

The Silent Struggles of Astronauts in Space

HUMANS in Space! This sentence itself ignites much curiosity and excitement about space exploration. The month of June seemed quite captivating with the news of two NASA astronauts — Sunita Williams and Butch Wilmore. In its first crewed flight on 5 June 2024, Boeing's Starliner spacecraft lifted off two veteran astronauts. They arrived at the International Space Station (ISS) on 6 June 2024, with an expected date to return home on 6 September 2024. However, due to certain technical difficulties, the agency made a decision to return the spacecraft without astronauts on board. Consequently, the eight-day mission turned into an extended eight-month mission, raising concerns about the health of the astronauts in space. Since then, the duo has been living and working aboard the space station as part of the Expedition 71/72 crew and will return home in February 2025 aboard the SpaceX Dragon spacecraft, as per NASA.

Ever since this news of extended stay came, the world has been waiting for their safe return and concerned about the impacts on their health. There are several reports stating that both astronauts are experiencing weight loss. As per the reports, NASA is closely monitoring their health following their health concerns.

Both astronauts, undoubtedly, are no strangers to the vast hardships of space exploration. According to NASA's Human Research Programme, there are five hazards that astronauts come across on their journeys to space, including space radiation, isolation and confinement, distance from Earth, gravity (and the lack of it), and closed or hostile environments.

When we think of astronauts in space, the first thought that strikes our mind is the absence of gravity. In microgravity, the body of astronauts experiences dramatic changes, leading to issues like dizziness, bone and muscle loss, vision problems, etc. In such situations, to make a mission successful, it becomes important to develop strategies that help the crew adapt to different gravitational conditions. Maintaining a safe ecosystem in confined spacecraft also becomes even more challenging, necessitating managing temperature, pressure, lighting, reducing noise, and monitoring health.

We on Earth enjoy all its luxury and freedom, going anywhere freely and connecting with our family and friends. But, in the case of astronauts in space, life becomes more isolated and confined than we imagine. This results in sleep loss, circadian desynchronisation, and Yes! Work pressure intensifies the situation. This may lead to decreased performance and can have adverse effects on health. Psychological strain and behavioural responses are common in confined, isolated groups over long periods, for which crews are carefully selected, trained, and supported to work effectively together for months or years in space.

But, still, the fear of unknown risks is one of the many other major challenges astronauts experience in spaceflight; dangers can arise unexpectedly at times. In spite of intense training, the tragic losses of missions can occur in seconds. For example, in the past, the Space Shuttle Challenger and Columbia tragedies remind that space flights are risky undertakings. Still, astronauts hold a deep sense of responsibility, and they understand that their lives and the future of space exploration depend on the success of the mission. There is constant stress of technical complexities and potential risks. Yet, because of a desire to expand human knowledge, astronauts go to the frontiers, hoping that every new mission brings humanity one step closer to exploring the universe.

Besides the achievements of astronauts, their lives are full of physical, psychological, and emotional struggles that we on Earth can hardly think about. They undergo various silent struggles in space. These struggles remind us of the strength of the human spirit — a relentless urge to learn, explore, and ultimately overcome the boundaries of our living world. *Science Reporter* wishes the astronauts a safe return!

Happy New Year!

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