Nasal Breathing

Warms air

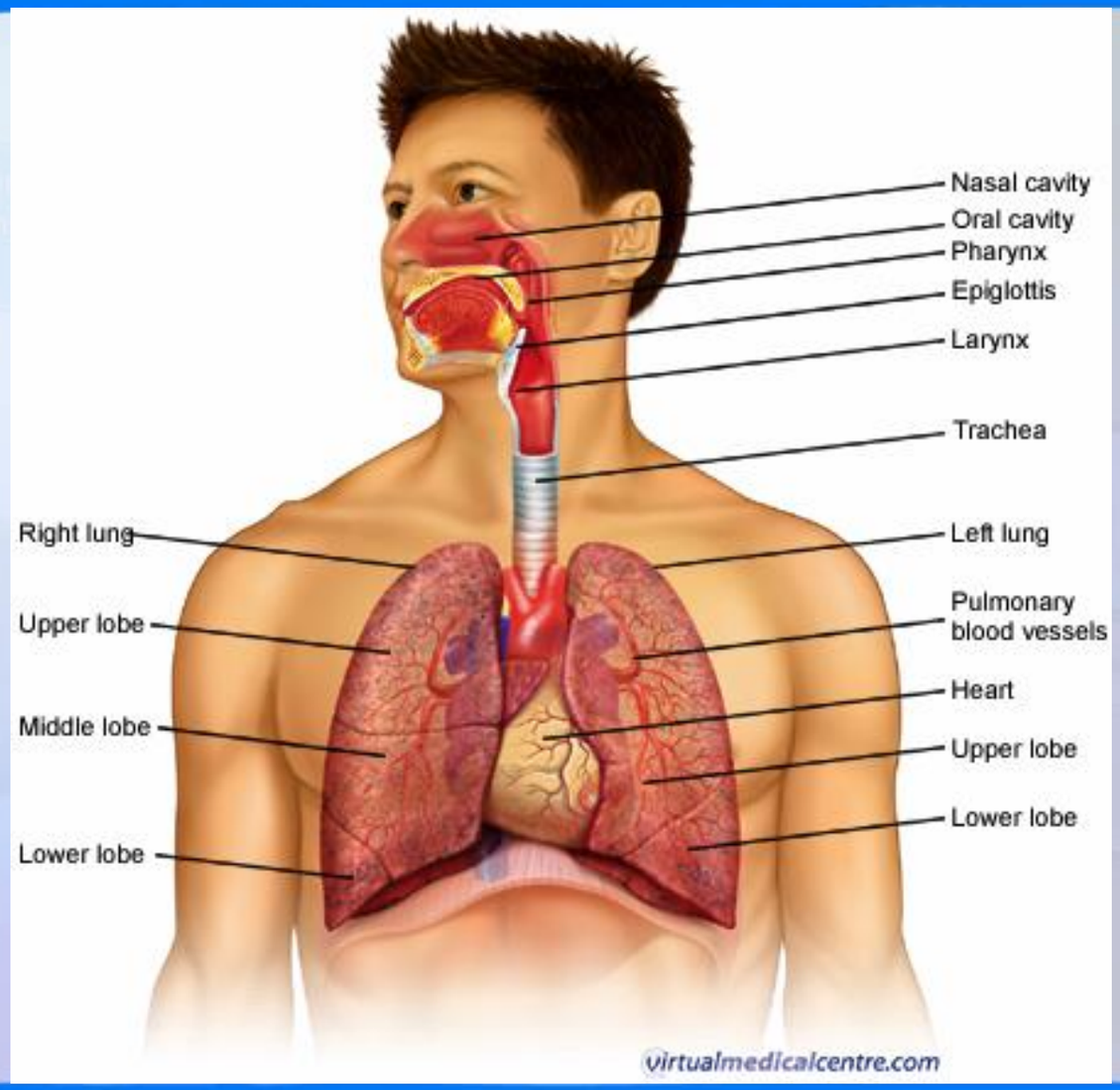
Humidifies air

Filters air

Nasal Breathing

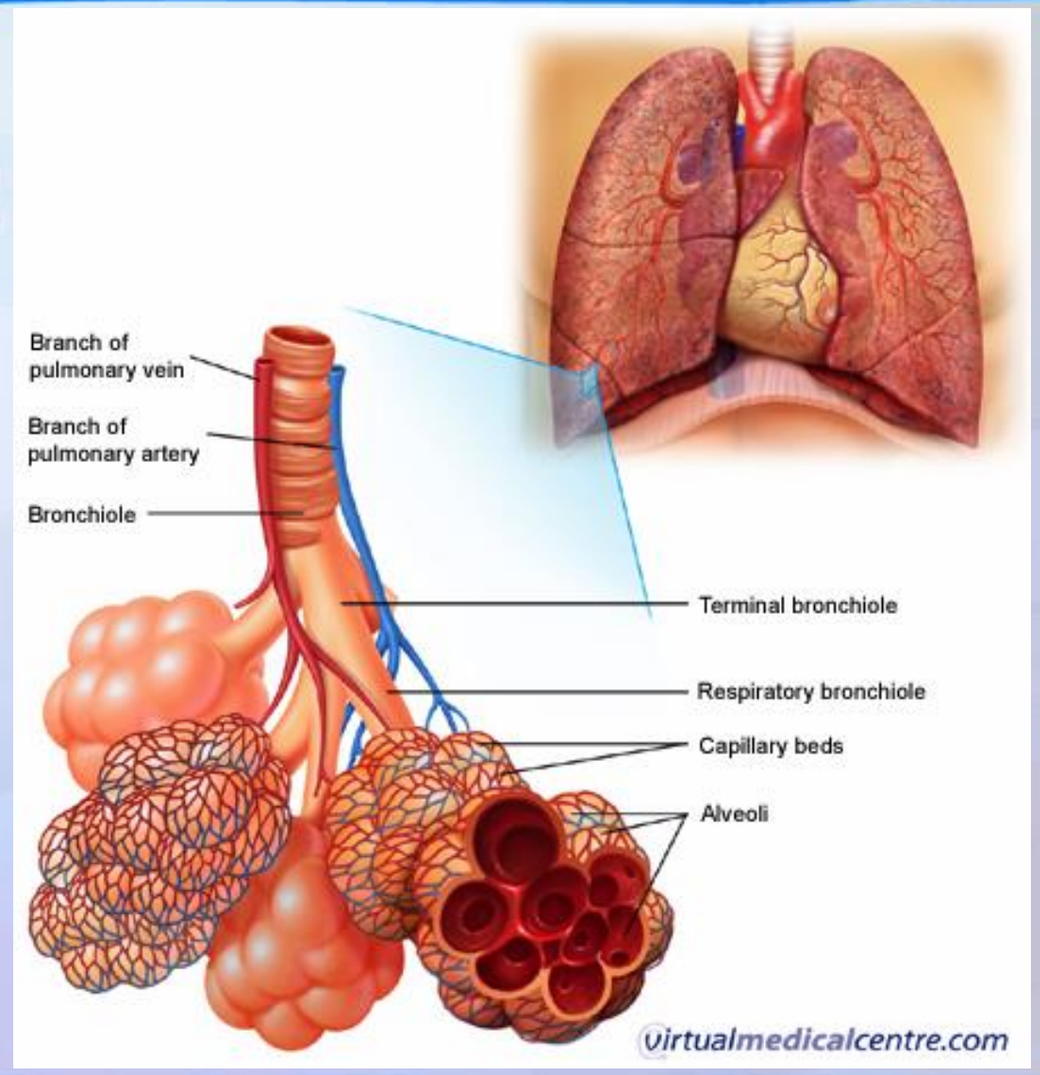
Improves oxygen tension
in every cell in the body

Nasal Breathing



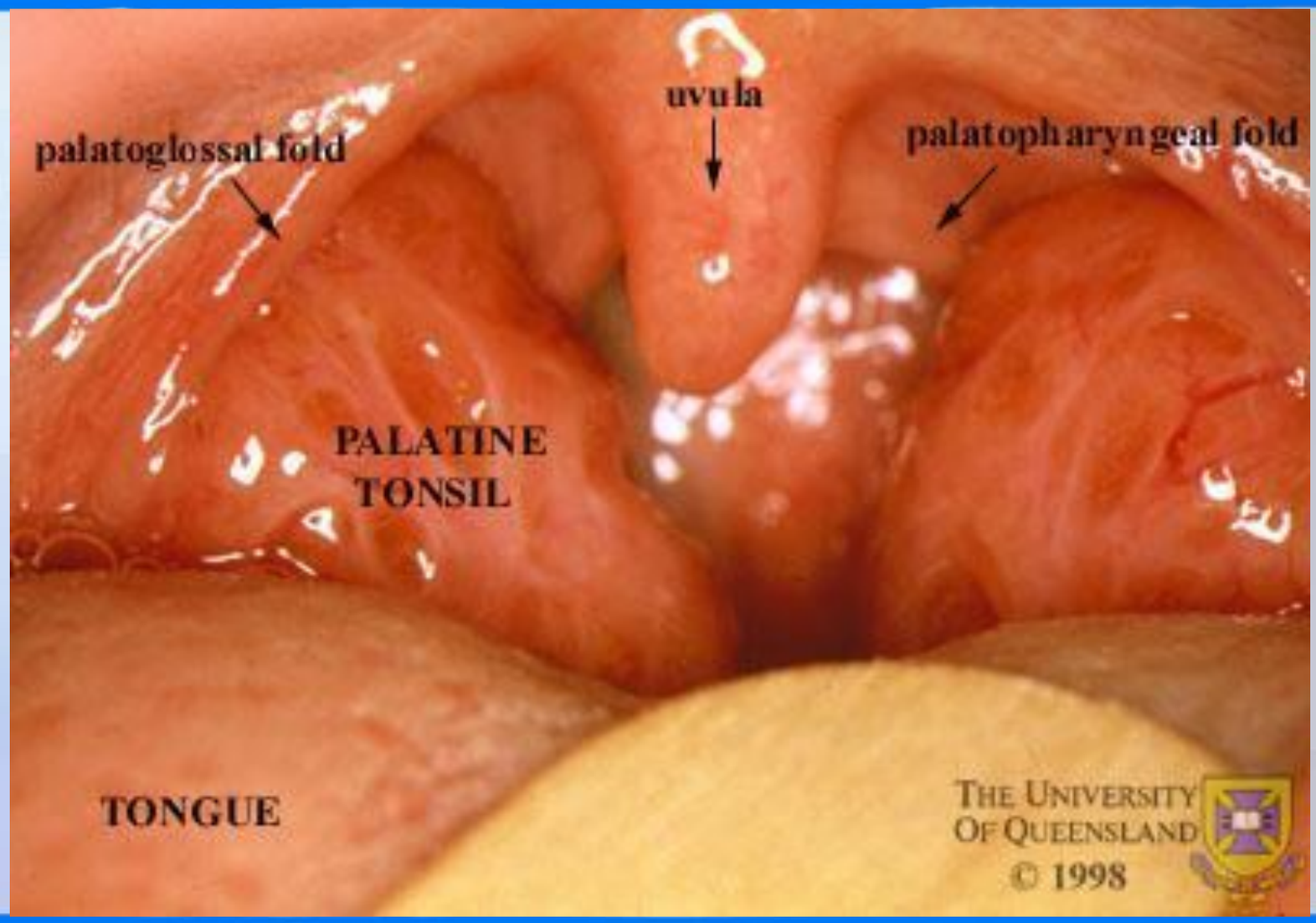
The diaphragm contracts and draws air into the lungs

Nasal Breathing



Oxygen passes into the blood stream and carbon dioxide passes out of the blood stream

Nasal Breathing



In mouthbreathing children the enlarged tonsils and adenoids help warm and filter the air

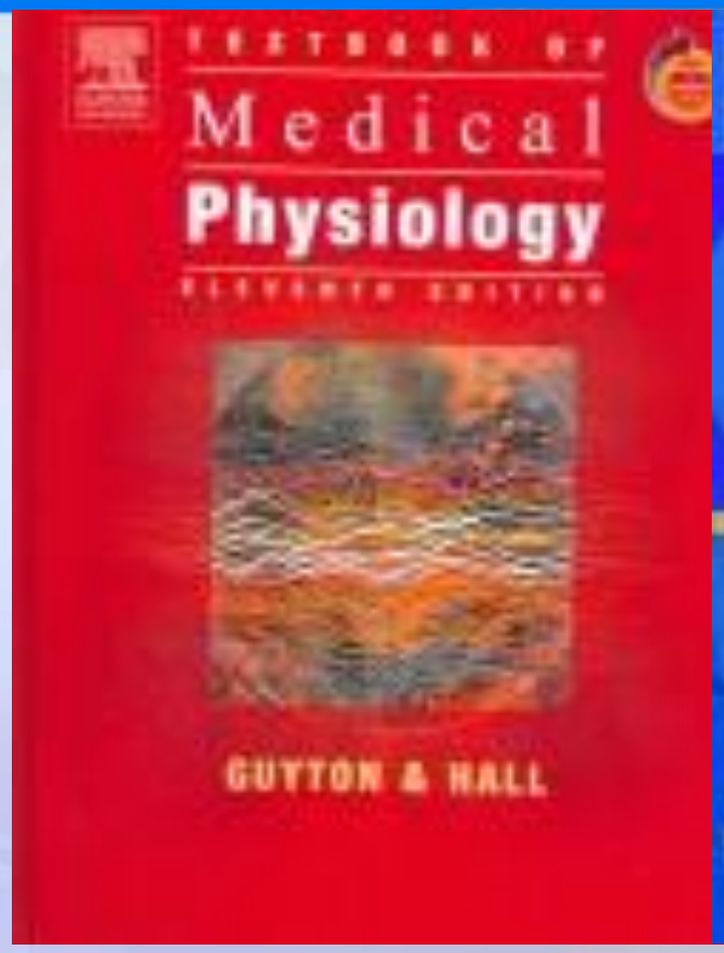
Breathing is Mainstream

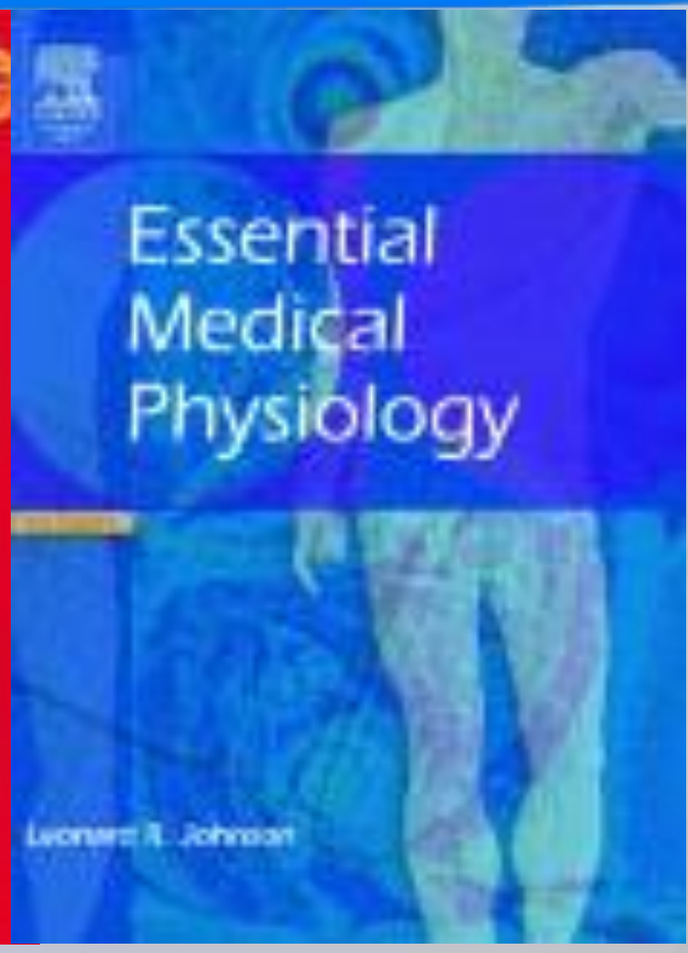
It is not alternative or complemantary

This is not New

What we teach is based on the Physiology which is studied by every dentist. This is a subject which is usually done very early on in the course.

By the time the degree has been completed it has been largely forgotten.

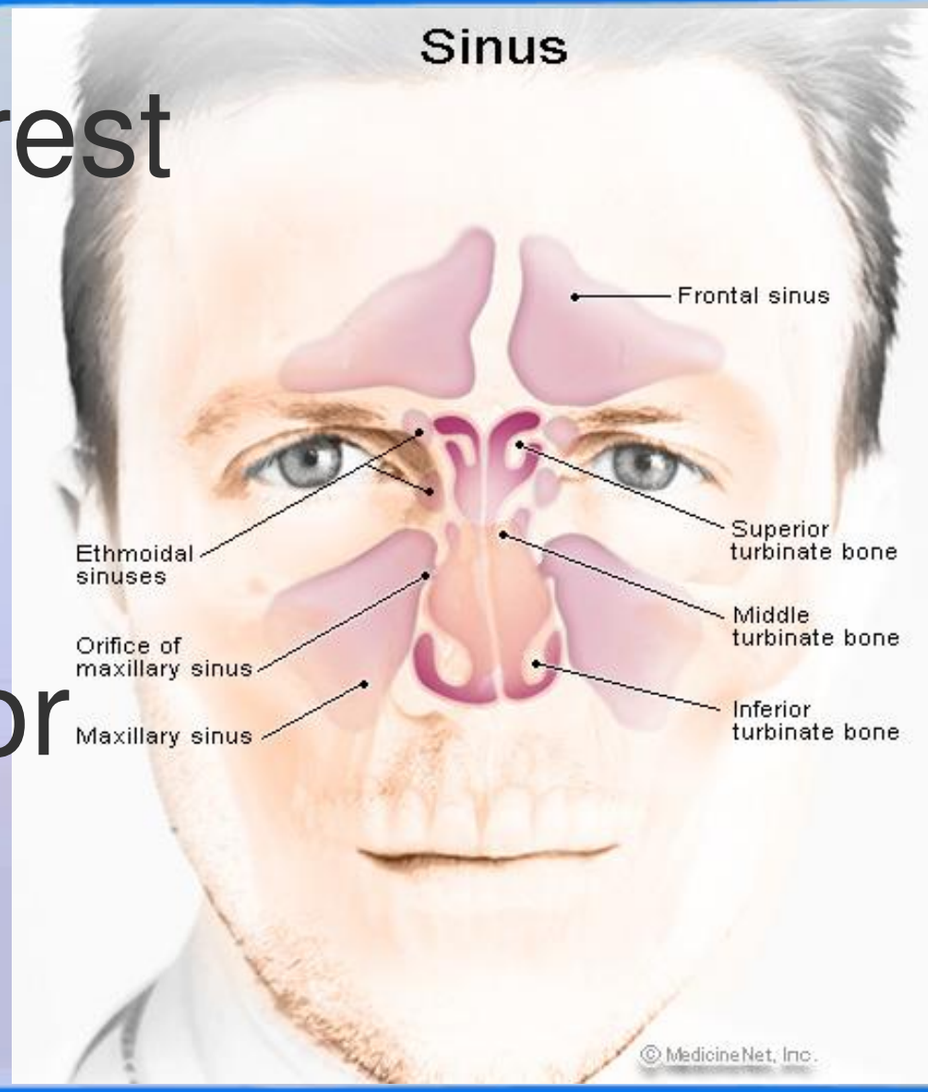




We have all studied this before!

Normal Breathing

★8-10 breaths per minute at rest
★In and out through the nose
★4-5 litres of air per minute
★Driven by the diaphragm
★No movement of the chest or shoulders
★Silent



We have all studied this before!

Respiration

To deliver oxygen to body cells

To remove excess CO_2

Why do we breathe?

Oxygen

Body requirement: 6%

Atmospheric content: 21%

Oxygen is Cell Food

It does not have to be stored

It is always available

Carbon Dioxide

Body requirement: 6.5%

Atmospheric content: 0.03%

Carbon Dioxide

It has to be produced by the body and is stored in the blood and the lungs.

Produced as a product of exercise and digestion

Carbon Dioxide

Produced as a product of exercise and digestion

Chemical Balance

There is always enough oxygen but we have to produce and store carbon dioxide

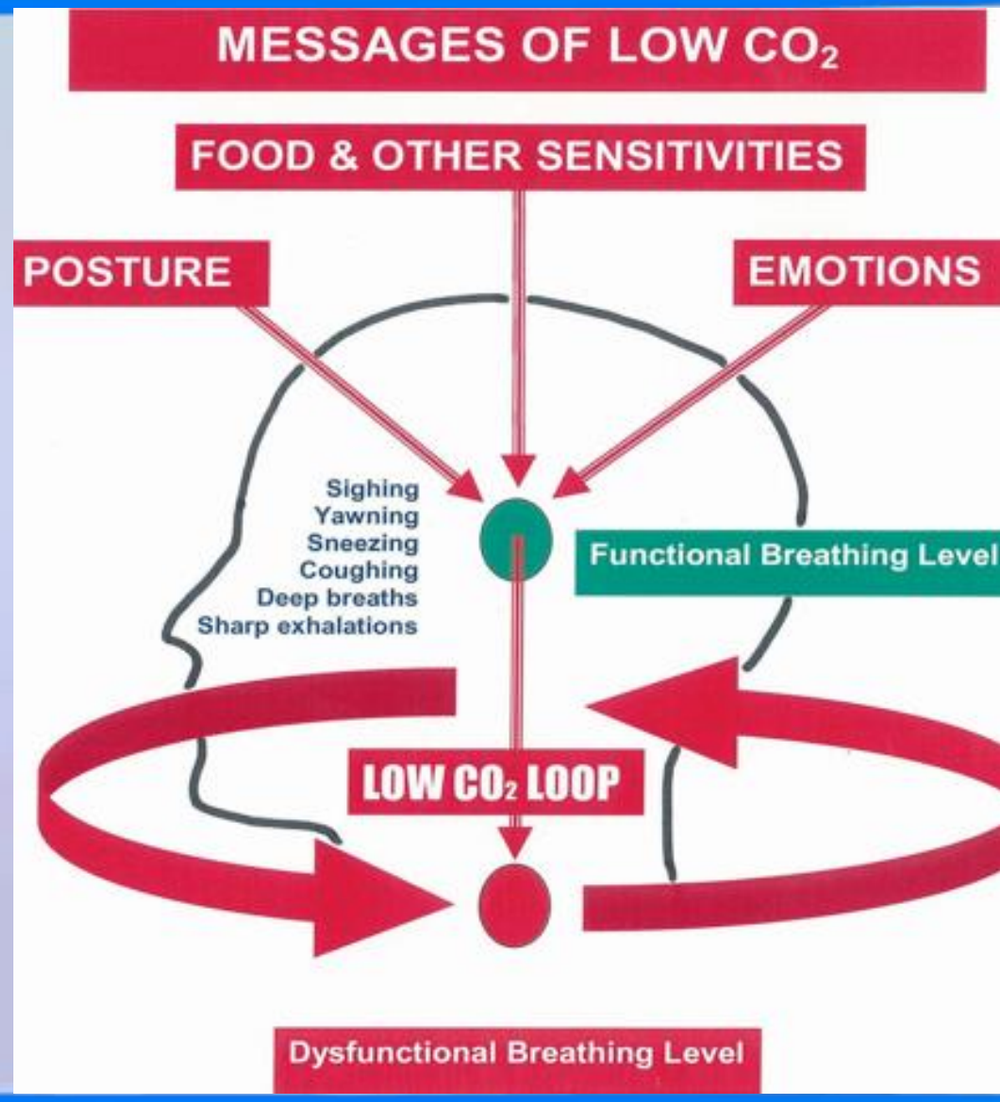
Carbon Dioxide

Triggers breathing by activating the medullary sensor

Four major Functions of Carbon Dioxide

The Breathing Trigger

The constant messages of low CO_2 cause the medullary response to reset itself at a lower level, effectively lowering the “breathing ceiling.”



The trigger is reset at a lower level as a result of chronic hypocapnia

Carbon Dioxide

Facilitates the release of oxygen from oxyhaemoglobin

Four major Functions of Carbon Dioxide

Carbon Dioxide

Discovered by a Danish physiologist in 1903. Subsequently awarded the Nobel Prize for his work.

CHRISTIAN BOHR 1855-1911

The Bohr Effect

Carbon Dioxide

The Bohr Effect states that as CO_2 levels in arterial blood drop the strength of the bond between oxygen and haemoglbin tightens resulting in reduced Oxygen availability to cells.

CHRISTIAN BOHR 1855-1911

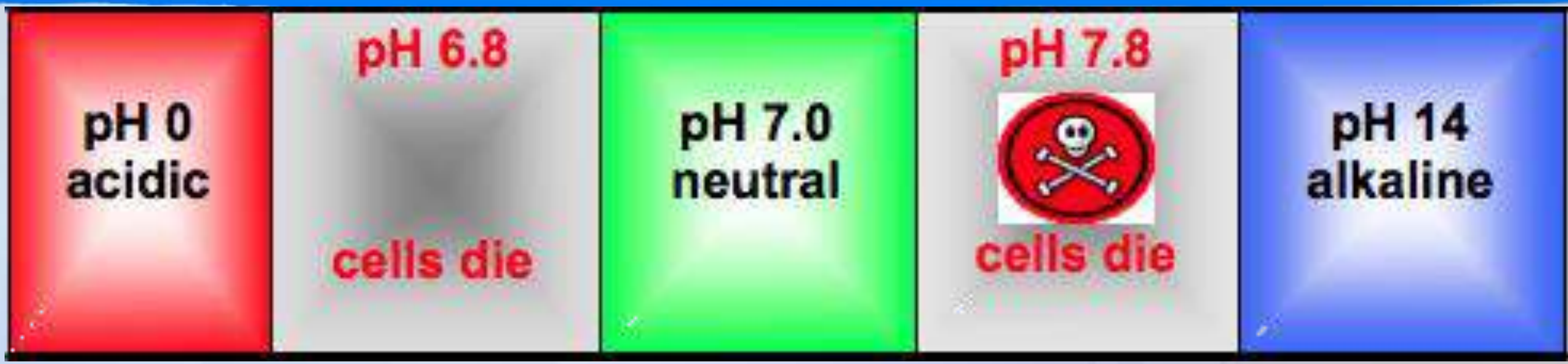
The Bohr Effect

Carbon Dioxide

Maintains blood pH by buffering with bicarbonate or carbonic acid

Four major Functions of Carbon Dioxide

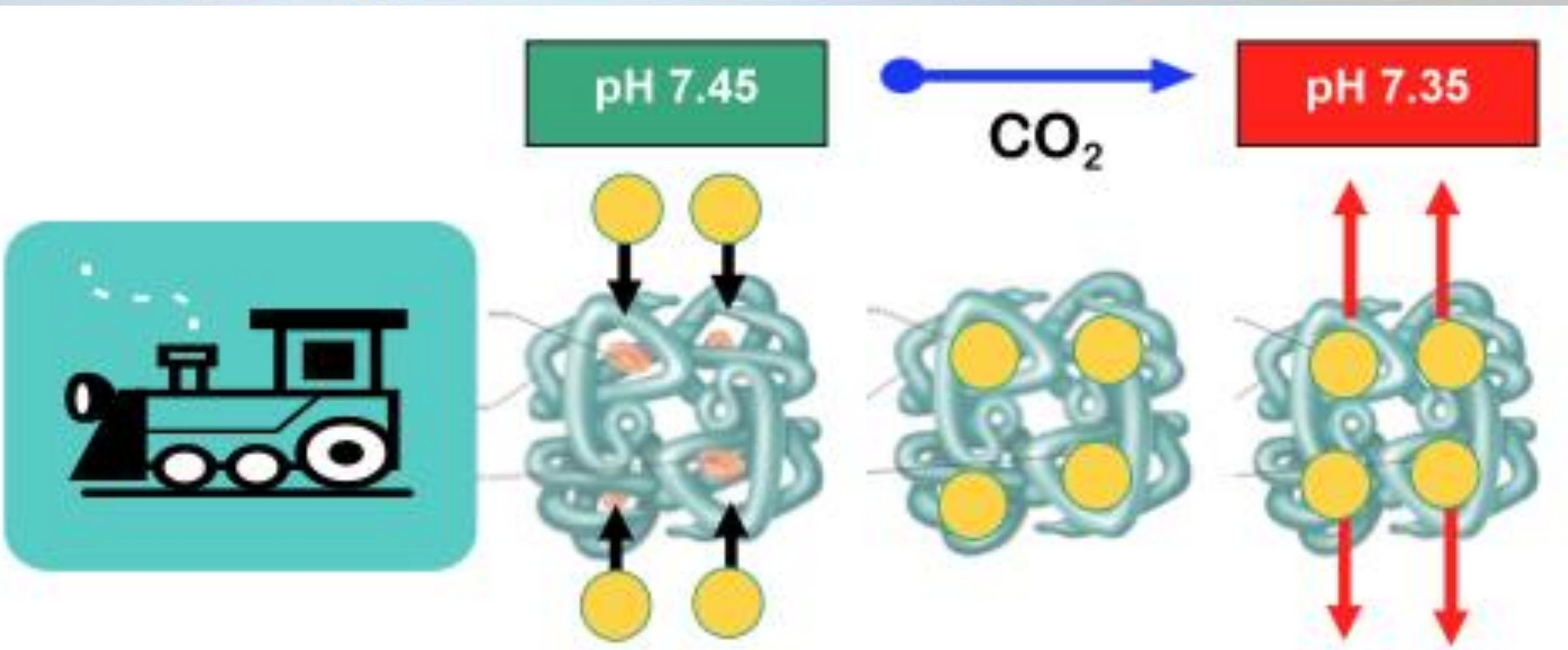
The pH CO2 Link



7.45 to create the oxyhaemoglobin bond
7.35 to release the oxyhaemoglobin bond.

The optimal pH range for efficient oxygen transport

The Oxygen Transport System



The optimal pH range for efficient oxygen transport

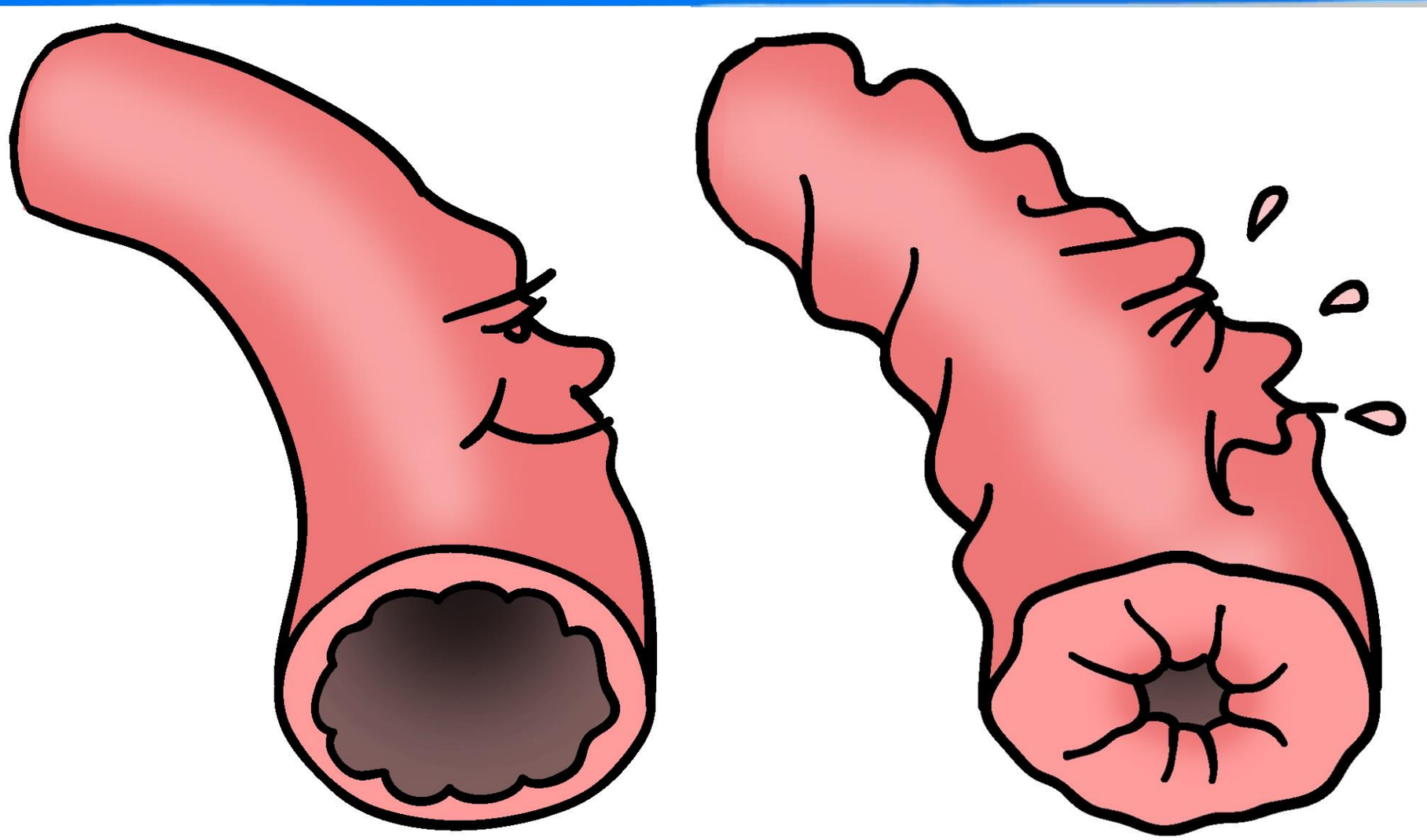
Carbon Dioxide

Prevents smooth muscle going into spasm

Four major Functions of Carbon Dioxide

Carbon Dioxide

300,000 kms of tubes in an adult



Low carbon dioxide leads to smooth muscle spasm

Carbon Dioxide

This is the major cause of shortness of breath as experienced with “asthma”

It also causes spasm in all other smooth muscle tubes in the body and is one of the major culprits in disorders of the circulatory and digestive systems.

Low carbon dioxide leads to smooth muscle spasm

Two Effects of Hypocapnia

Less oxygen available to the cells

Smooth muscle spasm

Hypocapnia is low carbon dioxide in the blood

Carbonated Beverages

Consists of water with salts, sugar and CO_2 under pressure

Leave the cap off and they go flat

Blood is a Carbonated Beverage

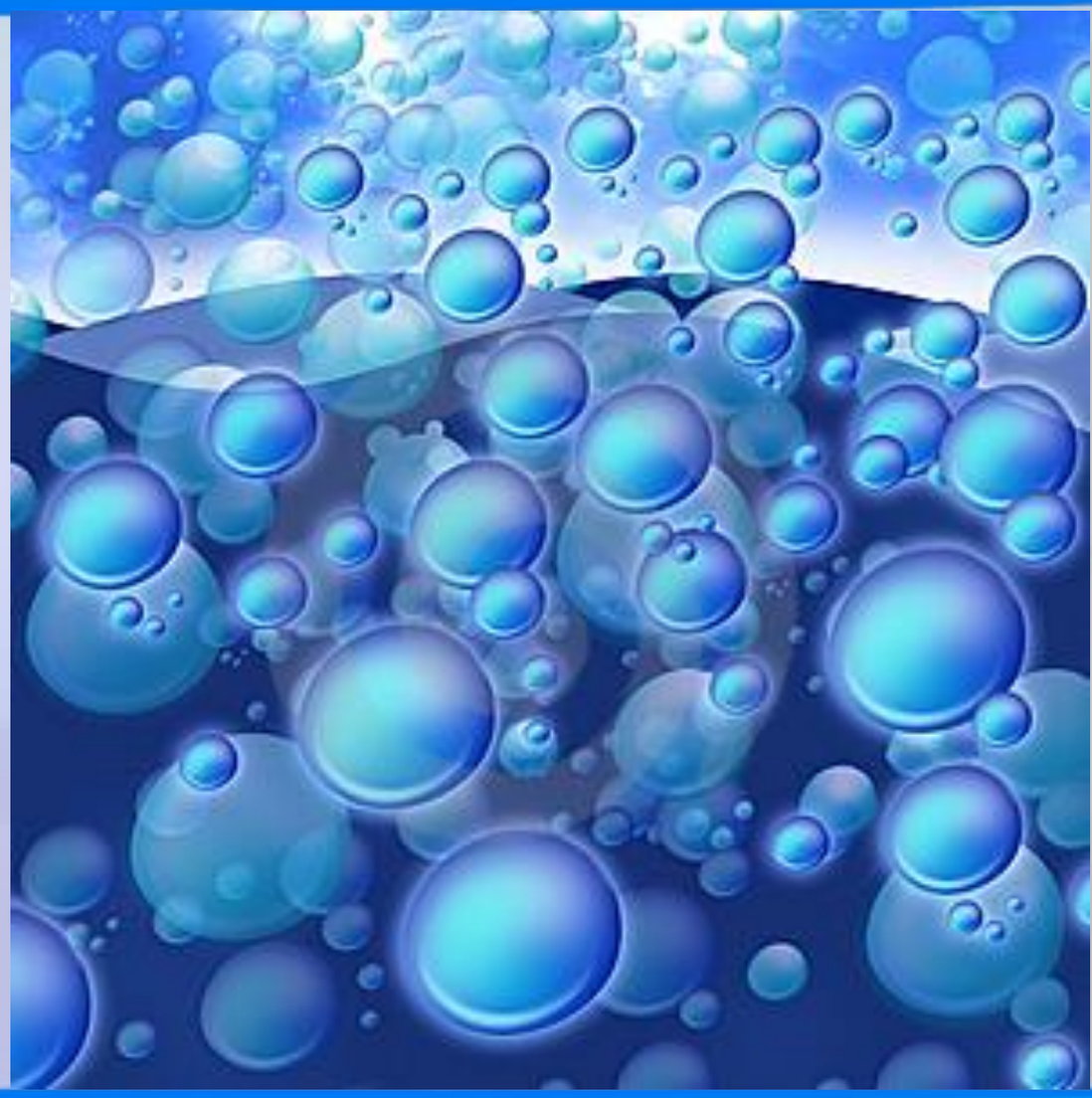
Also consists of water with salts, sugar and CO_2 under pressure

BLOOD

Leave your mouth open and the blood goes flat

Fizziology

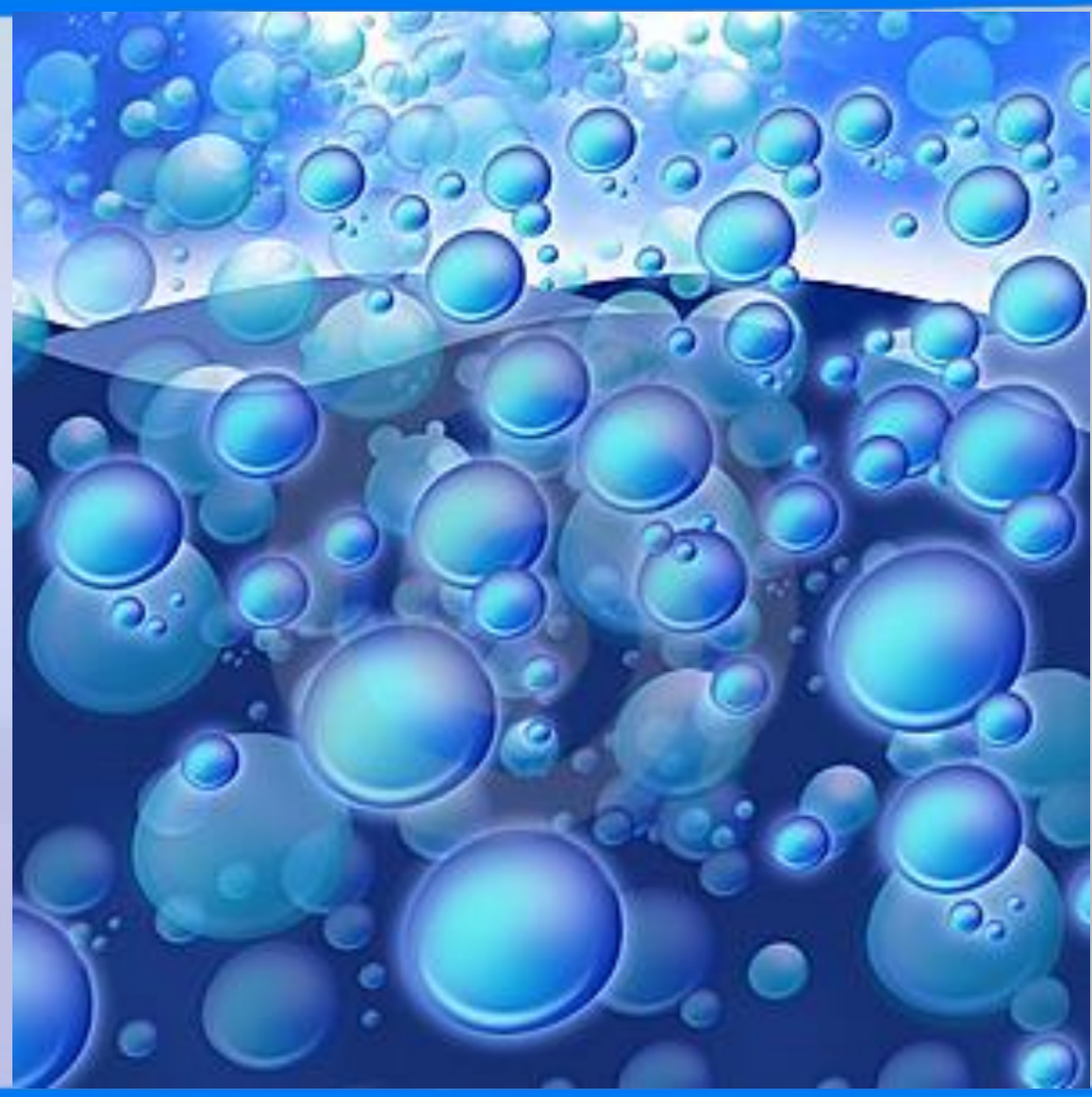
This programme is all about fizz.
How to make it
How to keep it
How to measure it



Leave your mouth open and the blood goes flat

Fizziology

Mouth breathing children (and adults) have low fizz in the blood.



Leave your mouth open and the blood goes flat

Mouthbreathing

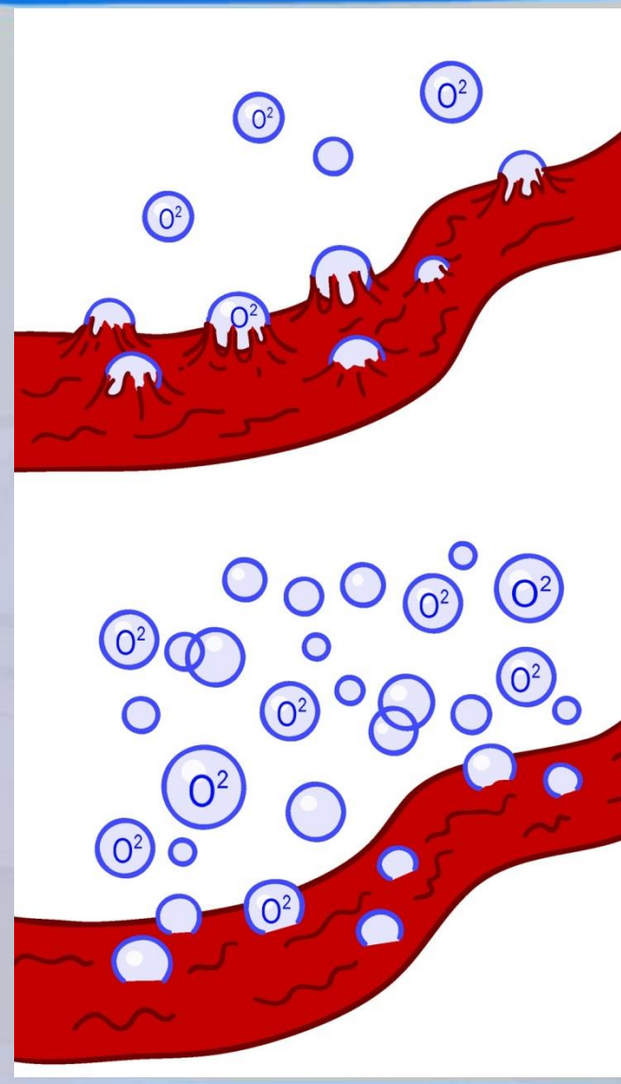
Talking too fast
Sighing
Yawning
Frequent deep breaths

Mouthbreathing = low fizz = Hypocapnia

Hypocapnia Causes Low SaO2

Hypocapnia prevents the pH of arterial blood reaching the optimal level of 7.35 for Oxygen release and results in low SaO2

This in turn reduces oxygen flow to tissues and is a major cause of chronic tiredness

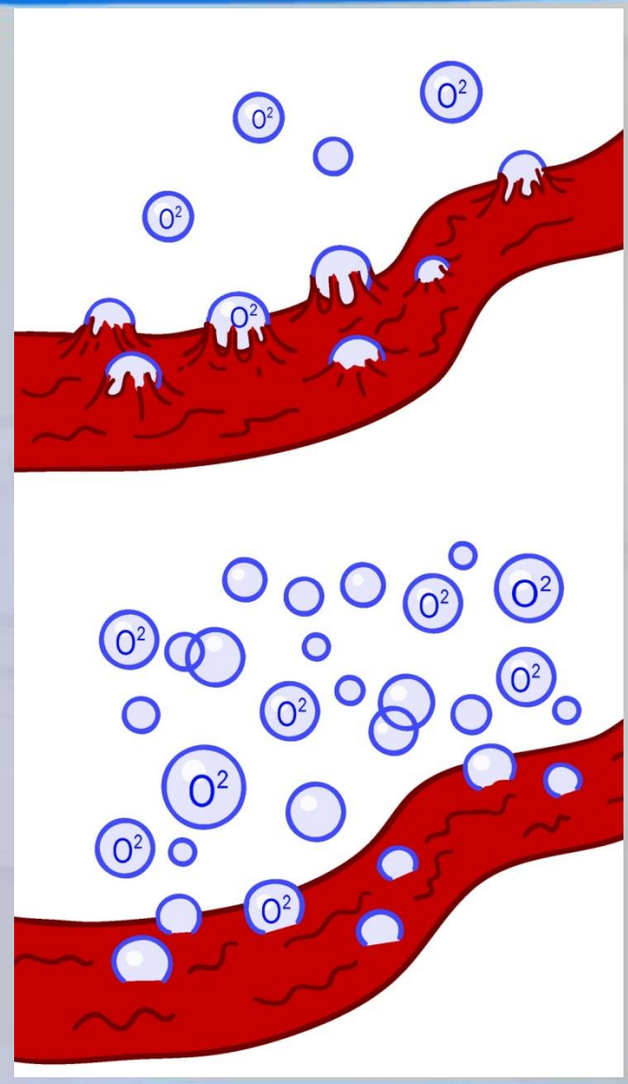


SaO2 is the measure of how much oxygen is dissolved in the plasma, not how much oxygen is in the blood

Hypocapnia Causes Low SaO2

To increase SaO2 we need to increase the fizz not increase the oxygen.

There is always enough oxygen in the blood.



SaO2 is the measure of how much oxygen is dissolved in the plasma, not how much oxygen is in the blood

Mouthbreathing Snoring and Sleep Apnoea

Low CO_2 from mouth breathing can cause snoring, sleep apnoea, disturbed sleep patterns, constant tiredness and a lack of energy

Mouthbreathing = low fizz

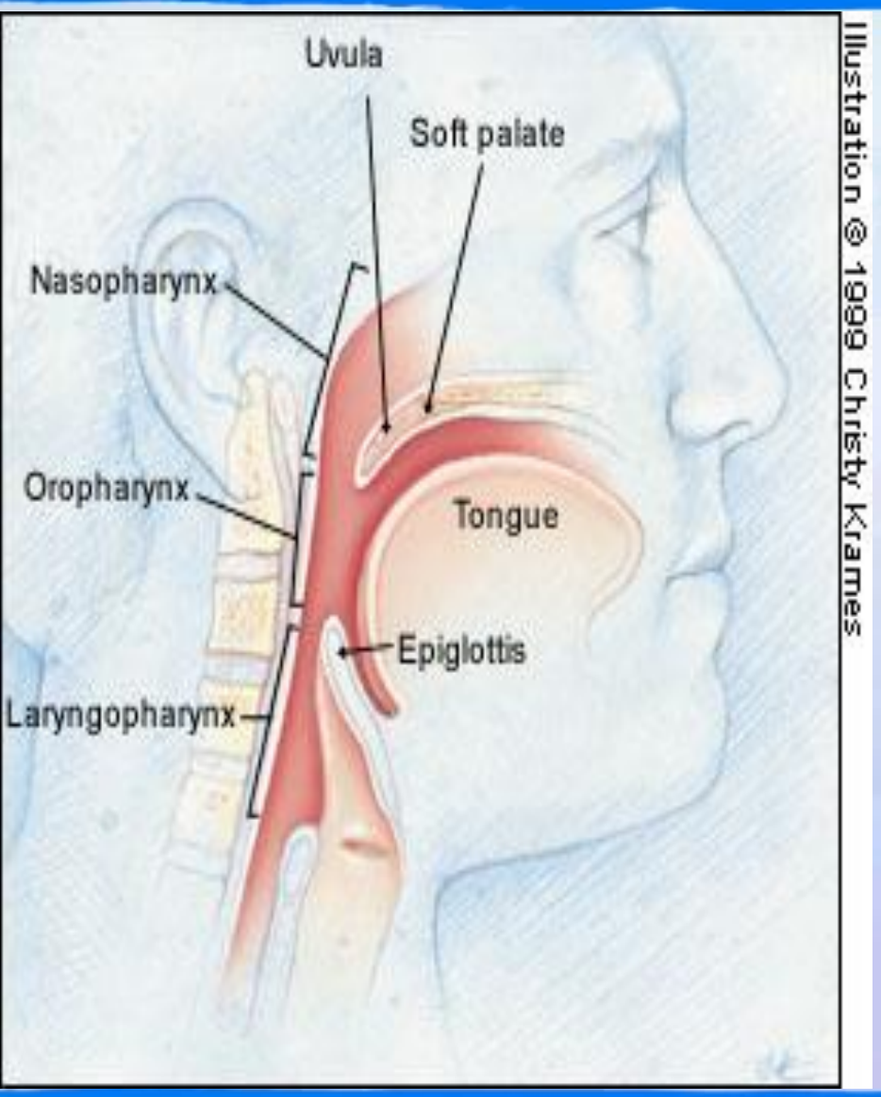
Mouthbreathing Snoring and Sleep Apnoea

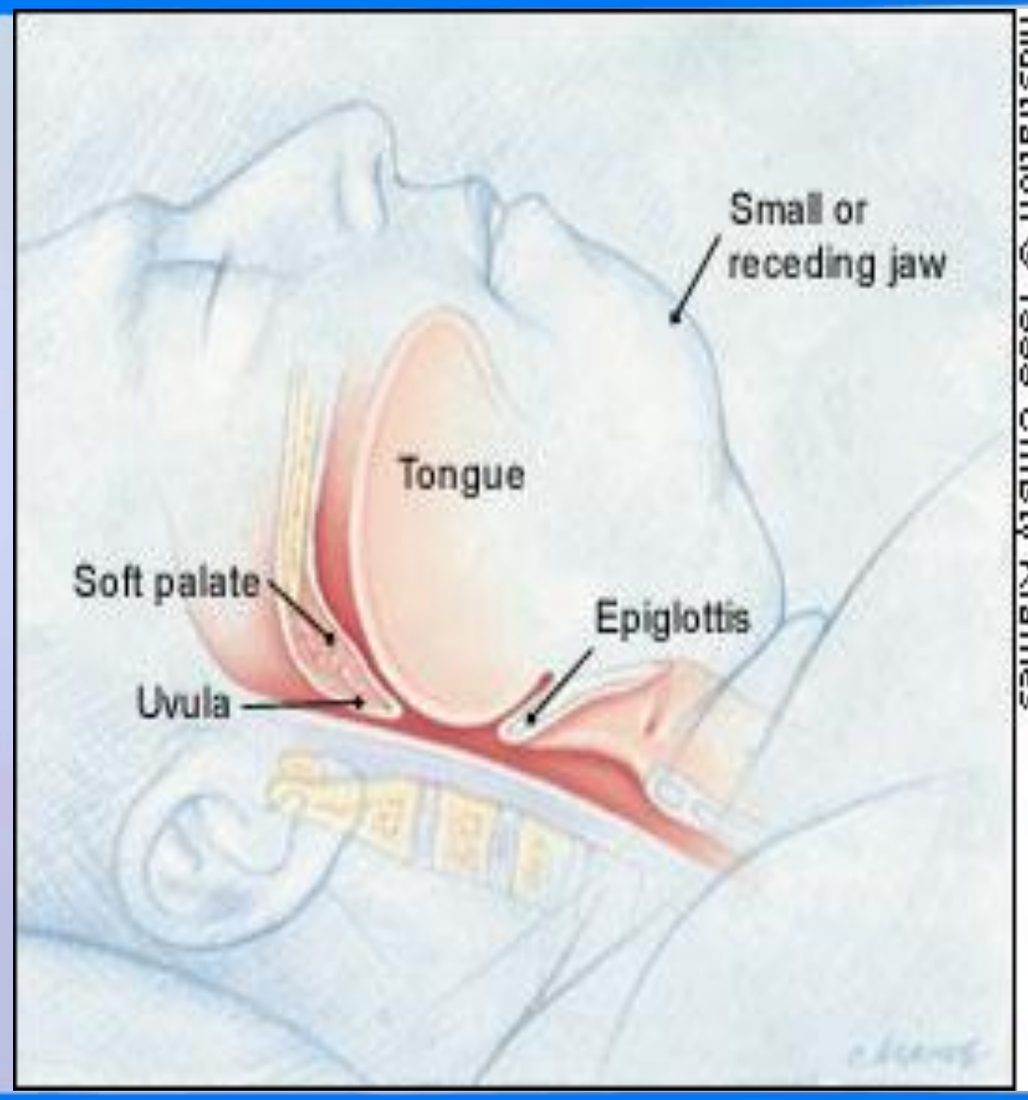
Obstructive Sleep Apnoea

Central Sleep Anpoea

Mouthbreathing = low fizz

Obstructive Sleep Apnoea

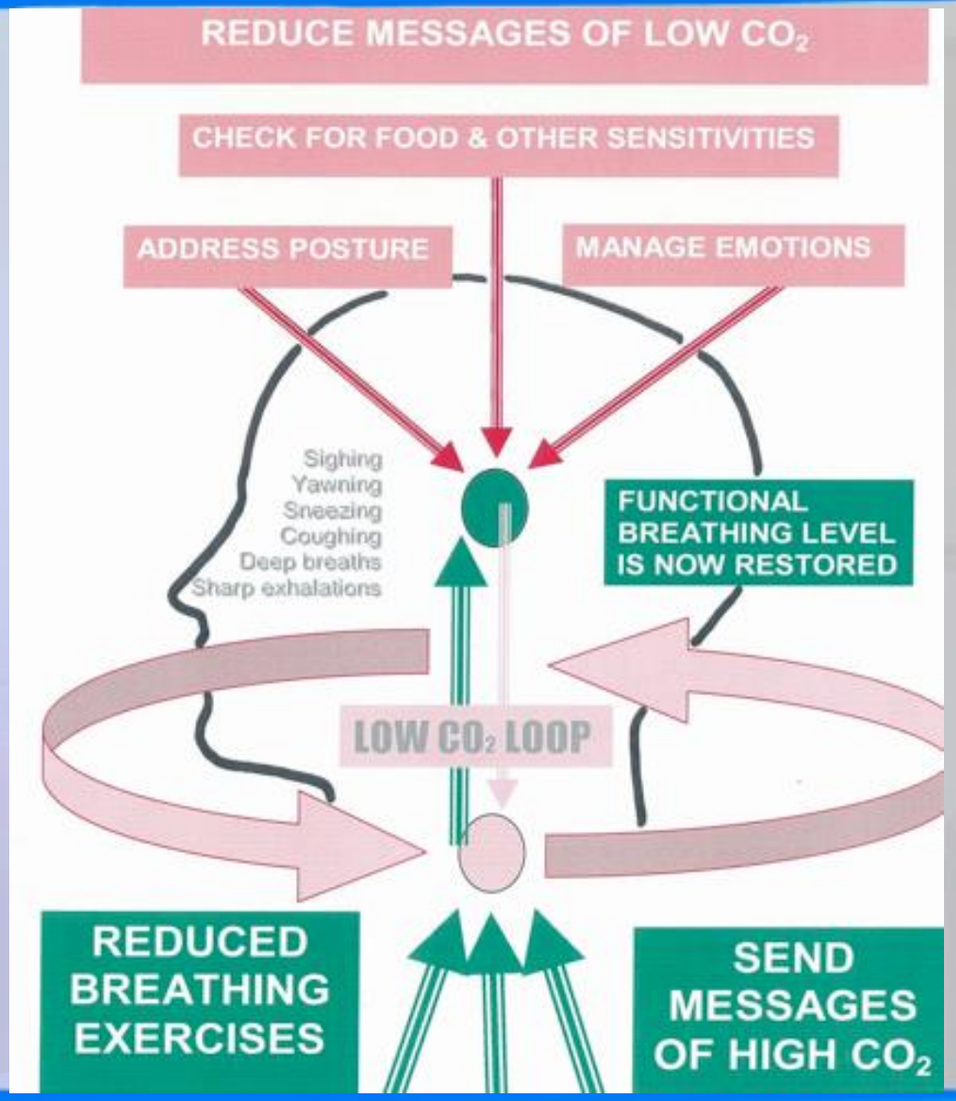




The tongue falls back and obstructs the airway

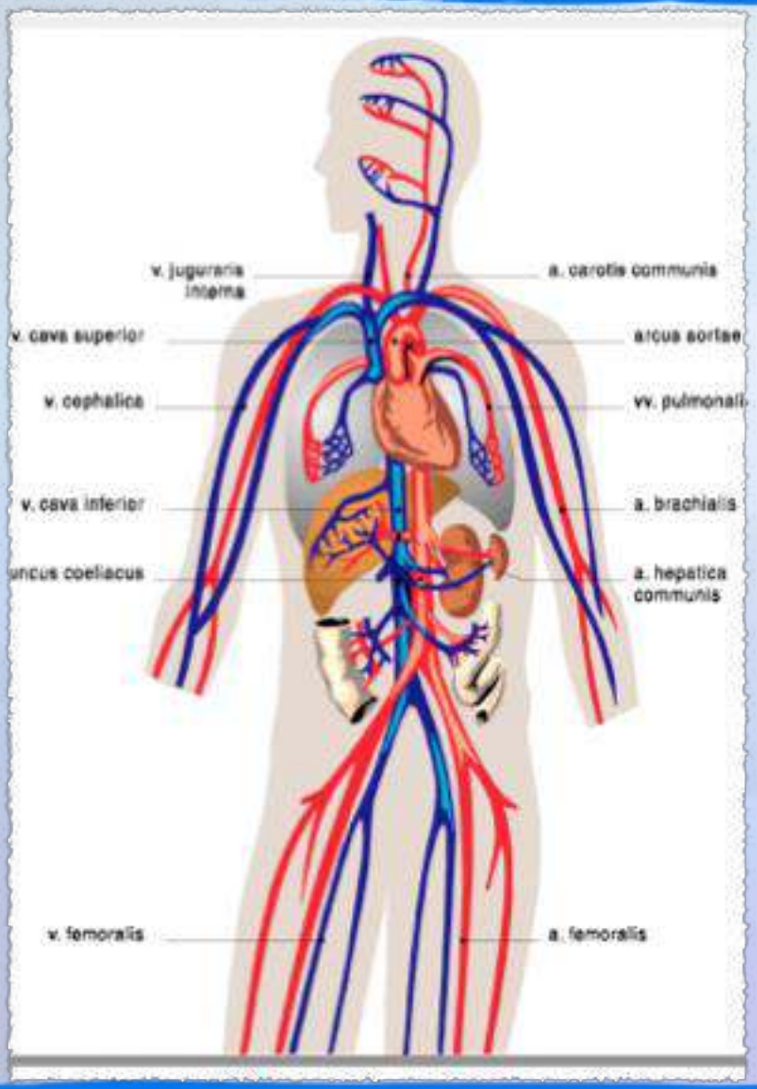
Central Sleep Apnoea

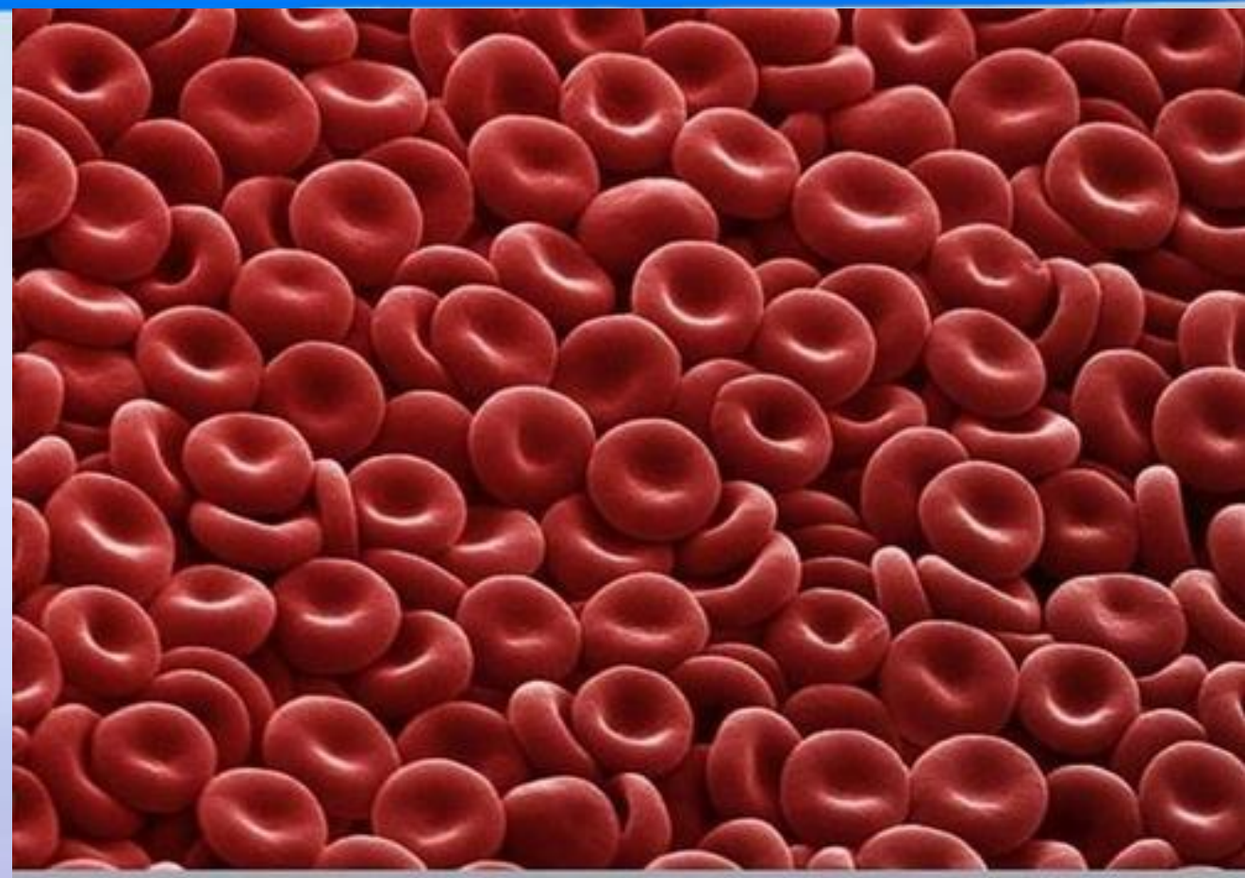
Nightime hypocapnia fails to activate the trigger and so breathing stops



Obstructive sleep apnoea is the brain trying to keep you alive!

Tubes and Cells

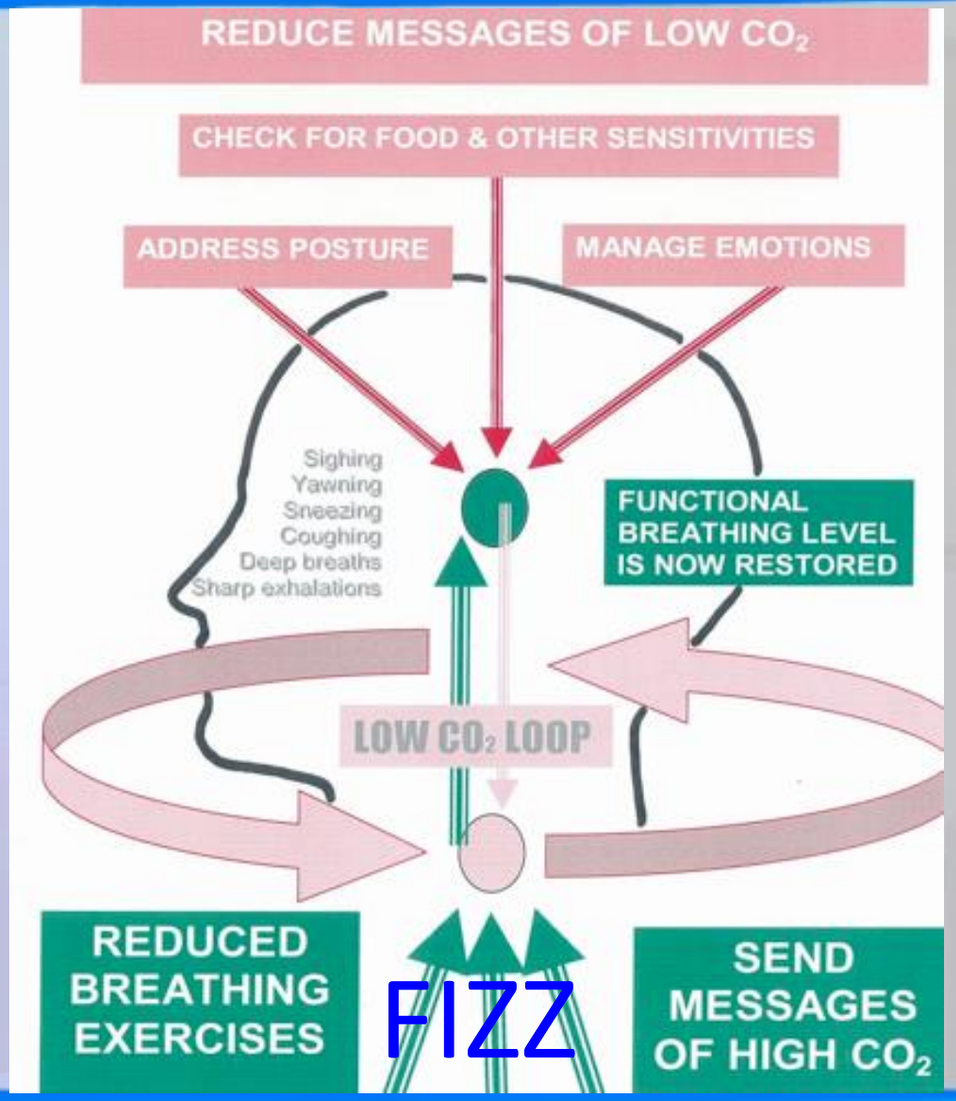




All dysfunctional breathing needs to be addressed by breathing retraining

Breathing Retraining

We need to put more fizz in the blood more often to reset the breathing trigger



This then becomes the new breathing habit