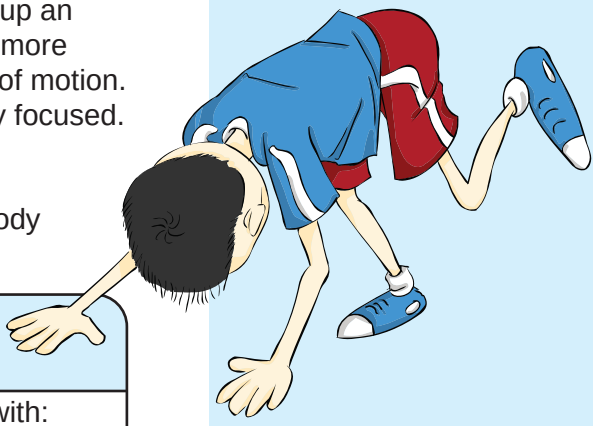
YOUR MISSION: Space Roll-n-roll

In the microgravity environment of the International Space Station astronauts can perform spectacular rolls. Here on Earth, because of gravity these rolls are not as easy. You will imitate astronauts being upside down and making your own body roll. You will perform a series of somersaults on the ground to improve your body coordination, flexibility, balance and strengthen your back, abdominal and leg muscles. You will record observations about improvements in this somersaults training in your Mission Journal.

Performing a somersault requires the ability to coordinate your body movements, good balance and muscle power. Some daily activities that require flexibility and body coordination include dancing, walking, picking up an object from the ground or simply grasping something. To become more flexible, you need to stretch regularly and use the full body range of motion. To enhance your body coordination, you need to practice and stay focused.

MISSION QUESTION:
How could you perform a physical activity that will improve your body coordination, flexibility and increase motion range?



MISSION ASSIGNMENT: Somersaults Training

- ◯ To perform the exercise, you will need to be in a gym equipped with:
  - A thick and long mat
- ◯ Beginner somersault
  - Bend your knees, bringing your chin into your chest.
  - Put your hands close to your feet.
  - Put your head down carefully Roll in a straight direction.
  - Complete the somersault sitting on the mat.
  - Each child does this exercise 3 times. It is important to do the exercise well, and not too fast.
- ◯ Intermediate somersault
  - Start in the same position as the beginner somersault.
  - Complete the somersault standing.
  - Each child does this exercise 3 times. It is important to do the exercise well, and not too fast.
- ◯ Advanced somersault
  - Stand.
  - Get into a squat and do the somersault.
  - Complete the somersault standing.
  - Each child does this exercise 3 times. It is important to do the exercise well, and not too fast.

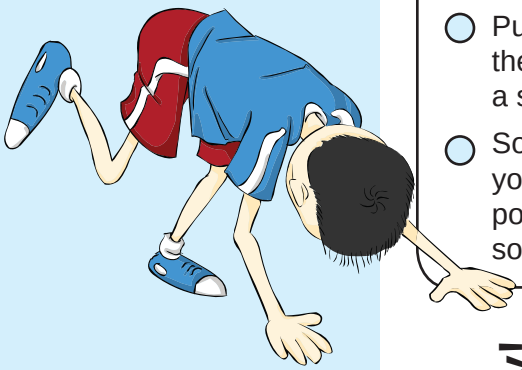
◯ Record observations before and after this physical experience in your Mission Journal.

Follow these instructions to train like an astronaut.

Performing somersaults improves body coordination, which is extremely important to have a good posture. This also helps you to do most kinds of sport. Improving flexibility will make it easier for you to reach objects and perform daily activities. Stretching will result in increased flexibility and range of motion.

It's a Space Fact

In space, astronauts can perform spectacular rolls. You can watch some amazing somersaults on the Mission X- Train like an Astronaut website. On the International Space Station (ISS) astronauts seem to be floating. The astronauts inside the ISS experience microgravity or weightlessness, floating around in no particular direction. There's no up or down for them! Therefore astronauts can easily do acrobatics and they can do a series of somersaults without any particular effort. In order to stop rolling, they must stop themselves by reaching out to hold on to an object or person. This happens because there are no forces which oppose their movements. Here on Earth, things behave differently. When an acrobat makes a flip, he needs to jump high and be quick enough to rotate completely before gravity pulls him back to the ground. Similarly, when you roll, you let your body fall to the ground but then you need to fight gravity with your muscles to complete the exercise sitting or in a vertical position. If you are well trained with somersaults on Earth, you will enjoy performing amazing flips once you will become an astronaut!



Fitness Acceleration

- Put a hula-hoop on the mat. Do a somersault through it without touching the hula-hoop. Put a hula-hoop at a certain height above the mat and do a somersault through it.
- Somersault from a vertical head down position. Stand upside down with your feet on the wall. Hands very close to the wall and stand in a vertical position facing the wall Let you shoulder touch the floor and do the somersault.

Coordination:
Using your muscles together to move your body the way you want it to.

Stretching:
Elongating one or more muscles as much as possible.

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 practise, so that the astronauts can't get injured.

- A warming-up and cooling-down period is always recommended.
- Avoid obstacles, hazards, and uneven surfaces.
- Wear appropriate attire that allows you to move freely and comfortably.
- Use appropriate mats to avoid accidents to your neck and back.

Mission Explorations

- Find a gym which is equipped with trampolines and try to do spectacular somersaults.
- In the swimming pool, try to do somersaults in the water. How is it? Is it more difficult?
- Find a gym which is equipped with gymnastic rings. Can you do a roll? Do you need your teacher's help? Do you have enough strength in your arm muscles?

Status Check: Have you updated your Mission Journal?