

IAF/IAA SPACE LIFE SCIENCES SYMPOSIUM (A1)
Behaviour, Performance and Psychosocial Issues in Space (1)

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PERSONAL GROWTH AFTER A 90-DAY HEAD-DOWN TILT BED REST

Abstract

Previous studies have shown that extreme environments such as simulated micro-gravity and prolonged immobility would cause psychological stress, and even lead to pathological diseases. There are many studies on psychological pressure caused by extreme environments, but stress recovery states and positive changes from environments such as space flight or participation in weightlessness experiments are overlooked. The "Earth Star II" experiment, in which thirty-six volunteers were bedridden at a low head of -6 degrees, lasted about 90 days in Shenzhen. Three months after the experiment, we used the Rest-Q and the Post-Experience Change Inventory (PECI) adapted from the Post-Traumatic Growth Inventory to measure the stress recovery states and the positive changes of thirty-six male volunteers who participated in the experiment. Data from the Rest-Q showed that compared to baseline measure 10 days before the head-down tilt bed rest and 25 days after, the total stress of volunteers decreased significantly, and the total recovery had an obvious increase three months after the experiment. Besides, the results of the Peci showed that the volunteers themselves have had a great deal of positive changes in personal strength, new possibilities, relating to others, spiritual change, and appreciation of life ($M > 4$). Moreover, compared with the means of twenty retired male cosmonauts Mir and/or ISS cosmonauts, the averages in these five aspects of those who underwent the 90-day head-down tilt bed rest were significantly higher ($p < 0.05$). In addition to the questionnaire data, the volunteers' feelings about the experiment also fully reflected their positive changes. Collecting and observing volunteers' WeChat Moments, a social media in China like Facebook. While got up and after the experiment, they frequently used words like "hon-

ored”, “proud” and “simple greatness” to describe their feelings. They believed that participating in such experiments could realize their self-worth to a certain extent and even make contributions to China’s space exploration, thus feeling proud and honored and being positive changes. This research appears that significant positive changes have taken part through the stress recovery states and the positive changes of the volunteers who experienced the 90-day head-down tilt bed rest. All the results indicate that long-term space missions psychological stress is not always dysfunctional for adaptation of astronauts but might also have positive psychological impacts.