National Aeronautics and Space Administration

Train Like an Astronaut: Adapted Physical Activity Strategies

Building an Astronaut Core

YOUR MISSION

You will perform the Commander Crunch and Pilot Plank to improve the strength in abdominal and back muscles. As you train like an astronaut, record your observations about improvements in core muscle strength during this physical experience in your Mission Journal.

LINK TO SKILLS AND STANDARDS

APENS: 3.10.10.01 Understand the use of statics, dynamics, kinematics, body axes, planes, balance, and equilibrium for studying and planning movement activities for individuals with unique needs

Activity Specific Terms/Skills

Core, muscle strength, endurance, plank, balance

SPACE RELEVANCE

Astronauts in space must be able to twist, bend, lift, and carry massive objects. They must have strong core muscles so they can perform their tasks efficiently and avoid injury. In order to maintain muscle strength while in space, astronauts practice core-building activities before, during, and after their missions. Here on Earth these activities may include swimming, running, weight training, or floor exercises. In space, astronauts use specialized equipment to maintain an exercise routine to keep their core muscles fit for the job.

WARM-UP & PRACTICE

Warm-up

- Wall push-ups
- Toe or knee touches
- Hold push-up position while stacking cups (see image)
- Modify push-ups (on knees)
- Demonstrate animal, yoga poses: 'seal' or comic book 'Superman' position
- Use a core ball, knees @ 90 degrees; squeeze abdominal muscles

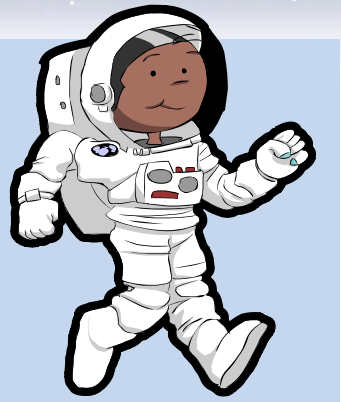
Practice: Practice skills separately and build complexity

SUGGESTED ADAPTED EQUIPMENT:

- RIGID BALL
- STURDY CHAIR OR TABLE

Building an Astronaut Core

LET'S "TRAIN LIKE AN ASTRONAUT!"



Adjust steps and procedures as appropriate for participants
Instructions for play: You will do the following activities with a partner.

Commander Crunches

- Starting position: Lie on your back, knees bent, feet flat on the floor.
- Chin should be pointed to the sky, arms crossed over your chest.

Procedure

- Using only your abdominal muscles, lift your upper body until your shoulder blades leave the ground. Put one hand on your abdomen to feel your muscles working as you raise your shoulders off the floor.
- Lower your shoulders down using only your abdominal muscles to complete one crunch.
- At your partners command, begin to complete as many crunches as possible in one minute, timed or counted by your partner.

Pilot Plank

- Starting position: Lie down on your stomach.
- Resting on you forearms, make a fist with each hand, place your knuckles on the floor shoulder width apart.
- Using only your arm muscles, push your body off the floor supporting your weight on your forearms and toes.
- Your body should be straight as a board from your head to your feet.

Procedure

- Using the muscles in your abdomen and back, stabilize your body by tightening these muscles.
- Try to keep this position for at least 30 seconds.
- Switch places with your partner and follow the same procedure.

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

TRY THIS! *Some ideas for Adapted Activity*

- In wheelchair, place hands on arm rests and lift up using arms
- Lift legs and hold. Legs straight or bent.
- In chair, lean forward 45 degrees
- Lay on the floor and lift feet or legs,
- Elevated plank (various levels - using a table, a stool, bench, bar, steps- no wheels)
- Isometric: squeeze abs, or lean or push against wall.
- Use stopwatch to get baseline and progress by adding time.
- Place ball between stomach and floor and while in plank position using hands to walk out and back
- While in push up position, alternate right and left hand crossing midline to touch opposite shoulder, keeping plank
- Peer assistance, visual cues