

□ **READING CHALLENGE**

# Life on the International Space Station

*Sleeping in zero gravity, drinking floating water, exercising two hours a day, and using the strangest toilet in the universe*

<b>Level</b>	B1 — Intermediate
<b>Age Group</b>	Teens (11-16)
<b>Topic</b>	True Stories
<b>Duration</b>	~15-20 minutes
<b>Skill</b>	Reading
<b>Vocabulary</b>	15 words
<b>Quiz</b>	5 questions

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Imagine waking up in the morning, unzipping your sleeping bag, and floating out of it like a ghost. You drift gently towards the ceiling, push yourself off with one finger, and glide across the room to brush your teeth — being careful not to let the toothpaste escape into the air. This is not a dream. This is a normal morning for the six or seven astronauts living on the International Space Station, a giant laboratory orbiting Earth at 28,000 kilometres per hour, about 400 kilometres above our heads. The ISS is the most expensive object ever built, a home the size of a football pitch where people from different countries live and work together in one of the most extreme environments imaginable. But what is daily life actually like up there?

## A Home in the Sky

The International Space Station is not one single spacecraft. It is made up of sixteen pressurised modules connected together, built and launched piece by piece between 1998 and 2011 by the space agencies of the United States (NASA), Russia (Roscosmos), Europe (ESA), Japan (JAXA), and Canada (CSA). The station stretches 109 metres from end to end, roughly the length of a football pitch, and weighs about 420,000 kilograms. Inside, the living and working space is approximately the size of a six-bedroom house, though it certainly does not feel like one. Every wall is covered with equipment, cables, laptops, storage bags, and scientific instruments. There are no “floors” or “ceilings” in the traditional sense because in microgravity, there is no up or down. Astronauts use all six surfaces of every room.

The ISS completes one full orbit of Earth every ninety minutes, which means the crew experiences sixteen sunrises and sixteen sunsets every twenty-four hours. The station travels at such speed that if you could drive a car that fast, you would reach the moon in about fourteen hours. Despite this incredible velocity, the astronauts inside feel nothing — they float peacefully in microgravity, as though the station were standing still.

## Sleeping Without a Bed

There are no beds on the ISS. Instead, each astronaut has a small personal cabin, roughly the size of a phone box, where they sleep inside a sleeping bag attached to the wall. The sleeping bag is tethered so that the astronaut does not drift around the station during the night and bump into equipment or other crew members. Some astronauts strap their arms inside the bag; others let them float freely, which creates a strange sight — their arms rise up in front of their face like a zombie in a film.

Because the station orbits Earth every ninety minutes, the concept of “night” is meaningless. To maintain a normal routine, mission control sets a schedule based on Greenwich Mean Time (GMT). The crew wakes up at around 06:00 GMT and goes to sleep at about 21:30 GMT. The station dims its lights in the sleeping areas, and astronauts sometimes wear eye masks to block out any stray light from the sun streaming through the windows. Most astronauts report that sleeping in space is surprisingly comfortable once you get used to it — there is no hard mattress, no pressure on your shoulders or hips, and no need to find the perfect position. You simply float.

## Eating in Space

Food on the ISS has come a long way since the early days of space travel, when astronauts squeezed cold paste from tubes. Today, the crew eats a varied diet that includes more than two hundred items: tortillas, scrambled eggs, beef stew, shrimp cocktail, chocolate pudding, and even specially prepared sushi. Most food arrives dehydrated or thermostabilised in pouches. Astronauts add hot or cold water to rehydrate their meals and heat them in a small food warmer. [Nutrition](#) experts on the ground carefully plan every meal to ensure the crew gets enough calories, vitamins, and minerals.

Crumbs are a serious problem in microgravity. A tiny piece of bread can float into an air vent, get inside electronic equipment, or drift into an astronaut's eye. That is why the ISS uses tortillas instead of bread — they do not produce crumbs. Drinks come in sealed pouches with straws, because pouring a glass of water is impossible when the water simply forms a wobbling sphere and floats away. Catching a floating ball of water in your mouth is actually one of the astronauts' favourite games, and there are many videos of this on the internet.

## The World's Strangest Bathroom

Going to the toilet on the ISS is probably the question every schoolchild asks when an astronaut visits. The answer is fascinatingly awkward. The ISS toilet — officially called the Waste and Hygiene Compartment — costs about \$23 million and uses a suction system instead of water. The astronaut sits on a small seat and a fan creates airflow that pulls waste away from the body and into a sealed container. For urine, there is a separate funnel attached to a hose, also powered by suction. Each astronaut has their own personal funnel attachment for hygiene reasons.

Here is the remarkable part: urine is not thrown away. It is collected, filtered, and processed through the station's Water Recovery System, which purifies it into clean drinking water. The ISS [recycles](#) approximately ninety percent of all water on board, including moisture from the astronauts' breath, sweat, and even the humidity in the air. As NASA astronaut Peggy Whitson once famously said, "Yesterday's coffee becomes tomorrow's coffee." The Water Recovery System recovers about 3,600 litres of water per year, saving enormous costs that would otherwise be spent launching fresh water from Earth.

## Working Out to Stay Alive

In microgravity, the human body begins to change in dangerous ways. Without the constant pull of gravity, muscles weaken and bones lose density. Astronauts can lose up to one to two percent of their bone mass per month — a rate far faster than the bone loss caused by ageing on Earth. The heart also changes shape, becoming more spherical because it does not have to pump blood upward against gravity. To fight these effects, every astronaut on the ISS must exercise for approximately two hours every single day.

The station has three main pieces of exercise equipment: a treadmill, a stationary bicycle, and a resistance machine called ARED (Advanced Resistive Exercise Device) that **simulations** weightlifting using vacuum cylinders. When running on the treadmill, astronauts must wear a harness that pulls them down towards the belt, otherwise they would simply float above it. The stationary bicycle has no seat — astronauts pedal while floating, clipped in by their shoes. These daily workouts are essential for maintaining **cardiovascular** health, muscle strength, and bone density. Without them, astronauts would return to Earth barely able to walk.

## Spacewalks: Working Outside

One of the most dramatic parts of life on the ISS is the **extravehicular** activity, or EVA — commonly known as a spacewalk. Astronauts leave the station through an **airlock** wearing a bulky spacesuit that weighs about 127 kilograms on Earth (though it weighs nothing in space). The suit provides oxygen, temperature control, **radiation** protection, and communication. Putting on the suit takes about forty-five minutes, and before going outside, astronauts must breathe pure oxygen for several hours to remove nitrogen from their blood — a process that prevents a painful condition called decompression sickness, similar to what deep-sea divers experience.

During a spacewalk, astronauts are always tethered to the station with a steel cable. Losing your grip and floating away into the emptiness of space is every astronaut's worst nightmare. Each spacewalk typically lasts six to seven hours, and the work is physically exhausting. Astronauts describe the **fatigue** as similar to climbing a mountain while wearing thick winter gloves and a motorcycle helmet. The most common tasks during spacewalks include repairing equipment, installing new experiments, and upgrading the station's systems. Over two hundred and sixty spacewalks have been performed on the ISS since the year 2000.

## Science in Orbit

The main purpose of the ISS is science. The station is a floating laboratory where researchers conduct experiments that would be impossible on Earth. In microgravity, flames burn as perfect spheres, crystals grow larger and more evenly, and human cells behave differently. Scientists on the ISS study everything from how plants grow without gravity to how **payloads** of new medicines react in space. Over three thousand scientific experiments have been carried out on the station since it became operational.

One of the most important areas of research is studying the human body itself. Every astronaut is essentially a research subject, with doctors on the ground monitoring their bone density, muscle mass, eyesight, blood pressure, and mental health. This data is critical for planning future missions to the Moon and Mars, where astronauts will spend even longer periods in space. NASA's famous Twins Study, which compared astronaut Scott Kelly (who spent 340 days on the ISS) with his identical twin brother Mark (who stayed on Earth), revealed thousands of changes in Scott's body at the genetic level — most of which returned to normal after he came home.

## The Mental Challenge

Living on the ISS is not just physically demanding — it is a serious **psychological** challenge too. Astronauts spend four to six months confined to a space the size of a house, with the same small group of people, unable to step outside for fresh air, see friends and family, or enjoy the simple pleasures of Earth like rain on their face or the smell of grass. They can video-call their families, send emails, and even use social media, but the emotional distance is real.

NASA employs psychological support teams who regularly check on crew members' mental health and send care packages with favourite foods, family photos, and surprise gifts. Astronauts are also given one day off per week — usually Saturday — when they can read, watch films, play music, or simply float by the Cupola window and stare at Earth below. Many astronauts describe looking at Earth as the most powerful emotional experience of their lives — a phenomenon called the “overview effect,” where seeing the planet as a fragile, borderless sphere changes how they think about humanity.

## Coming Home

After months in space, returning to Earth is both exciting and difficult. Astronauts land in a Soyuz capsule or a SpaceX Crew Dragon, experiencing intense g-forces during re-entry — a brutal contrast to months of weightlessness. When they step out of the capsule, many struggle to stand. Their muscles are weak, their sense of balance is confused, and they often feel dizzy and nauseous. Astronauts go through a **quarantine** period and weeks of rehabilitation to readjust to gravity. Simple things like sitting in a chair, taking a shower, or holding a glass of water feel strange after months of floating.

Despite the challenges, almost every astronaut who has lived on the ISS says they would go back in a heartbeat. The experience of floating through a laboratory in the sky, watching continents pass beneath you, and seeing the thin blue line of Earth's atmosphere against the blackness of space is something that changes a person forever. The ISS is more than a research station — it is proof that humans from different nations can live and work together peacefully, even in the most extreme environment imaginable. As Canadian astronaut Chris Hadfield once put it, the ISS teaches us that the things we share are far more important than the things that divide us.

## Vocabulary

#	Word	Definition
1	<b>orbit</b>	to move continuously around a planet or star in a curved path
2	<b>microgravity</b>	a condition where gravity is extremely weak, making people and objects float
3	<b>module</b>	a separate section or part of a spacecraft or building that has a specific purpose
4	<b>tethered</b>	attached or tied to something with a rope, cable, or strap to prevent floating away
5	<b>recycle</b>	to process used materials so they can be used again
6	<b>airlock</b>	a small room with two sealed doors, used to move between areas with different air pressure
7	<b>extravehicular</b>	taking place outside a spacecraft, especially a spacewalk
8	<b>fatigue</b>	extreme tiredness, either physical or mental
9	<b>nutrition</b>	the process of eating the right food to stay healthy and grow
10	<b>radiation</b>	energy that travels through space in the form of waves or particles, some of which can be harmful
11	<b>psychological</b>	related to the mind and how people think, feel, and behave
12	<b>quarantine</b>	a period when a person is kept away from others to prevent the spread of disease
13	<b>payload</b>	the equipment, experiments, or supplies carried by a spacecraft
14	<b>cardiovascular</b>	related to the heart and blood vessels
15	<b>simulation</b>	an imitation of a real situation or process, used for training or testing

## Comprehension Quiz

1. How long does the ISS take to complete one orbit around Earth?
  - A) 24 hours
  - B) About 90 minutes
  - C) 12 hours
  - D) About 45 minutes
  
2. Why do astronauts have to exercise for about two hours every day on the ISS?
  - A) To stay entertained during their free time
  - B) Because NASA requires them to compete in fitness tests
  - C) To prevent their muscles and bones from becoming weak in microgravity
  - D) To generate electricity for the station
  
3. How does the toilet on the ISS work?
  - A) It uses water to flush waste into space
  - B) It uses a suction system with fans to pull waste away from the body
  - C) Astronauts use special bags that they throw away
  - D) It works exactly like a toilet on Earth
  
4. What happens to the water that astronauts breathe out and sweat on the ISS?
  - A) It is released into space
  - B) It is stored in tanks and never used again
  - C) It is collected, filtered, purified, and recycled into drinking water
  - D) It is sent back to Earth on cargo ships
  
5. What is one of the biggest psychological challenges astronauts face on the ISS?
  - A) They are not allowed to speak to their families
  - B) They miss the feeling of gravity pulling on their body
  - C) Being far from family and living in a small space with the same people for months
  - D) They are afraid the station will lose power

## Answer Key

#	Answer	Question
1	<b>B</b>	How long does the ISS take to complete one orbit around Earth?
2	<b>C</b>	Why do astronauts have to exercise for about two hours every day on the ISS?
3	<b>B</b>	How does the toilet on the ISS work?
4	<b>C</b>	What happens to the water that astronauts breathe out and sweat on the ISS?
5	<b>C</b>	What is one of the biggest psychological challenges astronauts face on the ISS?