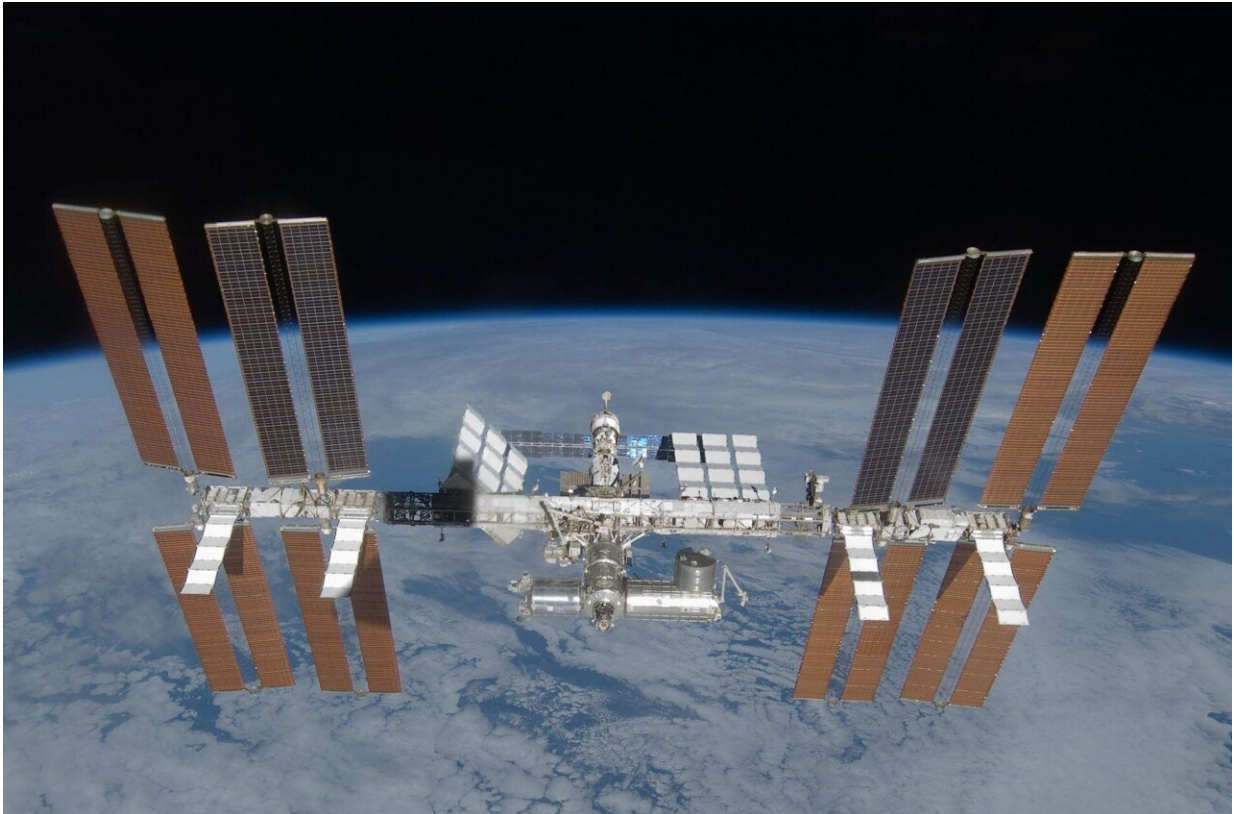


Do astronauts experience 'space headaches'?

March 13 2024



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Space travel and zero gravity can take a toll on the body. A new study has found that astronauts with no prior history of headaches may experience migraine and tension-type headaches during long-haul space flight, which includes more than 10 days in space. The study was published in *Neurology*.

"Changes in gravity caused by space flight affect the function of many parts of the body, including the brain," said study author W. P. J. van Oosterhout, MD, Ph.D., of Leiden University Medical Center in the Netherlands.

"The [vestibular system](#), which affects balance and posture, has to adapt to the conflict between the signals it is expecting to receive and the actual signals it receives in the absence of normal gravity. This can lead to space [motion sickness](#) in the first week, of which headache is the most frequently reported symptom. Our study shows that headaches also occur later in space flight and could be related to an increase in pressure within the skull."

The study involved 24 astronauts from the European Space Agency, the U.S. National Aeronautics and Space Administration (NASA) and the Japan Aerospace Exploration Agency. They were assigned to International Space Station expeditions for up to 26 weeks from November 2011 to June 2018.

Prior to the study, nine astronauts reported never having any headaches and three had a headache that interfered with daily activities in the last year. None of them had a history of recurrent headaches or had ever been diagnosed with migraine.

Of the total participants, 22 astronauts experienced one or more episodes of headache during a total of 3,596 days in space for all participants.

Astronauts completed health screenings and a questionnaire about their headache history before the flight. During space flight, astronauts filled out a daily questionnaire for the first seven days and a weekly questionnaire each following week throughout their stay in the [space station](#).

The astronauts reported 378 headaches in flight. Researchers found that 92% of astronauts experienced headaches during flight compared to just 38% of them experiencing headaches prior to flight.

Of the total headaches, 170, or 90%, were tension-type headache and 19, or 10%, were migraine.

Researchers also found that headaches were of a higher intensity and more likely to be migraine-like during the first week of space flight. During this time, 21 astronauts had one or more headaches for a total of 51 headaches. Of the 51 headaches, 39 were considered tension-type headaches and 12 were migraine-like or probable migraine.

In the three months after return to Earth, none of the astronauts reported any headaches.

"Further research is needed to unravel the underlying causes of space [headache](#) and explore how such discoveries may provide insights into headaches occurring on Earth," said Van Oosterhout. "Also, more [effective therapies](#) need to be developed to combat space headaches as for many astronauts this a major problem during space flights."

This research does not prove that going into space causes headaches; it only shows an association.

A limitation of the study was that [astronauts](#) reported their own symptoms, so they may not have remembered all the information accurately.

More information: Willebrordus P.J. van Oosterhout et al, Frequency and Clinical Features of Space Headache Experienced by Astronauts During Long-Haul Space Flights, *Neurology* (2024). DOI: 10.1212/WNL.0000000000209224

Provided by American Academy of Neurology

Citation: Do astronauts experience 'space headaches'? (2024, March 13) retrieved 27 April 2024 from <https://phys.org/news/2024-03-astronauts-space-headaches.html>

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