Activity Guide: Astronaut Training Course

Purpose: Ages 5-10

Museum Connection: We are curious, creative and playful!

Main Idea: Astronauts train and maintain healthy lifestyles to be physically fit for space travel. They should also know that training in space is important because of the different gravitational resistances on the body between Earth and space.

Background info:

The lack of gravity resistance astronauts experience while in orbit causes loss of bone and muscle mass. An astronaut can lose between 1-2% of their bone mass in one month. The loss of muscle mass can reach 20% in just one week! Because of these potential losses of bone and muscle, astronauts use specialized exercise equipment while in space. These mimic gravity resistance so astronauts can stay in shape while in orbit by working out between 2-3 hours a day.

Before heading into space, astronauts also need to be in top-notch shape so that their bodies are better equip to be under extreme conditions like take-off and life in space.

Sources:

Staying Shape in Space

Muscle loss in Space

Fitness Test for Military/Space

Long-term time in space- Scott Kelly

Astronaut selection for space

Train like an Astronaut

Materials:

Item	Quantity
Variety of exercise, sports, and outdoor activity equipment: hula-hoops, ropes, jump ropes, balls, rackets, bats, nets, cones, etc.	Variable
Kitchen Timer/s (optional)	As needed for activities (i.e. hula-hoop for 30 seconds)
Stopwatch (optional)	For race competition between family members, if done

Prep (5-15 minutes, variable by amount of supplies collected):

- Gather suggested materials or others available at home

Step-by-Step Instructions (25-45 minutes):

1. Discuss what life in space is like- no gravity!- and what this can do to our bodies. Also discuss what can happen to our bodies here on earth with no exercise.
    a. Ask about ways child already has physical activity and exercise in their life.
    b. Think about ways we exercise and may not know it; our brains with a new challenge, sitting up in bed or standing up from a chair, just walking around!
    c. Then think about how our lives would change with the new environment that space presents with no gravity, less oxygen, different planet mass, long travel times from earth to other locations (that can be a lot of sitting or floating!)
2. Discuss what can keep us healthy here on earth and how we can recreate that in space!

3. Work together to create an astronaut training course, either to prepare to go into space or to keep an astronaut healthy when in zero gravity! Incorporate all of the materials you gathered. Plan for specific action or task with some elements (i.e. hula-hoop for 30 seconds using a kitchen timer if needed; skip rope 20 times; shoot 5 baskets with basketball; kick soccer ball into net 5 times).
4. Once the course is complete, try it out! Have a competition between family members. Use the stopwatch to time each other!
5. Take a picture of the obstacle course and post it to social media. Use the hashtag #DMNSScienceparty and tag the museum!