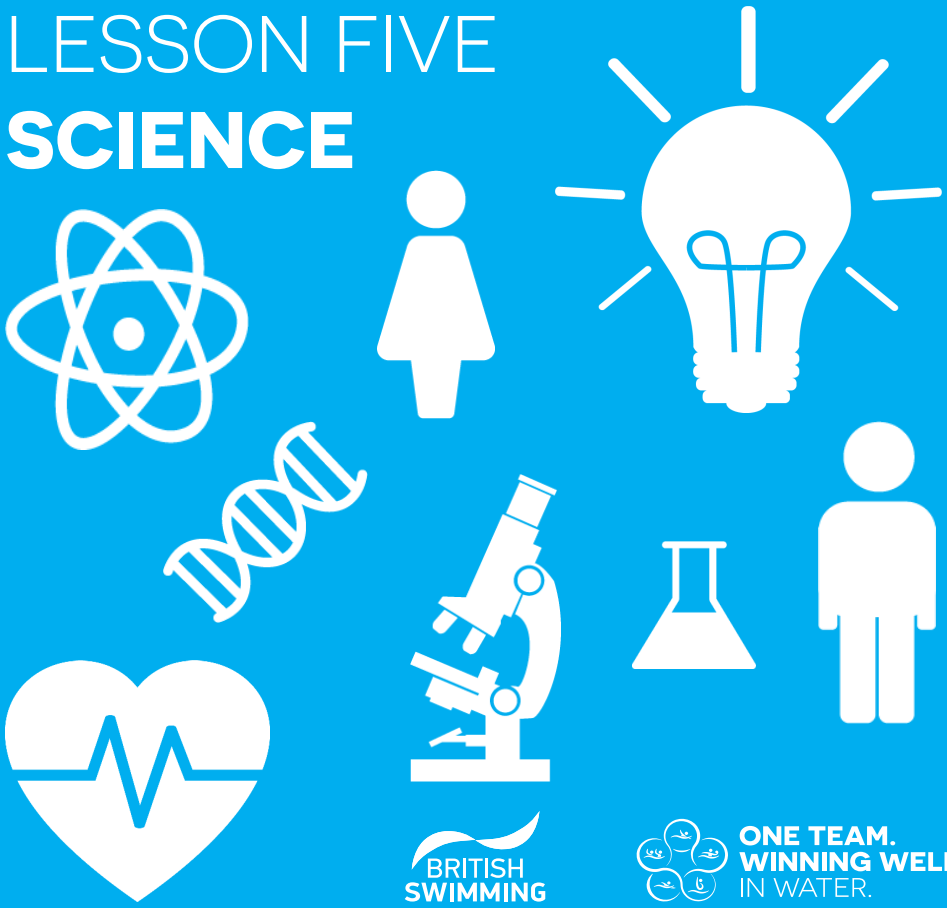
HOME POOLING

LESSON FIVE
SCIENCE



BRITISH SWIMMING

ONE TEAM.
WINNING WELL.
IN WATER.

Welcome to the fifth lesson of our new Home Pooling classes

Welcome to the fifth of our new Home Pooling challenges! Each week, we will be releasing two challenges across a variety of subjects for parents and carers to work through with their children at home – with a British Swimming twist to each one.

Once your child/children have completed the relevant tasks, submit their work over social media by tagging @BritishSwimming using the hashtag #HomePooling – and one lucky child from each task will receive a personalised video message from one of our swimming, para-swimming or diving stars.

Good luck and have fun!

Introduction

Have you ever put your hand on your chest and felt your heart beating? And the rise and fall as you breathe in and out?

Perhaps after going swimming (or doing any exercise) you've noticed that this increases or you feel a little bit out of breath – this is all because your muscles require oxygen from the air to produce energy to move, and the heart and lungs play a key role in delivering it. In this session we'll try to introduce you to some of the basic terms in the 'cardiopulmonary system' so you can learn a bit more about two of your major organs.

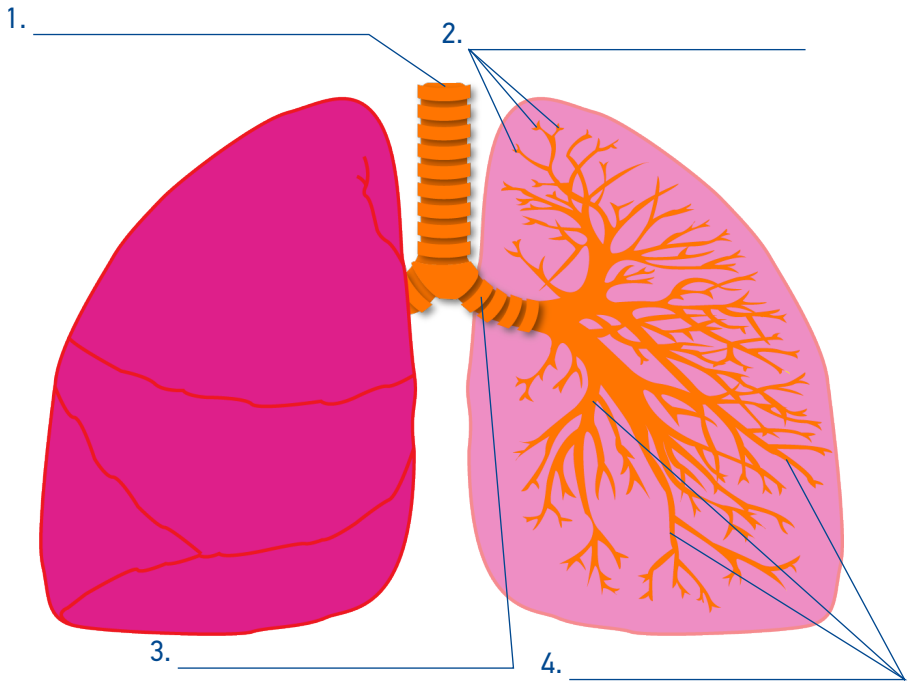
Task One – Travelling inside the Lungs

If you were able to see inside your chest and see your lungs, they would look pink and a bit squishy, like a sponge. However on the inside is an amazing network air travels in and out of with every breath. Entering through the **TRACHEA** *or windpipe at the back of your mouth, this separates into two large tubes called the main stem* **BRONCHI** *- one heads left into the left lung, while the other heads right into the right lung.*

Each main stem bronchus (the name for just one of the bronchi) then branches off into tubes that get smaller and even smaller still, like branches on a big tree. The tiniest tubes are called **BRONCHIOLES** *and there are about 30,000 of them in each lung. Each bronchiole is about the same thickness as a hair.*

At the end of each bronchiole is a special area that leads into clumps of teeny tiny air sacs called **ALVEOLI** *which interact with tiny blood vessels, to transfer oxygen into the blood and remove waste carbon dioxide from it. There are about 600 million alveoli in your lungs and if you stretched them out, they would cover the surface area of two lanes of an Olympic swimming pool.*

Using the above passage, fill the highlighted words in on the below diagram.



Task Two – To the beat of your heart

The heart does its job of pumping blood carrying oxygen and vital nutrients around your body 24 hours a day, seven days a week all year long without you ever having to think about it – pretty amazing!

When you think about a swimming an endurance event like the 10km marathon swim, an athlete like Alice Dearing can be in the water for almost two hours. During the race her heart will respond by increasing the rate at which it pumps blood around the body through a network of vessels called arteries and veins, to deliver a constant supply of oxygen from the lungs to her muscles, so that they can produce energy for the movement required to swim.

Have a go at seeing if you can match up the key words below to their definitions from what you already know:

Hint: When trying to learn the difference between arteries and veins as types of blood vessel, just think A for 'artery' and 'away' (from the heart).

A **HEART**	1 The process of moving air into and out of the lungs.
B **LUNGS**	2 A vessel which carry blood away from the heart and transports oxygen and useful nutrients to the body's cells.
C **BREATHING**	3 The organ in your body that transfers oxygen into your blood.
D **HEART RATE**	4 A vessel which take blood back to the heart where it is pumped to the lungs to pick up new oxygen again.
E **ARTERY**	5 The number of times your heart beats in a minute.
F **VEIN**	6 A cardiac muscle which pumps blood around your body.

Task Three – To the beat of your heart

In our final task we want you to play a game where you imagine you're a red blood cell swimming through the arteries and veins of an athlete, picking up and delivering oxygen on your way around the two different circuits to which the heart pumps blood;

1) to and from the lungs
2) to and from the body

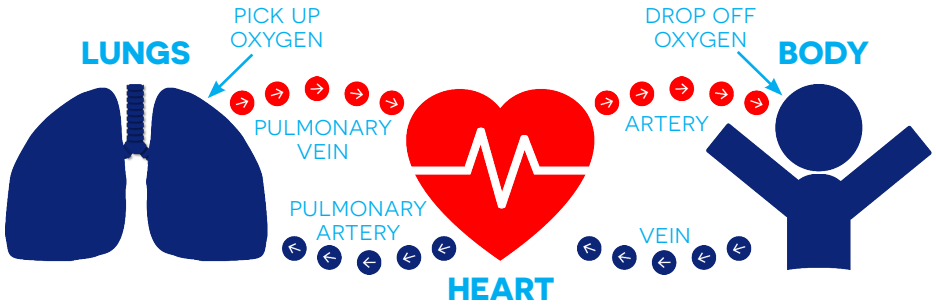
What you'll need:

- A bit of space
- Markers to create zones for the heart, lungs and body (use cones, or go old fashioned and put a couple of jumpers down!)
- A few balls (as pretend oxygen molecules to station in the lungs)

Rules:

1. Starting in the heart, follow the circuit round from heart > lungs > heart > body >heart shouting out which organ you're in
2. When you visit the lungs pick up an 'oxygen' ball and when you visit the body drop it off
3. And finally if you're travelling in a vein you must hop (a sneaky way to get you to remember the difference in types of blood vessels by their direction of travel from the heart).

Want to make it a competition? Take on members of your family to see how many times you can deliver oxygen to the body in 90 seconds – make a mistake though and you start again!



Answers – Task One: 1) Trachea, 2) Alveoli, 3) Bronchi, 4) Bronchioles. **Task Two**: A-6, B-3, C-1, D-5, E-2, F-4.