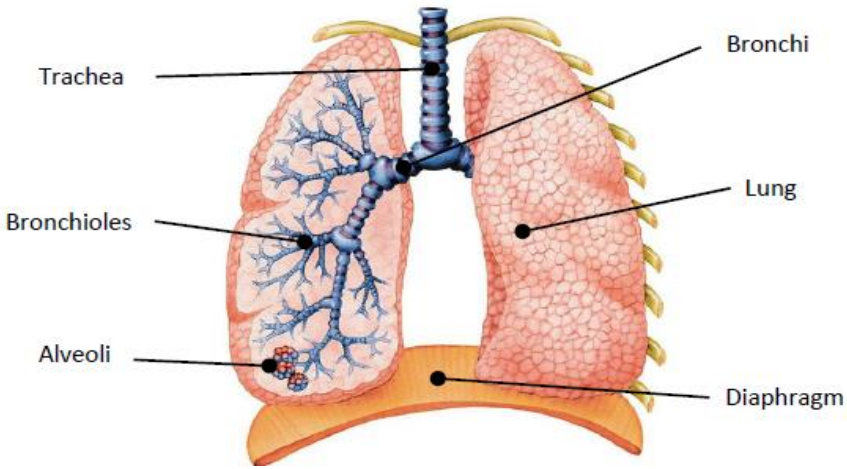
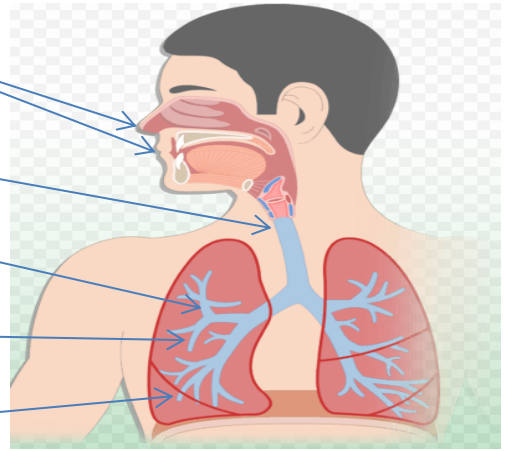
GCSE Physical Education – The Respiratory system

Structure of the respiratory system



Pathway of air through the respiratory system

mouth and nose
↓
trachea
↓
bronchi
↓
bronchiole
↓
alveoli



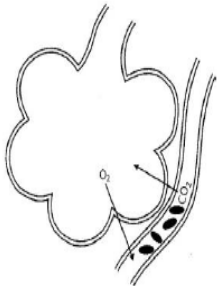
alveoli and gaseous exchange

Gaseous exchange at the alveoli

- Diffusion is the movement of molecules from an area of high concentration to a low one.
- The alveoli have thin moist walls to allow diffusion to occur.
- Capillaries are closely wrapped around the alveoli to reduce the distance of diffusion and increase efficiency.

During inhalation:

- The concentration of **oxygen** is air is higher than the alveoli.
- The concentration of **carbon dioxide** in the blood is higher than that in the air.



KEY DEFINTIONS

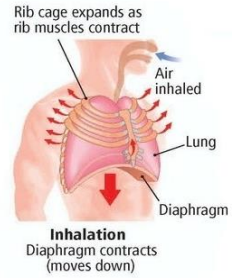
Breathing rate	***Tidal volume***	***Minute ventilation***
The number of breaths you take per minute	**The volume of air inspired or expired per breath**	**The volume of air inspired or expired per minute**

ANAEROBIC AND AEROBIC EXERCISE

AEROBIC	**ANAEROBIC**
1. Continuous exercise	**1. Short bursts of exercise**
2. Low / Moderate intensity	**2. High intensity**
3. Oxygen is used	**3. No oxygen used**
4. Lactic acid not produced	**4. Lactic acid is produced**

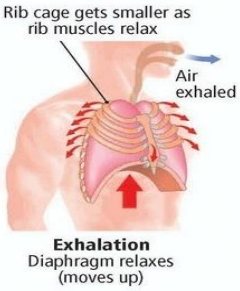
Mechanics of breathing (inspiration and expiration) and the role of the muscles

Muscles involved in breathing = Diaphragm and Intercostal



Inspiration (breathing in)

- The diaphragm contracts and moves downwards.
- The intercostal muscles contract and move the ribs upwards and outwards.
- This increases the size of the chest
- It also decreases the air pressure inside it which sucks air into the lungs



Expiration (breathing out)

- The diaphragm relaxes and moves back to its domed shape.
- The intercostal muscles relax so the ribs move inwards and downwards under their own weight.
- This decreases the size of the chest
- It also increases the air pressure in the chest so air is forced out of the lungs.