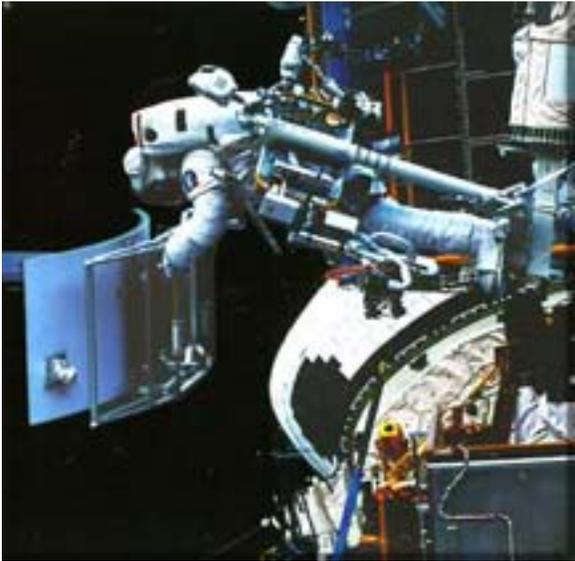


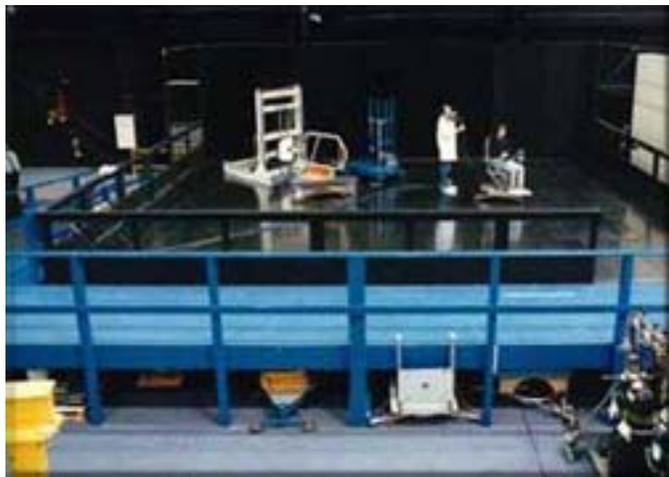
Two-Ton Hockey Pucks



Superman isn't the only one who can move a car with his pinkie. Astronauts can, too. Well, there aren't any cars in space. But, the crew can move heavy things with no problems. That's because there isn't any friction in **microgravity**. Large things take off with just a push. This can be a problem. It is easy to make things move. And, they can be hard to stop! Nobody wants heavy things floating wherever they want to go! Astronauts have to learn how to keep things where they want them in space. They practice on Earth.

That's where it gets hard. There isn't one machine that can copy microgravity. So, NASA uses a lot of **simulators**. Each one is like a part of microgravity. The KC-135 airplane lets astronauts **free fall** through the air. The Neutral Buoyancy Laboratory puts astronauts underwater. It makes the crew feel like they are floating in space. Virtual reality helps them see things like they would in space. Drop towers makes things weightless for a few seconds. Where do astronauts go to practice moving big things? They go to Johnson Space Center in Houston.

At Johnson, astronauts work on a special floor. Think of working on a giant air hockey table. It is easy for astronauts to push big things around. Things move just like an air hockey puck floats across a game table. To see how it works, pretend you are playing air hockey. The hockey puck would float on a thin pillow of air. The air is



blown from the top of the table. On the air-bearing floor, the air comes out of what is being tested. This makes a layer of air that floats just off the floor. The floor must be very smooth and flat for this to work.

The floor is made up of steel plates. They are lined up side by side. More plates are put on the bottom of the things the astronauts are moving. Air is packed into a tube that runs on the side and bottom of the plate. This makes the plates **hover** just above the floor's surface. All the astronauts have to do is give them a nudge. The giant things move as easily as a marble across the floor.



What do astronauts do on this floor? They learn to move things as large as a small car. They learn to keep the objects moving in the direction they want. They also practice using tools like they would in space. Gravity keeps us in place. Astronauts have to learn to work without it. That is because just a twist of a screwdriver can send you spinning if you are in space. So, astronauts fasten themselves to something.

NASA also uses the floor to test things that will go into space. This lets them see how things will work in space.

Some people call this a zero-gravity room. But that is not what it is. There is a lot of gravity in the room. This floor can copy what happens when gravity is cut. It is amazing to see someone move something as heavy as a car with just a pinkie.

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