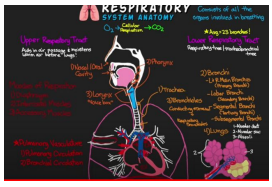
Note: All text underlined in blue are hyperlinks to external resources

Key learning outcomes:

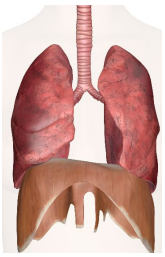
- Describe the arrangement of the respiratory system
- Describe the osteology and musculature of the thorax
- Identify microscopic features of the respiratory system
- Explain the process of respiration + changes involved
- Explain the process of gas exchange

ANATOMY

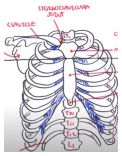
As usual, let's start off with an overview of the respiratory system! Did you know that the respiratory system is organised into an upper and lower respiratory tract?



This is a fantastic video explaining the system! Here is another overview by Khan Academy as well!



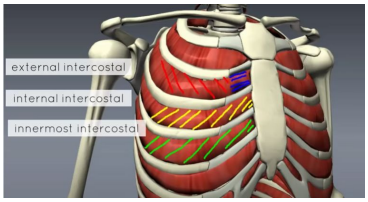
Also, recommend to have a play with this interactive resource which is greatly detailed so just make sure you have an appreciation of key features such as the lobes.



Having covered the heart in the last resource, it is great for you to get a greater appreciation of the thorax so try out these videos, which will talk more about classification of ribs and pleura.

This video is great and interesting because has a clinical aspect at the end where it talks about pneumothorax

This video is in 3D and will help to visualize the fibres of the intercostal muscles specifically. Note it is quite detailed - at this stage you do not need to know origins and insertions but be able to describe the layers and where they are found.



MICROANATOMY

It is incredibly important to start to look at how the histology differs between the conducting and respiratory portion of the respiratory system. First of all, **READ** through this histology guide which will define these portions and make sure to press "find out more" under each portion in order to see examples of microscopic slides.

Watch these videos:

- Histology Helper - 16m
- School of Surgery - 8m

Again, try out these slides in study and quiz mode - feel free to skim over the other info but it is detailed so just understand the basics!

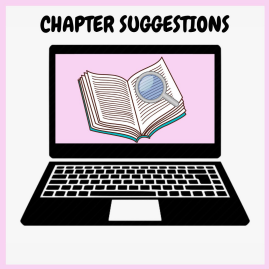
PHYSIOLOGY

The following videos will tackle the key functions of the respiratory system - breathing & gas exchange!

➢ *These Khan Academy videos give some great explanations to the science behind inhalation and exhalation!*
- Volume & pressure changes (WATCH)
- Role of respiratory muscles (WATCH)

➢ *Crash course series:*
- **Part 1:** recaps anatomy and goes over physiology of breathing
- **Part 2:** tackles gas exchange, partial pressure gradients, dissociation curves and more

➢ *This **video** from Armando Hasudungan covers a challenging topic which is introduced to you in Year 1* - ventilation: perfusion ratio. Do not worry if you do not understand this at this stage - there will be lectures/ tutorials on this in PCS - just thought to add it in to build on your knowledge!



If you like to read instead, these online chapters give an overview of the topics discussed in the videos:

- Anatomy: article on lungs | respiratory system
- Physiology: Have a brief look over this apart from chemoreceptors/ neural control of breathing (READ)
- Check out some of these detailed lecture notes from mechanics of breathing to transport of oxygen and carbon dioxide in the blood (READ)

To finish off, try these quizzes to see what you have learnt!
- Getbodysmart quizzes: *Lungs!* (GO) | *Bronchi quiz!* (GO)
- Khan Academy quiz! (GO) | Biology corner quiz! (GO)
- further free anatomy quizzes! (GO)
- Ribcage quiz! (GO)
- Try out this histology quiz - it is tough but use it more as a learning resource!

Here is some great advice from Moli, Year 1:

Here are some tips for those who struggle with the respiratory system (like I very much did!):

1. It may sound obvious but go about the system **section by section**. Don't try and learn everything for every structure all at once otherwise you'll get overwhelmed in a few minutes. Take it easy and start off with one structure, learn the anatomy, histology and physiology. Once you're comfortable with all of that, move on to the next! *Slow and steady wins the race.*
2. Don't worry too much about the maths now! If you're not mathematically inclined like myself, the tutors in PCS are more than happy to explain it in simple terms and the uni have great maths support which you should 100% take advantage of! "

Hope you have found this resource useful! Once you have completed this, please give some short feedback - it will take 10 seconds to fill in! This will help me to get your opinions and check engagement! (GIVE FEEDBACK)