

Title: Heart Rate

Topics: Heart rate, the effects of exercise, recording results, graphical representation of results and evaluation.	Time: 60 minutes	Age: 11 - 13
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Differentiation:

There are opportunities to stretch students during this activity particularly through their use of language and evaluation.

Guidelines, ICT support etc.:

There are no specific requirements for equipment or resources in relation to this experiment. However some teachers have used pulse meters to generate results.

Some teachers have uploaded the question sheet onto PCs and allowed students to fill in their answers using word.

Equipment needed for this activity:

Stop watch

Graph paper

Paper for recording results

Health and Safety:

There are no specific health and safety issues with regards' to this activity.

However ample space is needed for pupils to be active.

Learning outcomes for this activity:

Students will record their pulse both before and after exercise.

Students will be able to record their declining pulse and plot this on a line graph unaided. Predicting how long it will take to return to normal.

Students will be able to construct a class results table and look for unusual results which could be re tested.

Lesson description

Starter Activity (10 minutes)

Beginning with a discussion of what a pulse is and why it might rise, pupils are encouraged to consider the effects of exercise on their bodies. Why do our muscles need blood and what does it supply and take away from our cells.

Exercising muscles need more oxygen and food and require to have waste materials removed.

Main Activity (40 minutes)

Work sheets are provided

Pupils are shown how to record their own pulse.

As a class all pupils record their own pulse 3 times and produce an average this is recorded as their resting heart rate.

Pupils working in pairs are then asked to jog on the spot or walk up and down stairs or perform star jumps for 1 minute.

At the end of this activity pupils immediately record their pulse again, wait a minute and take their pulse this is repeated for several minutes.

They then produce a graph of their results.

Plenary Activity (10 minutes)

Pupils are asked to feedback on their results can they identify results which stand out from the rest.

Can they identify a class average and use extrapolation to predict when their heart rate might return to their resting rate. This is known as the recovery period.

Heart Beat

Everybody knows that you will die very quickly if your heart stops, if I asked you why what would you say?

Think about this for a minute, your teacher is going to ask you.

What is it your heart pumps around the body?

What does this red stuff do?

Why do you die within minutes if you don't constantly get a new supply of Blood?

Today we are going to carry out an experiment on your heart.

But don't worry we are leaving it inside you.

Firstly let's find out what is your normal resting heart beat?

Are you sitting comfortably, follow your teachers advice and find your pulse.

Now note down how many beats you feel in 10 seconds.

10 seconds _____

20 seconds _____

30 seconds _____

40 seconds _____

What do we have to do to these figures to turn them into beats per minute?

Rough Work

This is your average normal resting heart rate.

Think about it your heart will beat every minute of every day for your entire life.

How many beats will yours do in an hour, a day and a year?

Rough work

An hour _____

A Day _____

A Year _____

An average person will have about 2.21 billion heart beats in a lifetime.

Let's try an experiment.

Now we know your resting heart rate how much will it increase after you have exercised for a minute?

Write down what your heart rate is for the minute after you have exercised.

What is your heart beat for the 3rd minute after your exercise?

What is your heart beat for the 5th minute after you have exercised

What do you notice about your heart rate after exercise?

Can you draw a graph of your heart rate before during and after exercise?

Can you think what sort of graph would be best?

Can you plot another person on the same graph?

How will you make sure you can tell who is who on your graph?

Talk to your teacher about your results, do they fit in with the rest of the class?