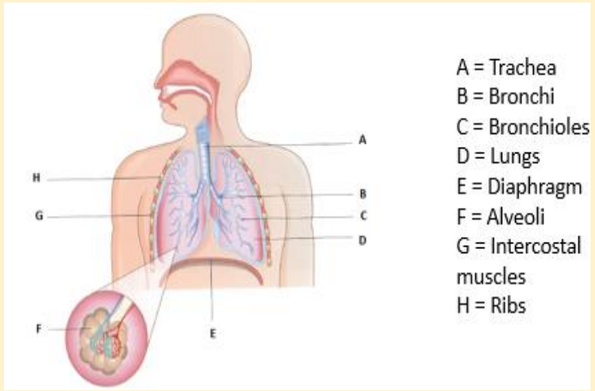
Year 9 GCSE PE Knowledge Organiser Spring 1

Respiratory system

Location of main components of respiratory system (lungs, bronchi, bronchioles, alveoli, diaphragm) and their role in movement of oxygen and carbon dioxide into and out of the body	**Function** of the respiratory system and its impact on the composition (make up) of inhaled and exhaled air and the impact (effect it has) of physical activity and sport on this composition	**The mechanism of breathing** and how the breathing muscles enable a performer to inhale and exhale	**Structure of alveoli** to enable **gas exchange and the process** of gas exchange to meet the demands of varying intensities of exercise (**aerobic and anaerobic)**



A = Trachea
B = Bronchi
C = Bronchioles
D = Lungs
E = Diaphragm
F = Alveoli
G = Intercostal muscles
H = Ribs

Bring <u>oxygen</u> into the body so it can help produce <u>energy aerobically</u>

Expels <u>carbon dioxide</u> produced as a waste product during <u>aerobic respiration</u>.

Gas	Amount in inhaled air	Amount in exhaled air
Oxygen	21%	16%
Carbon dioxide	0.03%	4%
Nitrogen	78%	78%

<u>Inhalation</u>
Diaphragm and intercostal muscles <u>contract</u>
<u>Diaphragm flattens</u> and pulls the bottom of the <u>lung down</u>
Intercostal muscles pull the ribs and lungs <u>outwards</u>
Lungs increase in size and the <u>air pressure is reduced</u> in the lungs
Air pressure outside the body is now higher that the air pressure in the lungs.
Air rushes in.

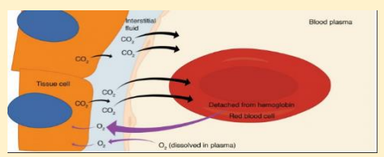
<u>Exhalation</u>
Diaphragm and intercostal muscles <u>relax</u>
Diaphragm move back <u>up</u> into a dome shape
Ribs and lungs to move <u>inwards</u>
Lungs reduce in size and the <u>air pressure is increased</u> in the lungs
Air pressure outside the body is now lower that the pressure in the lungs
<u>Air rushes out</u>

<u>Structure of alveoli</u>
Thin walls, Large surface area, Capillaries and alveoli are closely wrapped together
Blood supply is good so gas can be carries away quickly.

Gases move from an area of high concentration to low concentration in and attempt to reach a balance

<u>At the lungs gaseous exchange is…</u>

<u>At the muscles gaseous exchange is…</u>
Oxygen moves from the blood delivered in the aorta then in capillaries into the muscles, while carbon dioxide moves out of the muscles into the capillaries then back through the vena cava and pulmonary artery to get back to the lungs (via the heart).



Application

- Describe how the mechanics of inhalation and exhalation is effected by exercise?
- Explain how the respiratory system and the cardiovascular system work together to provide the body with oxygen so that an endurance athlete of your choice can compet?