

## Bones of Contention

Our bones support our bodies when we stand, sit, run, or anything else. They also protect our organs inside, store minerals (like calcium), and produce blood cells. Our bones are **alive** – and constantly being broken down and reformed.

In microgravity you don't need much effort to move around or do things or hold your body upright. Because we don't need bones in space, our body stops trying to maintain them and we slowly lose bone mass. Too much bone loss causes a disease - osteoporosis - where our bones become weak enough to break or fracture easily. In space, astronauts have to exercise a lot – physical activity helps bones stay strong – and they have to eat meals rich in calcium – just like you! Even with all this work, astronauts still suffer some bone loss. NASA scientists are exploring ways to help prevent bone loss.

You and your child will create models to compare bone loss in space to healthy, well exercised bones on Earth. You will discover what happens to bones without proper exercise and nutrition!

### What You Need:

- ✦ 2 Large Styrofoam cups
- ✦ Slightly sharpened pencil
- ✦ Colored markers



### What to Do:

Share with your child that maintaining healthy bones – like healthy muscles – means exercising! By not exercising, we lose bone material and our bones become brittle and can break.

Because astronauts live in reduced gravity, their muscles and bones don't have to work as hard as ours do on Earth – so their muscles and bones break down.

Invite your child to create a model of a healthy, exercised Earth bone and an astronaut's bone (or a bone that does not get enough exercise and healthy calcium!)

- ✦ Get two cups and Label one cup "Earth Bone" and one "Bone in Space"
- ✦ Poke 5 holes in the "Earth Bone"
- ✦ Poke several (~25) holes in the "Bone in Space"
- ✦ Place your hand on top of the "Normal Bone" cup and push down
- ✦ Place your hand on top of the "Bone in Space" cup and push down with the same force as you used on the "Normal Bone."

Parent Prompts:

Which cup collapsed under your hand more easily?

Why do you think it collapsed so easily?

Why might astronaut's bones become weak?

What can astronauts do to build strong bones?

What can you do to build strong bones?

