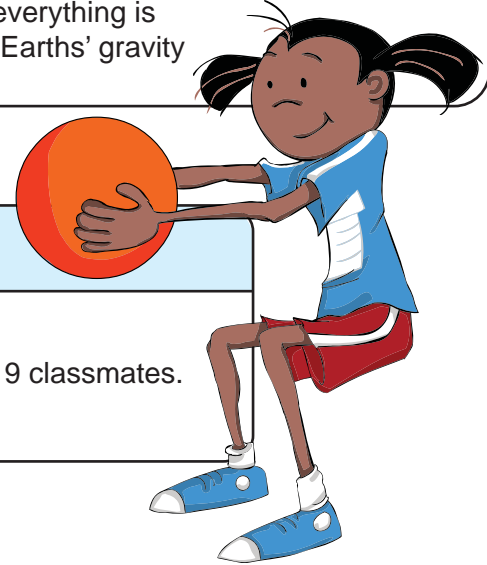


It's a Space Fact

When you jump into the air, you automatically land back on the ground. Apples and leaves fall from trees, and when you drop glass it breaks on the floor. Everything is pulled to the Earth due to the force of gravity. The force of gravity is also present on the Moon. Because the Moon's gravity is $\frac{1}{6}$ of the Earth's gravity, the Moon's gravitational pull is not as great as that of the Earth. This is the reason why an astronaut jumping on the surface of the Moon is automatically a long-jump champion. Astronauts can jump further than 10 meters! On Mars, gravity is less than half the gravity here on Earth but on Jupiter it is more than double. This means that on Jupiter's surface you would have a hard time to climb the stairs because the gravity on Jupiter would pull you to the ground much more than the Earth does. Astronauts will not walk on other planets in the near future but still their training takes into account the influence of gravity because during their mission they will be in a free-fall microgravity environment. When astronauts are back on Earth after a six-month stay on the International Space Station, they feel tired, as if everything is extremely heavy. Astronauts need to train to get acquainted again with Earth's gravity and do that using medicine balls to strengthen their muscles.



Fitness Acceleration

- Jump a 4 meters distance.
- Do a circle with the entire class, instead of just 9 classmates.
- Do the circle facing each other's back.

Core muscles:

The muscles that stabilize, align, and move the trunk of the body; the abdominal and back muscles.

Coordination:

Using your muscles together to move your body.

Muscular strength:

The ability to use your muscles to move or lift things, and yourself.

Medicine ball:

A medicine ball (also known as an exercise ball, a med ball, or a fitness ball) is a weighted ball. Often used for rehabilitation and strength training, it serves an important role in the field of sports medicine.

Think Safety!

Scientists and Astronaut Strength, Conditioning & Rehabilitation (ASCR) Specialists working with the astronauts must make sure they have a safe environment in which to practice, so that the astronauts can't get injured.

- A warming-up and cooling-down period is always recommended.
- Avoid obstacles, hazards, and uneven surfaces.
- Exercise in a gym with enough space for throwing balls and jumping and appropriate heating conditions (neither too cold nor too hot).
- Wear appropriate attire that allow you to move freely and comfortably.
- Chose adequate weight (not too heavy).

Mission Explorations

- Find different types of balls: e.g. basketball, volleyball, football, tennis ball, etc. Why are they different? Do they weigh differently and why?
- Determine the gravitational pull of Each planet in our solar system relative to Earth's gravitational pull. How many Earth years does it take for each planet to make a complete revolution around the Sun. Calculate your weight and age on each planet in our solar system as you jump from one planet to the next.

Status Check: Have you updated your Mission Journal?