



SOARING IN SPACE WITH CANADA'S FOOD GUIDE



FITNESS AND NUTRITION

MISSION DESCRIPTION

Participants shall navigate through Canada's Food Guide (CFG)* and identify aspects of the guide which can be applied to them and to astronauts aboard the International Space Station (ISS). Afterwards, participants shall play a mix-and-match game to solidify their understanding.

**This activity uses the 2019 release of Canada's Food Guide.*

Difficulty: **MODERATE**

Duration: **70 MINUTES**

Materials: **MODERATE**

MISSION PREPARATION

TIMELINE

Breakdown	Duration
Introduction to lesson and CFG	5 minutes
Explanation of activity	5 minutes
Individual CFG activity	30 minutes
Group activity	30 minutes
Total	70 minutes

ACTIVITY 1

Participants will work individually to complete the activity worksheet about Canada's Food Guide. Participants will need access to the Internet via laptop, tablet, or computer.

ACTIVITY 2

In small groups, participants will use the knowledge gained from Activity 1 to correctly match descriptions and situations on the ISS with the corresponding Canada's Food Guide recommendation.

GOALS

To familiarize the participants with Canada's Food Guide

OBJECTIVES

By the end of the activity, participants will be able to

- Identify four main messages of Canada's Food Guide
- Create a healthy-eating goal based on Canada's Food Guide recommendations
- Identify two examples of how astronauts can meet Canada's Food Guide recommendations

MATERIALS

- Internet access (laptops, tablets, etc.)
- Background information
- Activity 1 worksheet
- Activity 2 instructions and mix-and-match cards



BACKGROUND

Canada's Food Guide recognizes that healthy eating is more than the foods you eat and involves:

- Being mindful of your eating habits
- Cooking more often
- Enjoying your food
- Eating meals with others

The guide also encourages making it a habit to eat a variety of healthy foods each day by:

- Eating plenty of vegetables and fruits, whole grain foods, and protein foods
- Making water your drink of choice
- Using food labels
- Limiting foods high in sodium, sugars, or saturated fats
- Being aware of food marketing

The guide shows how your plate could be divided to encourage healthy eating: half consists of vegetables and fruits, a quarter is whole grains, and the remaining quarter is protein.

Astronauts aboard the International Space Station (ISS) have three meals and one snack per day. They must consume between 1900 and 3200 calories depending on their height, weight, and specific needs. Astronauts can choose their foods for each meal and snack. With this in mind, astronauts need to plan or be mindful of the foods they consume during the day to make sure their diet is balanced and healthy.

Although astronauts have a hectic work schedule, occasionally they eat meals together and may swap foods from their home country. Crewmembers may celebrate holidays together by eating a traditional meal associated with that holiday. Even when there is no special occasion, eating as a group is a fun way to relax!



Canadian Space Agency astronaut Robert Thirsk and the crew of Expedition 20/21 share a meal during their six-month mission on board the ISS. (Credit: NASA)



Canadian Space Agency astronauts are scheduled **one hour** for lunch, which includes preparation and clean- up time. For breakfast and dinner they have more flexibility, as these meals are outside their normal working hours. Although many meals available on the ISS come pre-prepared in a rehydratable or retort package, astronauts can get creative with their meals and try to “cook” something from scratch. A common creation is burritos. To do this, they use tortillas, condiments, and various food items. See below for David Saint-Jacques and one of his crewmates creating pizzas on the ISS.



Canadian Space Agency astronaut David Saint-Jacques and NASA astronaut Anne McClain create pizzas on the International Space Station. (Credit: NASA)

Limiting sodium and processed foods while aboard the ISS is difficult. Foods which are high in sodium and are processed often have a long shelf life, which is desirable for ISS missions because the ISS does not have a food refrigerator or freezer. However, foods sent to the ISS must have as little sodium as possible while still keeping the food palatable and with a long shelf life.

Nutrition guidelines for astronauts are based on the nutrition guidelines for people living on Earth; however, due to the unique environment of space, it can be difficult to meet those guidelines all the time. Once they return to Earth, astronauts can also return to following the healthy eating guidelines for Canadians as described in Canada's Food Guide.

KEY FOR ACTIVITY 1 WORKSHEET: NAVIGATING CANADA'S FOOD GUIDE

Assessment of the various items

A variety of answers work. As long as they make sense, mark correct.

1. A variety of answers are acceptable.
2.
 - a. A variety of answers are acceptable.
 - b. fibre, vitamins, and minerals
3. stroke, colon cancer, heart disease, and type 2 diabetes
4. A variety of answers are acceptable.
A few examples include:
 - Limit highly processed food and added sodium by purchasing a fresh, raw chicken at the grocery store instead of a rotisserie chicken.
 - Cook chicken by baking or broiling.
 - Choose canned beans with no sodium added.
 - Add whole grains such as quinoa to the bean salad.
 - To decrease the amount of salt and sugar used in the dish, you can add more flavour by using fresh or dried herbs and spices instead. Examples include dill, cinnamon, ginger, lemon juice, paprika, rosemary, curry powder, basil and oregano.
 - Instead of using a pre-made dressing for the bean salad, you can make it yourself using ingredients such as olive oil, citrus, and flavoured vinegar.
5. A variety of answers are acceptable.
Protein foods are part of a healthy eating pattern and contain important nutrients such as vitamins, and minerals. Plant-based proteins can provide more fibre and less saturated fats than other types of proteins, which can be beneficial for your heart health.
6. Heart-healthy fats include unsaturated fats. Unsaturated fats are part of a healthy eating pattern. Choosing foods that contain mostly healthy fats instead of mostly saturated fats can help lower your risk of heart disease. Foods high in saturated fats include fatty meats, high-fat dairy products, some highly processed foods, and some tropical oils such as palm oil and coconut oil.
7. Taking time to eat can help you:
 - Enjoy your food
 - Focus on your food
 - Prevent overeating
 - Enjoy eating with others
 - Make healthier food choices
 - Be mindful of your eating habits and choices
8. A variety of answers are acceptable.



ACTIVITY 1 WORKSHEET: NAVIGATING CANADA'S FOOD GUIDE

Astronauts on the International Space Station (ISS) need to be healthy and energized in order to perform scientific experiments and duties on the ISS.

Navigate Canada's Food Guide and answer the corresponding questions.

Access the Canada Food Guide at Canada.ca/FoodGuide

1. Looking at the healthy plate, how many different vegetables and fruits can you identify? What other types of vegetables and fruits can you think of?

2. a. In your opinion, why does the healthy plate consist of 50% vegetables and fruits?

- b. What are some examples of important nutrients that vegetables and fruits can have?

3. Eating fibre-rich whole grain foods can help lower your risk of diseases such as _____, _____, _____, and _____.

4. You are cooking chicken and a bean salad for your family and friends. Describe different preparation methods and flavour techniques you can use to make it healthy.



1. Describe a meal containing plant protein that you could make for dinner and explain why eating protein is healthy.

2. What is the difference between a healthy fat and a saturated fat? List three foods high in saturated fats that you could limit.

3. What are the benefits of taking time to eat?

4. Create one healthy eating goal that you could achieve today.



ACTIVITY 2 INSTRUCTIONS

1. Place all cards on the table and separate into **A** pile and **B** pile.
2. Shuffle each pile.
3. Place all **B** cards on the table so you can see them.
4. Match **A** cards with **B** cards.

There can be multiple **B** cards matched with an **A** card.

There is one **A** card which does not match a **B** card:

“Be aware of food marketing.” This card does not have a match because when living on the ISS, astronauts are not exposed to food marketing which could affect their food decisions. Although astronauts on the ISS have access to podcasts, movies, pictures, music, news and weather, the advertisements and commercials are removed.

After the activity, you may ask the following discussion questions:

- What did you learn while doing this activity?
- Were there cards that were difficult to match? If so, why?
- Was there an A card that had no matches? If so, why do you think that was?



A



Be mindful of your eating habits

A



Cook more often

A



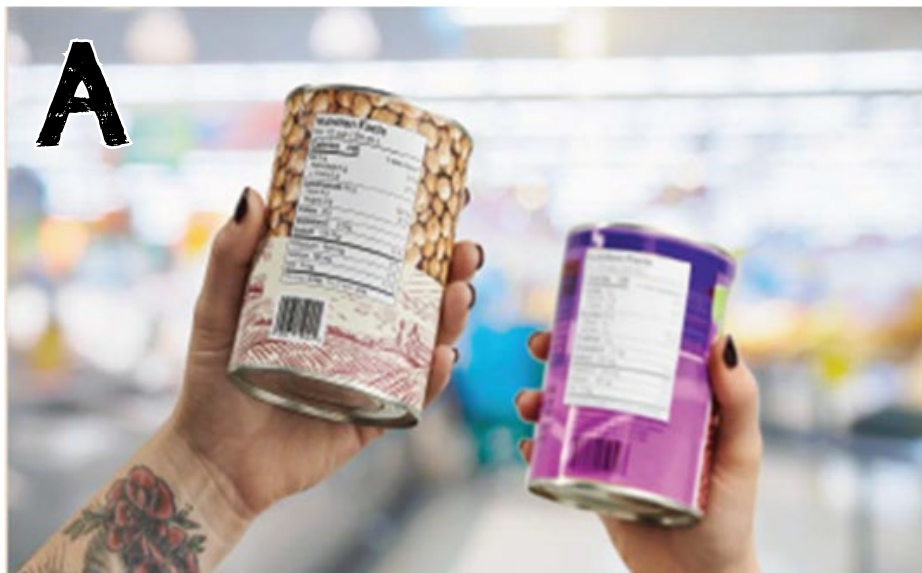
Eat meals with others

A



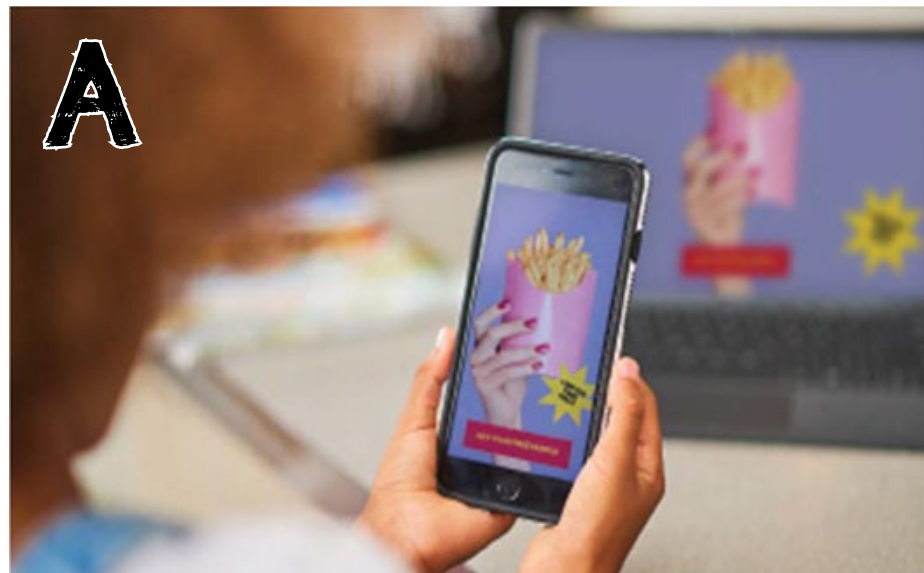
Enjoy your food

A



Use food labels

A



Be aware of food marketing

A



Choose healthy snack foods

A



**Limit foods high in sodium,
sugars or saturated fats**



Plan meals and snacks



Eat without distractions



Canadian Space Agency astronaut David Saint-Jacques eating with NASA astronaut Anne McClain. Credit: NASA



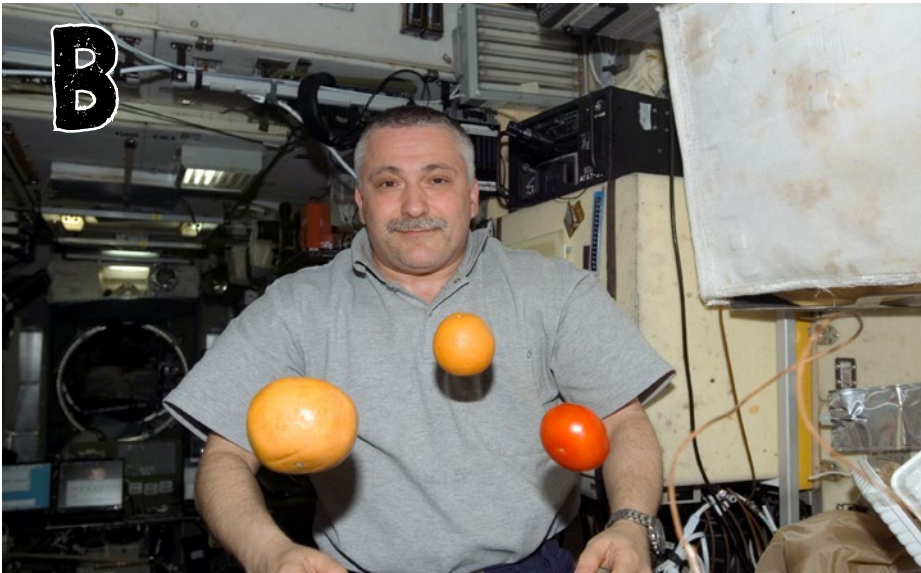
NASA astronaut Drew Feustel preparing waffles on the ISS. Credit: NASA



Space foods can be packaged in different ways which allows astronauts to enjoy a variety of food textures. They have rehydratable foods, canned foods, and natural form foods. Credit: NASA



Not all of the food on the ISS is healthy. Astronauts sometimes enjoy cookies and other treats too! Credit: NASA



Fresh fruits and vegetables get flown to the ISS every once in a while! Pictured is cosmonaut Fyodor N. Yurchikhin with fresh fruit. Credit: NASA



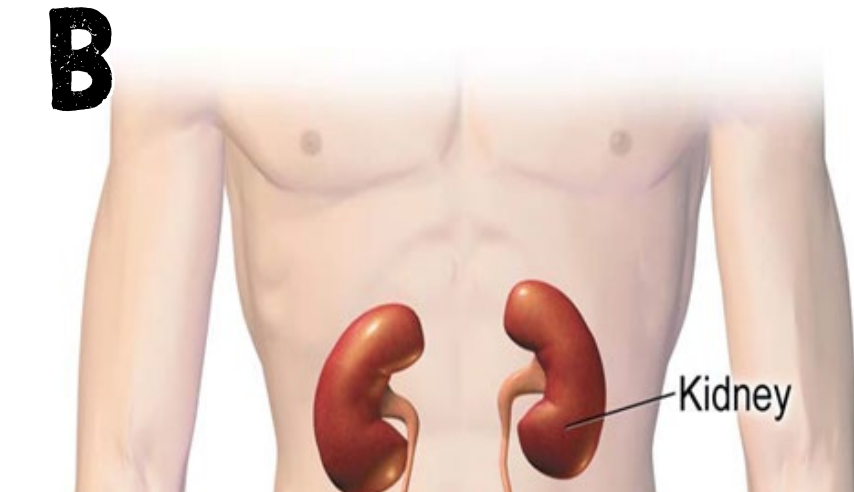
Astronauts can rehydrate healthy vegetables such as the asparagus in the picture. Also, they can add flavour to the dish by using garlic in a tube. Credit: NASA



Astronauts may need to plan their meals ahead of time so they can spend more time eating their meals instead of searching for food items. Credit: NASA



Foods sent to the ISS are planned months to a year or more in advance. A lot of evaluations, testing, and planning goes into space food! Credit: NASA



High salt intake is bad for the kidneys and could give astronauts kidney stones. Foods on the ISS must contain low amounts of salt.

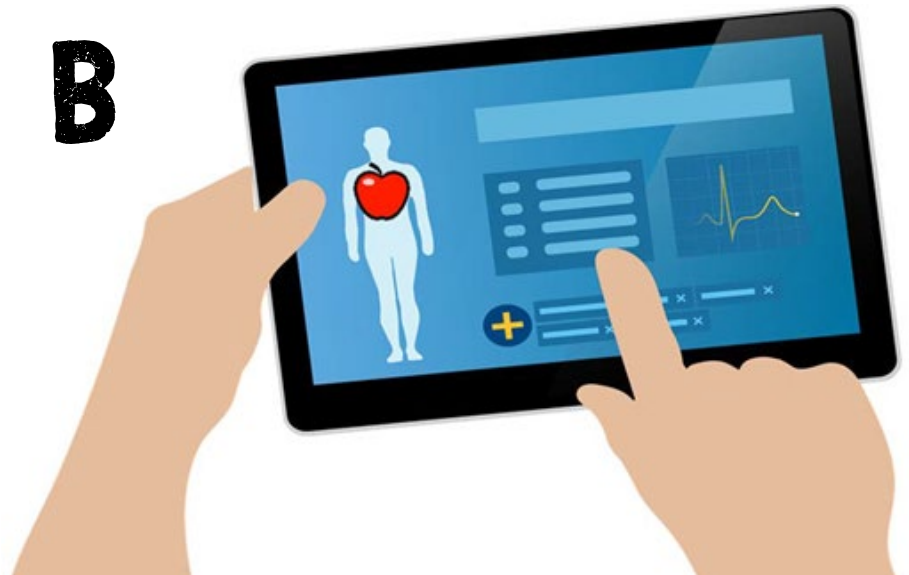


Astronauts read the food label to correctly rehydrate their dehydrated meals. Credit: Canadian Space Agency



B

Canadian Space Agency astronaut David Saint-Jacques is very busy on the ISS but has a one-hour lunch break in his schedule to make sure he has time to eat! Credit: NASA



B

Astronauts record the foods they eat on a tablet app and also complete food frequency questionnaires so the space dietitian and space doctors know what they are eating.



B

Former Canadian Space Agency astronaut Chris Hadfield plays with water on the ISS. Credit: NASA



B

Astronauts consume more heart-healthy (unsaturated) fats and consume less saturated fats.