



Power

People in space

time

50 minutes

learning outcomes

To:

- know that food floats around in space
- know why your body needs carbohydrates
- know which foods contain starch
- know the five principal food groups and use this knowledge to put together a healthy meal

end product

- the results of an experiment using iodine to show the presence of starch

materials needed

- photograph of astronauts eating (Appendix)
- sandwiches
- tortillas
- apples
- cheese
- biscuits
- cooked sausage
- iodine

Tip. You can also use the photographs of an astronaut's life from the Appendix

Preparation

For the activity **How do astronauts eat?** you will need the photograph of the astronauts eating from the Appendix.



How do astronauts eat? 15 min.

Show the photograph of the astronauts eating. Ask the children what they see in their photograph. Explain that astronauts can live aboard space stations. They carry out research and also eat and sleep there. What is it like to eat in space? Explain that it is not very easy to eat in space. You cannot feel any gravity in space. If you drop something, it does not fall down but stays floating around. Water in space forms a big drip that floats out from your cup. When it bumps into something it breaks up into lots of small drops that float off in all directions. These drips stick to the surfaces in the space station.

Explain that there are no shops in space, so it is important to think carefully about what food to send into space with the astronauts. An important part of the astronauts' diet is made up of carbohydrates: sugars and starches. Ask the questions: 'What foods contain carbohydrates, and Why are they an important part of our diet?' Explain that carbohydrates can be found in pasta, rice, and bread. Carbohydrates including starch, are used by our body as fuel. Eating foods that contain a lot of carbohydrates gives us energy. The children complete Task 1 on the worksheet.



The children investigate what types of food the astronauts can take into space to ensure they eat enough carbohydrates.



Testing for starch 15 min.

The children investigate which foods contain starch. Write on the board the different types of food you will be using in the experiment: bread, tortilla, apple, cheese, biscuit, cooked sausage. Take each food in turn and ask if the children think it contains starch. Encourage them to raise their hand if they think a food contains starch. Write on the board how many children think the food item contains starch.

Organise the children into pairs. Give each pair the items they need to carry out Task 2 on the worksheet. The children carefully drip a small amount of iodine onto each food product. If the iodine and the food turn a dark blue colour, then the food contains starch.



The children discover that sandwiches, tortillas, biscuits, and cooked sausage all contain starch.



Discuss the task. Astronauts can take these products containing starch to eat in space. This ensures they eat enough carbohydrates, which act as fuel for their bodies. Did the foods containing starch match the children's predictions at the beginning of the lesson?



Food in space 20 min.

We need to eat other kinds of food besides carbohydrates. Draw a pie chart on the board showing the five food groups. Explain the five food groups: Vegetables and fruit give us vitamins, minerals, and fibre. Bread, cereals, potatoes, rice, pasta, and pulses are an important source of carbohydrates. Dairy products, meat, fish, eggs, and meat substitutes (such as tofu) give us protein. We need oils and fats to help us absorb sufficient vitamins. Drinks are important to ensure our water intake is sufficient.



The children complete Task 3 on the worksheet. For this task they need to write down what food products an astronaut cannot do without if he wants to eat a healthy meal. They should use the chart of the five food groups to help them decide. They should also describe how the food should be served so that it is easy for the astronaut to eat or drink it in space. Explain that it is best if the astronaut doesn't have to cut up the food, and that it does not float away when the package or container is opened. Explain that the children also need to consider the shelf-life of the food products. A stay in the space station lasts a long time. Many food products would go bad during the stay in space, so the astronauts are given food that has a long shelf-life.



Food

58

Worksheet

1 How do astronauts eat?

a What food products do you know that contain carbohydrates?



write your
answer
HERE

b Why does your body need carbohydrates?

write your
answer
HERE

c What is starch?

write your
answer
HERE

2 The starch test



What do you need?

- bread
- cooked sausage
- tortilla
- iodine
- apple
- cheese
- biscuit

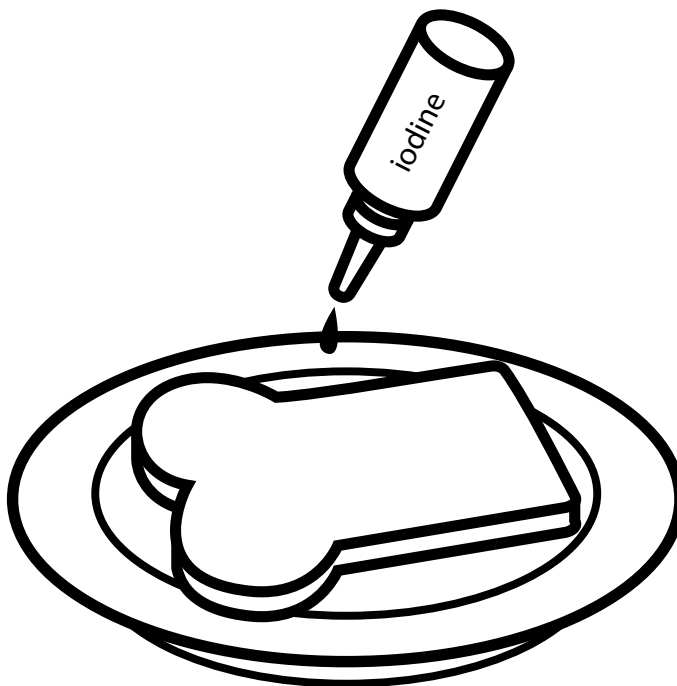
What do you need to do?



You are going to investigate which foods astronauts can take into space to ensure they eat enough starch.

1 Line up the bread, the tortilla, the apple, the cheese, the biscuit and the cooked sausage on the table.

2 Pour a few drops of iodine onto each food product.



If the food product contains starch, the food product and the iodine will turn dark blue.

a

Which food products contain starch?

Bread **yes / no**

Tortilla **yes / no**

Apple **yes / no**

Cheese **yes / no**

Biscuit **yes / no**

Cooked sausage **yes / no**

CIRCLE
the correct
answers

b

Which food products could astronauts take into space to ensure they eat enough carbohydrates?



write your
answer
HERE

3

Food in space

a

Look at the pie chart of the five food groups. Put together a healthy meal for an astronaut.



Write down for the astronaut which food products he must take into space, and why.

b

How should the meal be packaged? Remember that everything floats around in space if it is not fastened down.



Astronauts eating • LESSON 58

