UK SPACE AGENCY

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MISSION X

TRAIN LIKE AN ASTRONAUT

PEAKE LIFT-OFF

Team Leader Guide

MISSION OVERVIEW

Students will perform burpees to improve muscular strength, agility, coordination, and endurance. This activity blends together squats, pushups, and jumping in the air.

FAST FACTS

Subject: Physical Education
Age: 8-12
Lesson Time: less than 15 min
Location: non-slip surface such as a gym, outside in dry grass or an athletic track surface

LEARNING OBJECTIVES:

- Perform a series of burpees to improve agility and coordination, as well as cardiovascular and muscular endurance.
- Make and record observations about improvements in agility and coordination.

Skills: strength, agility, coordination.

INTRODUCTION

When we engage in physical activity, we are improving our health and demanding our bodies to work hard. Even performing daily activities such as when walking or standing while we brush our teeth, our muscles work to provide support and motion. In space, however, astronauts are floating and have very small loads on their bodies throughout the day. Without exercise astronauts would lose a significant amount of muscle and bone density while in space. To counteract this astronauts exercise for about two hours per day. They do cardiovascular exercises on the bicycle or treadmill ergometer, as well as strength training, to maintain muscle and bone. To help the astronauts stay healthy and get ready for space travel, space agencies have astronaut trainers to prepare the astronauts for living and working in space. The goal of the astronaut trainers is for astronauts to return to Earth healthy.

↑ ESA astronaut Thomas Pesquet in a training session.

Many of the activities the astronauts do are like ones we can all do in our schools and homes. One example is the burpee which is a high-intensity exercise that works many parts of the body. Research has found that high-intensity activities can be more beneficial than lower intensity activities. Burpees are great activities to do as part of a high intensity workout because they target muscular strength, engage nearly all the muscles in the body and get the heart pumping. Burpees can increase cardiovascular and muscle strength, but do not require any weights or equipment. They can be done almost anywhere in a small space. Let's try it out!

LET'S TRAIN LIKE AN ASTRONAUT!

MATERIALS

Team Leader
- No special equipment needed.

Student
- Mission Journal and pencil.

Optional to be used in Mission Adaptations
- Images demonstrating each exercise step.

PROCEDURE

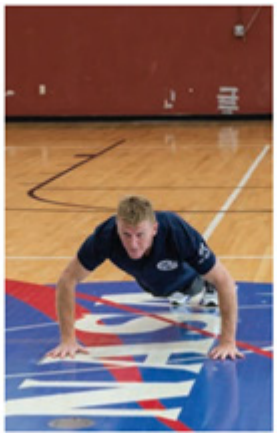
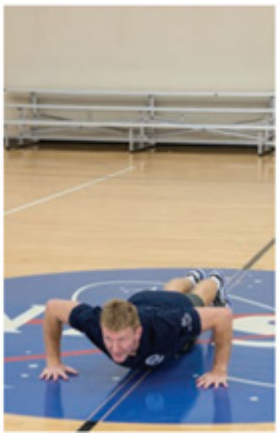
Students start in the standing position and follow the next set of exercises:

1. Students drop to a squatting position, with their hands touching the floor in front of them, and yell "5"
2. Students move their feet behind them, to the beginning of a push-up position, and yell "4" (paying attention to their form and keeping their back straight)
3. Students lower their chest to the floor and yell "3"
4. Students raise their chest back to the beginning push-up position and yell "2"
5. Students slide their feet back under them to a squat with their hands touching the floor and yell "1"
6. Students jump high in the air and yell "LIFTOFF

SET-UP

Have the students positioned more than an arms-length away from each other.




Students repeat this set of exercises 10 times, while maintaining proper form.

THINK SAFETY

- Make sure students have enough space around them to avoid hitting or bumping into others.
- Ensure ground is safe for students' hands.
- Students must wear the appropriate clothes and shoes that allow them to move freely and comfortably.
- Proper hydration is important before, during, and after any physical activity.
- Be aware of the signs of overheating.

MISSION ADAPTATIONS

Increase Diffculty

- Students do more than 10 sets of activities.
- Instead of jumping straight up into the air students tuck their knees into their chest as they jump up.
- Instead of jumping straight up, students jump to the side when coming out of the burpee.
- Add more push-ups in the exercise cycle.
- Try having students learn the countdown steps in other languages.

Increase Accessibility

- Adapt the cycle of exercises according to the capabilities of the students. For example, use arm strength exercises while seated by pushing the body up from the share with the arms or bending forward and touching the ground.
- Use images that demonstrate each step of the exercise cycle or perform each exercise in front of your students with a little break in between.

Decrease Difficulty

- Students do less than 10 sets of activities.
- Students take a short break in between each cycle of exercises.

This resource has been adapted from NASA's "Peake Lift-off".
Original Credits: Lesson development by the NASA Johnson Space Center Human Research Program Education and Outreach team with thanks to the subject matter experts who contributed their time and knowledge to this NASA Fit Explorer project.