Preparing for Space Travel

In this activity, you and your child will learn what happens to the human body when it has been in space for a period of time.

What You Need:

- 8 sheets of poster board in different colors
- Large print-outs of the information below
- Color images related to the different subjects
- Scissors
- Glue or tape to adhere the information to the poster board
- Elastic exercise bands
- One Answer Sheet on cardstock for each child
- Pencil or crayon for each child

What to Do:

Each of the following sets of information should be made into a big, bold, colorful poster with related images. Make sure the answers to the questions are on the posters, but covered by a page labeled “lift me” that hides the answer.

Place tape or a glue stick near posters 3 - 8 for the children to adhere their answers to their Venn Diagrams.

Provide each child with an Answer Sheet. Invite the children and parents to examine the posters and complete the questions by putting the answer in the appropriate area of the diagram.

Floating in Space

Wouldn’t it be fun to float in space?

As fun as it is, floating in space is not healthy for the astronauts!

Earth’s gravity pulls on us, which keeps us from floating away. Aboard the International Space Station astronauts live and work in *microgravity*.

On Earth, the pull of gravity keeps our muscles working hard. Astronauts’ muscles do not have to work very hard in space.

When your muscles don’t get a work out, they become weak.

Who needs to exercise to keep their muscles healthy?
You? Astronauts? Both?

Bone Loss

In microgravity astronauts don't need as much bone to support themselves. Their bones get weak. Astronauts have to exercise and eat diets rich in calcium to keep their bones healthy in space.

Even on Earth, bones need calcium and a lot of activity to stay strong.

What helps keep your bones strong …
Soda pop or milk?

What types of activities help keep your bones strong …
Running or watching a movie?

Who needs to exercise and eat food rich in calcium to keep their bones healthy?
You? Astronauts? Both?

Muscle Loss

In space, lifting weights is easy … the weights are weightless!

Astronauts perform "resistive" exercises; they pull against exercise machines in various ways – making it seem like they are lifting weights with their arms and legs.

Try the resistance bands to see what kind of work out you get!
How hard is it?

How long do astronauts need to exercise every day?
During commercial breaks of their favorite TV show or almost 2 hours?

Who needs to exercise to keep their muscles strong?
You? Astronauts? Both?

Fluid Distribution

The pull of Earth's gravity keeps the fluids in your body from floating up but in microgravity in space fluids float! Astronauts get "puffy faces" and "chicken legs" in space!

What do you think some of the symptoms of a "puffy face" would be?
"Puffy faces" causes stuffy noses and headaches, but don't worry, the symptoms go away after a few days in space.

Who has fluids float to their heads?
You? Astronauts? Both?

Sleep

Astronauts have to get plenty of rest so that their brains are sharp. But astronauts don't want to be floating around while they sleep, so they strap themselves into sleeping bags attached to the walls of the International Space Station.

Why do astronauts need to stay alert?
So that they can get to the next level of their Playstation game or because their work is very difficult and they need to be able to focus completely

Who needs to get plenty of rest to stay alert?
You? Astronauts? Both?

Staying Clean

Astronauts live and work in tight places with other astronauts. They have to keep themselves clean to make sure they stay healthy.

Taking a bath and brushing your teeth are a challenge in space. Astronauts take sponge baths and wash their hair with a vacuum! They also swallow their toothpaste!

Who needs to stay clean to keep their bodies healthy?
You? Astronauts? Both?

Eating Healthy

Making healthy meal choices is very important for astronauts. They have to consume just the right foods so that they are stay strong and energized.

Which food choice is the healthiest?
French fries or a grilled chicken sandwich?

Which foods contain the most nutrients, minerals, and vitamins?
Spinach or ice cream

Don't worry – astronauts get to have snacks in addition to a well-balanced meal!

Who needs to eat well to keep their bodies healthy?
You? Astronauts? Both?

Radiation

Our Sun gives us light, but it also gives out other types of radiation, like ultraviolet – UV – radiation that causes sunburn. Earth's atmosphere helps to protect us from much of the UV and other types of dangerous radiation, but we still need to take precautions!

Above Earth's atmosphere astronauts have their space suits and the Space Station to *help* protect them from the radiation. NASA is studying many different types of radiation shielding to find ways to protect astronauts.

What measures can you take to protect yourself further from UV radiation on earth?
Never go outside or wear sunblock?

What is one effect of too much UV radiation?
A sunburn or wrinkled clothes

Who needs to protect themselves from sunburn?
You? Astronauts? Both?

Possible Images for Posters

The following links provide nice images for the posters.

NASA Explores – Floating in Space
http://www.nasaexplores.com/show2_articlea.php?id=04-010

MSN Health and Fitness – Osteoporitic Bone
http://health.msn.com/PopUp.aspx?cp-documentid=100063529

NASA – Osteoporitic Vertebrae
http://science.nasa.gov/headlines/y2001/ast01oct_1.htm

Exploration NASA – Exercise in Space
http://exploration.nasa.gov/articles/pumpingiron_lite.html

NASA Human Space Flight – Fluid Distribution
http://spaceflight.nasa.gov/gallery/images/station/crew-11/html/iss011e10309.html

NASA Human Space Flight – Radiation
http://spaceflight.nasa.gov/gallery/images/shuttle/sts-88/html/s88e5056.html

PBS Living in Space – Sleeping in Space
http://www.pbs.org/spacestation/gallery/8_sleep.htm

NASA – Hygiene in Space
http://history.nasa.gov/SP-4225/nasa4/photo/nasa4-photo-34.htm

NASA – Food in Space Gallery
http://www.nasa.gov/audience/formedia/presskits/spacefood/gallery_food.html

	You	Astronaut	Both!
Who needs to exercise to keep their muscles healthy?			
Who needs to exercise and eat food rich in calcium to keep their bones healthy?			
Who needs to exercise to keep their muscles strong?			
Who has fluids float to their heads?			
Who needs to protect themselves from sunburn?			
Who needs to get plenty of rest to stay alert?			
Who needs to eat well to keep their bodies healthy?			
Who needs to stay clean to keep their bodies healthy?			