happening
- What is this process called?

Exercise 2

- If you run for a bus, what impact will there be on the rate of your breathing?
- How and why has this run changed your breathing?

Exercise 3

List any conditions that you think may affect respiration.

Exercise 4

How do you think respiratory dysfunction/disorder would affect your ability to perform your activities of daily living?