



Stage 2: Investigating the effect of exercise on heart rate

Learning Objectives:

- To identify and name the main parts of the human circulatory system
- To describe the functions of the heart, blood vessels and blood
- To investigate the effect of exercise on heart rate

Stage Overview:

In this stage, the children learn to identify the main parts of the circulatory system and their function. This is then linked to the lifestyle factors that can affect heart health. The children will work scientifically to design and carry out their own investigation to explore the question: "What effect does exercise have on our heart?"

Materials needed:

- Tablets
- Plasticine
- Stop watches

Presentation notes:

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| Slide 2: Sharing the learning intention | <ul style="list-style-type: none"> • Share the learning intention and explain that before we develop our range of healthy restaurant dishes, we need to understand the effect of diet and exercise on our hearts and how the circulatory system works. • Ask the children what they think the job of the circulatory system is. |
| Slide 3- 12: The circulatory system | <ul style="list-style-type: none"> • Talk through the power point slides to identify the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood. |
| Slide 13: Tasks | <ul style="list-style-type: none"> • Using this learning, challenge the children to create a stop motion animation to demonstrate the journey that blood takes as it travels around the body. • Link this to the project by asking the children to research the importance of ensuring our heart stays healthy and the lifestyle factors that can affect this. They will use this research in a later session. |
| Slide 14: Sharing the learning intention | <ul style="list-style-type: none"> • Share the second learning intention to introduce the next part of the session. |
| Slide 15: Working scientifically | <ul style="list-style-type: none"> • Ask the children to think about how we can measure their heart beats. • Establish that the pulse is a measure of this. |
| Slide 16-17: Finding your | <ul style="list-style-type: none"> • Model how to find their pulse in their wrist- their "resting heart rate" |

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| pulse | <ul style="list-style-type: none"> • Ask children to find their own pulse- explain that we will be counting the number of times our heart beats during a 30 second interval and multiplying this number by 2 to find the beats per minute. • Use a stop watch to time 30 seconds and ask children to measure their pulse rate and record it. • Ask if this is a reliable measure of our pulse? How can we make the result more accurate? We could take multiple measurements. Why is this important? |
| Slide 18: Finding the mean | <ul style="list-style-type: none"> • Ask the children to measure their resting heart rate twice more and ask what can we do with multiple measurements to create a single measurement? Establish that you can find the mean. • Ask for an explanation of how to find the mean and model on the board- ask the children to calculate their own mean resting heart rate. |
| Slide 19: Predictions | <ul style="list-style-type: none"> • Ask the children what happens to our heart rate when we exercise? • Ask them to think about and discuss how we can use what we have learnt about the circulatory system to explain this and allow time for the children to feed their ideas back to the class. |
| Slide 20: Designing an investigation | <ul style="list-style-type: none"> • Explain that you are going to investigate the impact that different exercises have on your heart rate. In their groups, challenge the children to think of how we could do this and to design their own fair test. • Children should write a prediction in their books that explains what they think will happen to their heart rate when they exercise, which exercise will have the strongest effect and why. • For their investigation design, they could take their heart rate measurement after three different forms of exercise. They could take two sets of measurements for each exercise: one straight after exercising and one 1 minute later to explore how quickly their heart rate returns to resting after each exercise. They could repeat this several times to find a mean. |
| Slide 21-22: Fair testing | <ul style="list-style-type: none"> • Remind the children about fair testing and the importance of ensuring that all variables stay the same and only one i.e. the type of exercise is changed. Remind them to take repeated measurements. • Give the children the opportunity to complete the investigation that they have designed, record and describe their results and write a conclusion about what they found. |
| Slide 23-24: Drawing a line graph | <ul style="list-style-type: none"> • Ask the children to plot a line graph to display their results and write a short paragraph to explain what it shows. |
| Slide 25: Evaluating | <ul style="list-style-type: none"> • Encourage the children to think critically about how they conducted their investigation. Was it well controlled? Could they have improved their design or fair testing? How? • Can they think of a potential problem with collecting this data all in one session? What impact might this have on the measurements we take towards the end of the session? Did anybody notice this in their data? How could we control for that in future investigations? |

A colorful illustration of a farm scene. In the foreground, there is a black and white cow, a white sheep, and two chickens. In the middle ground, a red tractor is plowing a field. The background features rolling green hills, trees, and a bright yellow sun in a blue sky with birds and clouds.

Links to the National Curriculum:

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| Science | Animals including humans | <ul style="list-style-type: none">- Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function- Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood |
| Maths | Statistics | <ul style="list-style-type: none">- Calculate and interpret the mean as an average- Interpret and construct pie charts and line graphs and use these to solve problems |