

Spring Block 4

Diet, drugs and lifestyle

Small steps

Step 1

Diet

Step 2

Drugs

Step 3

Cigarettes

Step 4

Plan – heart rate experiment

Step 5

Investigate – heart rate experiment

Step 6

Evaluate – heart rate experiment

Notes and guidance

In this block, children explore the impacts of diet, drugs and lifestyle on overall body health. They should make links to learning in the previous circulatory system block as much as possible to identify how diet can have positive or negative effects on the heart.

In Year 3, children explored the concept of a balanced diet and learnt about the five food groups. In Year 6, children should explore the impact of diet on overall heart health. They learn that fats can be classified as saturated, unsaturated and trans fats. Children should learn that the body needs vitamins (such as, A, C and D) and minerals (such as, iron and calcium). Children will encounter energy measured in calories and should research the impact of too many or too little calories on the body and how this also affects general and heart health.

Things to look out for

- Children may think that humans cannot get all the vitamins and minerals needed for good overall health from the food we eat.
- Children may be sensitive when discussing diet and calories in Year 6 and it is important to be aware of this.

Key questions

- What is a balanced diet?
- What are the functions of proteins/carbohydrates?
- What are saturated/unsaturated/trans fats?
- What are the positives of eating unsaturated fats?
- How does eating too much saturated/trans fat negatively affect the body?
- What are vitamins and minerals?
- How do humans get vitamins and minerals in their diets?
- What are the benefits of eating foods high in vitamins and minerals?

National curriculum links

- Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function.
- **Working scientifically** – Identifying scientific evidence that has been used to support or refute ideas or arguments.

Diet

Key vocabulary

- **balanced diet** – a diet that fulfills a person’s nutritional needs



- **calories** – a measure of energy taken from the food or drinks a person consumes

Energy	Fat	Saturates	Sugars	Salt
1046kJ 250kcal	3.0g	1.3g	34g	0.9g
	LOW	LOW	HIGH	MED
13%	4%	7%	38%	15%

- **unsaturated fats** – fats that have a positive impact on the body



- **saturated fats** – fats commonly found in animal-based foods



- **trans fats** – unhealthy fats found in fried and processed foods



Practical ideas

- Children could use secondary sources to research foods that can be classified into unsaturated, saturated or trans fats. They should also explore the positive or negative impact of eating foods from these groups on overall body/heart health. Encourage children to link learning to the previous circulatory block as much as possible.

- Ask children to create a meal plan for an adult or a child. They can think of how to create nutritionally balanced meals whilst keeping within the calorie limits for that particular person.

Encourage children to think about whether their meals are providing enough vitamins and minerals to function properly as well as thinking about eating food from various food groups.



Factual knowledge

- A balanced diet is made up of the right amounts of carbohydrates, fats, proteins, vitamins, minerals, fibre and water.
- Fats can be classified as unsaturated, saturated or trans fats.
- Unsaturated fats provide the body with energy and allow humans to absorb some vitamins.
- Saturated and trans fats can cause weight gain and heart disease.

Drugs

Notes and guidance

In this small step, children learn about drugs and their effects on the body. This includes different drugs, such as painkillers, depressants and stimulants. It is important to note that children may not have come across these terms before so they will need clarifying before they explore the effects on the body.

Children should have opportunities to research different drugs, their effects and ask relevant questions to their peers and adults to further their understanding. By the end of this step, children should be able to give examples of different drugs and their effects on the body. They should also explore the difference between legal and illegal drugs. Refer to the school's PSHE policy when discussing this.

Things to look out for

- Children may believe that painkillers cure a person of a certain illness or condition. Explain to them that painkillers help to reduce pain.
- Children may believe that drugs relieve a person's stress and problems.
- Children may think that all drugs are bad for you. Clarify that some drugs are helpful and reduce symptoms or pain.

Key questions

- What is a drug?
- What are some examples of drugs?
- What are painkillers?
- What are the effects of painkillers on the body?
- What are stimulants?
- What are the effects of stimulants on the body?
- What is addiction?
- How can you classify different drugs?
- Why are some drugs legal and others are illegal?

National curriculum links

- Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function.
- **Working scientifically** – Recognise which secondary sources will be most useful to research their ideas and begin the separate opinion from fact (non-statutory).

Drugs

Key vocabulary

- **drug** – a chemical that can change the way your body or brain functions



- **painkiller** – drugs that help the body dull pain



- **stimulants** – drugs that help you feel more awake and alert



- **depressants** – drugs that make the body feel calm and drowsy



Practical ideas

- Give children images of different types of painkillers and drinks containing stimulants, such as paracetamol, ibuprofen, aspirin, tea, coffee and caffeinated fizzy/energy drinks.

Ask them to group them as painkillers or stimulants and give their reasons for this.

Encourage children to identify the effects each type of drug has on the body.

- In groups, ask children to research different types of drugs and their effects on the body.

Ensure that if they are using secondary sources that these are age-appropriate.



Factual knowledge

- A drug is a chemical that can change the way your body or brain functions.
- Painkillers help the body to dull pain.
- Stimulants make a person feel more alert and awake.
- Depressants make the body feel calm and drowsy.
- Some drugs are legal and some are illegal.

Cigarettes

Notes and guidance

In this small step, children learn about cigarettes and vaping. This includes what cigarettes are made from, the dangers of smoking and vaping including their effects on the body. It is important that children look at the impact of smoking on the heart to allow them to recap knowledge learnt in the previous block.

This is the first time that children have learnt about cigarettes and vaping. As a result, they may have some common misconceptions about them and their effects. It is important to note that children may not have come across terms such as tar, nicotine and carbon monoxide. They will need to know these terms before they can describe their effects on the body.

Things to look out for

- Children may believe that a person must smoke for a long time before it has an adverse effect on the body.
- Children may have parents that smoke or vape and may be distressed by some of the information. Be mindful of this.
- Children may believe that if you are pregnant and smoke, then the mother's body protects the baby from the smoke.

Key questions

- What do cigarettes contain?
- What is vaping?
- What are the effects of tar on the body?
- How do cigarettes affect the heart?
- What are the effects of nicotine?
- What are the effects of carbon monoxide?
- Why is smoking cigarettes/vaping bad for you?
- What is addiction?
- How is it possible to become addicted to smoking/vaping?

National curriculum links

- Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function.
- **Working scientifically** – Recognise which secondary sources will be most useful to research their ideas and begin to separate opinion from fact (non-statutory).

Cigarettes

Key vocabulary

- **cigarette** – a thin tube filled with tobacco used for smoking
- **vape** – a device used for inhaling vapour containing nicotine and other flavours
- **tar** – a sticky, brown substance that collects in the lungs when inhaled



- **nicotine** – a highly addictive chemical



- **carbon monoxide** – a poisonous gas that stops the blood from carrying as much oxygen



- **addiction** – when a person becomes dependent on a drug

Practical ideas

- Children can use secondary sources to research the composition of cigarettes and to look at the effects on the body including the dangers of smoking.

They could then present their findings to the rest of the group.

- Split the class into smaller groups.

Give each group a part of the body which is adversely affected by smoking and vaping.



Allow children to research how cigarettes/vapes affect each part of the body.



Factual knowledge

- Cigarettes contain tar, nicotine and other harmful substances.
- Tar is a sticky, brown substance which can cause cancer.
- Nicotine is highly addictive.
- Carbon monoxide is a poisonous gas that stops the blood carrying as much oxygen.
- Smoking can damage the body and cause breathing problems. It also increases the risks of heart and lung disease.

Plan – heart rate experiment

Notes and guidance

In this small step, children plan a fair test to explore whether the duration of exercise affects heart rate. Children should be encouraged to use a plan proforma in small groups, so that they get support in making a prediction and create a logical experiment plan.

Children should be introduced to the enquiry question. They should be aware of the terms “independent”, “dependent” and “controlled” variables, however, the definitions of these terms may need to be recapped. They should then be able to identify the three variables in their experiment.

Things to look out for

- Children may confuse the variables in this experiment. Highlight and make clear to them what the independent, dependent and controlled variables are in this experiment.
- Children may think that only sport such as football or basketball is exercise. Clarify to them there are many different forms of exercise.

Key questions

- What is exercise?
- What are the positive impacts of exercise on the body?
- What is your heart rate?
- What will you use to measure the duration of the exercise?
- How will you measure heart rate?
- What are the independent/dependent/controlled variables in this experiment?
- How will you record your results?

Enquiry question

- How does the duration of exercise affect heart rate?

National curriculum links

- Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function.
- **Working scientifically** – planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.

Plan – heart rate experiment

Experiment variables

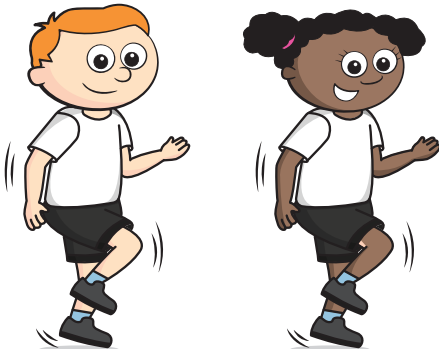
- **independent variable** – (what will change) – the duration or length of the exercise



- **dependent variable** – (what will be measured) – the heart rate (bpm)



- **controlled variables** – (what is kept the same) – performing the same type of exercise



Equipment needed

- stopwatch
- PE kits
- suitable footwear
- large space – outdoor or hall

Practical activity

- Put children in small groups.
Give each group cards of the three variables and general definitions.
Children should then match the variables to their definitions.
They then do the same card sort activity to identify the variables in this investigation.

Planning sentence stems

- I predict that ...
I think this will happen because ...
- We are changing the ...
- We are measuring the ...
- We are keeping the _____ the same.

Investigate – heart rate experiment

Notes and guidance

In this small step, children carry out a fair test to explore how the duration of exercise affects heart rate. They should use their plans from the previous step to effectively carry out their investigation and obtain results for each duration of exercise.

Before starting the investigation, it is essential that children are able to take their heart rate accurately. This should be practised prior to the investigation. Their heart rate can be easily found by placing two fingers in the centre of their wrist and pressing down slightly.

Children could count the number of beats in 15 seconds and then multiply this number by 4 to calculate their beats per minute (bpm). Calculators may be used to support multiplying if children need extra support.

Things to look out for

- Children may need reminding before the investigation that heart rate must be taken before and after the exercise.
- Children may also need reminding that after each duration of exercise, the heart rate needs to return to normal before starting the exercise again.

Key questions

- What is your heart rate?
- How do you measure your heart rate?
- What is your experiment plan?
- What are the independent/dependent/controlled variables?
- What will your table of results look like?
- What effect does the duration of exercise have on heart rate?

Enquiry question

- How does the duration of exercise affect heart rate?

National curriculum links

- Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function.
- **Working scientifically** – Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.

Investigate – heart rate experiment

Key vocabulary

- **circulatory system** – parts of the body that work together to move blood around the body



- **heart** – the organ responsible for pumping blood around the body



- **heart rate** – the number of times your heart beats in one minute



- **duration** – the length of time something lasts



- **exercise** – physical activity that improves or maintains physical fitness

Equipment needed

- stopwatch
- PE kits
- suitable footwear
- large space – outdoor or hall



Be aware of any existing medical conditions before exercising and ensure they wear appropriate footwear.

Method

1. Children should place two fingers on their wrist and measure resting heart rate for 15 seconds. Multiply this answer by 4 to calculate beats per minute.
2. Ask children to perform an exercise for 1 minute.
3. After 1 minute children should take their heart rate. Ask them to count their heart rate for 15 seconds and then multiply their answer by 4 to calculate beats per minute.
4. Allow their heart rate to return to its resting rate.
5. Then repeat the exercise but this time for 2 minutes.
6. After 2 minutes, children should take their heart rate. Ask them to count their heart rate for 15 seconds and then multiply their answer by 4 to calculate beats per minute.
7. Allow their heart rate to return to its resting rate.
8. Repeat the process for different durations of exercise lasting 3 minutes and 4 minutes.

Evaluate – heart rate experiment

Notes and guidance

In this small step, children evaluate their heart rate experiment. They should work scientifically to analyse data, make conclusions and evaluate their experiment. Within this step, children should be given the opportunity to answer the enquiry question and discuss the effect of the duration of exercise on heart rate. They should discuss why their heart rate increases and link back to learning about the circulatory system in the previous block.

Children could compare their data or results with other children's to allow them to spot patterns and evaluate whether their results are similar or different. They should be aware of the term "anomalous results", but this may need to be re-capped so they can identify any anomalous results in their data.

Things to look out for

- Children need to comment on scientific improvements when evaluating their experiments, such as improving accuracy and how this can be achieved. For example, children could use a heart rate monitor which is more accurate than counting beats per minute (bpm) as they could take the measurement during exercise rather than immediately afterwards.

Key questions

- What is heart rate?
- How did the duration of exercise affect heart rate?
- Were there any anomalous results in your experiment?
- If you were to repeat this experiment again, how could you improve your results?
- What questions do you have for further investigation?

Enquiry question

- How does the duration of exercise affect heart rate?

National curriculum links

- Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function.
- **Working scientifically** – Using test results to make predictions to set up further comparative and fair tests.

Evaluate – heart rate experiment

Key vocabulary

- **heart** – the organ responsible for pumping blood around the body



- **heart rate** – the number of times your heart beats in one minute



- **duration** – the length of time something lasts



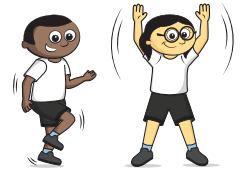
- **conclusion** – what has been found out during an investigation based on experimental measurements and observations

Duration of exercise (mins)	Heart rate (bpm)
1	91
2	101

- **evaluation** – to consider the quality of the results obtained and suggest improvements to the investigation or experiment

Practical ideas

- Children can extend their investigation by investigating how the type of exercise affects heart rate. This may include skipping, running and performing star jumps. They then compare the effects of the different types of exercises.



Be aware of any existing medical conditions before exercising.

- Children can work out their recovery rates by timing how long it takes for their heart rates to return to their resting rate after exercising. They can then compare their recovery rates to other children's.

Evaluation sentence stems

- I predicted that ...
My prediction was correct/incorrect because ...
- From looking at our results, I can see that ...
This happened because ...
- Our results are/are not reliable because ...
- To make our investigation more accurate, we could ...
- For a future investigation, I would like to find out ...