



Microgravity Osteoporosis

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Opinion

Volume 8 Issue 3

Received Date: August 12, 2024

Published Date: August 27, 2024

DOI: 10.23880/jobd-16000271

Keywords

Microgravity; Osteoporosis; Space Olympics

Abbreviations

NASA: National Aeronautics and Space Administration;
ISS: International Space Station; ARED: Advanced Resistive Exercise Device.

Opinion

International Space Station (ISS) is a multinational collaboration of countries for the study of space science and exploration of outer space, weather forecasting satellite management growing of plants, and conduction of research.

Sunitha Williams and Barry Wilmore had stuck in ISS due to some technical issues and coming back to earth may take time of many days. National Aeronautics and Space Administration (NASA) [1] is planning to bring back her through SPACE-X. Space Olympics is also conducted by NASA as Sunitha Williams as participant.

The health issues associated with the microgravity in the space will be discussed here with special reference to bone health.

The human body experience many changes in the space life. The potential detrimental effects of microgravity are changes in nervous system, variation in behaviour, body wide alterations, change in cardiac performance, loss of bone and muscle mass. Upon return to earth gravity the astronaut's

ability to move and walk is affected. The need of bone in standing and walking on earth is not essential in space as most of the time astronauts spend "floating" and propelling themselves with their arms. Astronauts are more exposed to bone fracture on return to earth due to drop in density in space called disuse osteoporosis characterized by weakness of bones and less ability to support the body structure. The astronauts are more prone to disuse osteoporosis because they do not use their bones in space the same way that they do on Earth.

Physical stress is required to proper functioning of muscles and bones in human body. Bodily tension is caused by physical stress. When we ride a bike or lift a heavy object stress is felt in the legs. The health of bones and muscles during the spaceflight requires physical stress to keep them healthy, to achieve this Advanced Resistive Exercise Device (ARED) is used for weight lifting to induce physical stress among astronauts.

Systematic immobilization or local skeletal unloading leads to bone loss called disuse osteoporosis [2]. Teriparatide treatment is one of the option in the treatment of osteoporosis. Yoga and pranayama is also evolving treatment modalities in Microgravity osteoporosis.

References

1. (2024) National Aeronautics and Space Administration. STEMstation.
2. Takata S, Yasui N (2001) Disuse osteoporosis. J Med Invest 48(3-4): 147-156.

