

Taller in Space During Apollo and Skylab missions, some astronauts discovered that their spacesuits had gotten too short. And it wasn't that the suits were shrinking. What happened – coming up on Earth and Sky.

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DB: This is Earth and Sky, with a question from Rebekah LaBar of Ellensburg, Washington. Rebekah writes, *“I've heard that astronauts get taller in space. Why?”*

JB: Rebekah, when humans spend time in space, their spines get longer. That's because blood and other body fluids don't behave the same way in weightless conditions as they do here on Earth.

DB: One job of the heart and other muscles is to circulate fluids through the body. They depend partly on Earth's gravity for the downward movement, so most of the pumping action pushes fluids up toward the head. When that pumping happens in the weightless conditions in a spacecraft, fluids gather in upper body parts. You can get a similar effect here on Earth if you hang by your knees from a jungle gym. It gets uncomfortable after a while.

JB: After a few hours in space, this fluid shift toward the head makes an astronaut's brain think there's too much blood in circulation. Some of this extra fluid gets soaked up by disks in the astronaut's backbone. Each disk swells a little, causing the backbone to lengthen. The astronaut grows as much as two inches taller. That was enough, on Apollo and Skylab missions, to make their close-fitting spacesuits feel tight from the shoulders all the way down to the fingertips.

DB: Rebekah, thanks for your question. With thanks to the National Science Foundation, we're Block and Byrd for Earth and Sky.