



TRAIN LIKE AN ASTRONAUT MISSION HANDOUT

YOUR MISSION: **Mission: Control!**

You will perform throwing and catching techniques on one foot to improve balance and *spatial awareness*. You will also record observations about improvements in balance and *spatial awareness* during this physical experience in your Mission Journal.

All people need to have well-developed balance and *spatial awareness*. If not, we would all fall over constantly and have trouble walking around corners. Seeing our surroundings and being able to move around them is important so we do not bump into things and get hurt.

When you are participating in athletics, especially sports such as dancing, skateboarding, bowling, diving, and skiing, balance and *spatial awareness* are very important. Even jumping on a trampoline or riding a bicycle requires both!

MISSION QUESTION: How could you perform a physical activity that would improve balance and *spatial awareness*?



MISSION ASSIGNMENT: **Balance Training**

○ **Practice:**

- ⇒ Choose a smooth-surfaced solid wall, approved by an adult for use.
- ⇒ Bounce a tennis ball off the wall and try to catch it while balancing on one foot. Raise your foot up behind you, level with your knee.
- ⇒ Count how many seconds you can stand on one foot while throwing the tennis ball against the wall. Try not to let the ball or your foot touch the floor. Try to balance for at least 30 seconds without falling.
- ⇒ Continue to practice this activity over time until you can keep your balance for 60 seconds without having to start over.

○ **Game:**

Divide into groups, each forming a circle. Each circle should contain at least 6 players.

In your circle:

- ⇒ Space a distance more than arms length apart.
- ⇒ Try to balance on one foot while gently tossing a gym ball to a player across from you.
- ⇒ If a player loses balance and both feet touch the floor, he or she must hop on one foot, around the outside of the circle before rejoining the game.

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

Follow these instructions to train like an astronaut.

Spatial Awareness:

Knowing where you are in your space compared to your surroundings.

Agile:

Being ready and able to move quickly and easily.

Coordination:

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

It's a NASA Fact:

During the first few days of space flight and after returning to Earth, astronauts experience a change in *spatial awareness* and may lose some sense of balance when they return to Earth. Research scientists from NASA's Neurosciences Laboratory closely monitor the crew members, who often report difficulty walking around corners and feeling like they are "tumbling" when they move their heads from side-to-side. Their brain has to relearn how to use information from their eyes, tiny balance organs in their inner ear, and their muscles to help control body movement. These problems are usually corrected after several weeks have passed and balance exercises are added to their fitness routine. Until then, they have to be extra careful; which means they may not be able to do some physical activities like fly a plane or drive a car.

Fitness Accelerations

- Bounce a tennis ball off a wall while balancing on one foot. Do this for 60 seconds. Without taking a break, change legs and balance on the opposite foot for 60 second. Take a 30 second break and repeat this routine five times.
- Conduct the above acceleration while balancing one foot on a small trampoline.
- Play the Balance Training Game with a partner by balancing one foot on a small trampoline. If a player loses their balance or drops a ball they should hop on one foot around both trampolines.



Improving your balance and *spatial awareness* will make you more *coordinated* and *agile*. It will decrease the chances of being hurt, or hurting someone else, due to a fall.

Think Safety!

- While exploring, astronauts must watch out for rocks and craters in their paths to avoid tripping!**
- The area under your feet should be clear of all obstacles.
- Stay at least an arms distance from the wall and from others while doing this activity.
- Do not throw the ball too hard, nor use a ball that is too heavy.
- Remember that drinking plenty of water is important before, during, and after physical activities.

Mission Explorations:

- While standing still, stand on a soft surface and balance on one foot. Examples: towel, pillow, or cushion.
- Time yourself while trying to balance on two feet with your eyes closed. Open your eyes if you start to lose your balance.
- While practicing simple balance activities, you can also lift one foot to increase the difficulty.

Status Check: Have you updated your Mission Journal?