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THE ROLE OF VIBRATION THERAPY AND REHAB IN REDUCING ORTHOSTATIC INTOLERANCE IN ASTRONAUTS POST-SPACEFLIGHT

Abstract

Long-term space missions in microgravity pose serious health challenges for astronauts. In weightlessness, astronauts do not often need to use their limbs, which leads to problems such as muscle atrophy, decreased bone density, venous stasis, and orthostatic intolerance. To minimize damage and accelerate the rehabilitation process after re-entering Earth, astronauts must use various therapy methods while in space. The purpose of this article is to preserve the health of astronauts through vibration therapy and rehabilitation exercises during their time in space. Vibration therapy restores muscle and bone mass lost in zero gravity by stimulating the lower limb muscles and directing blood flow to the upper body, improving circulation and helping prevent orthostatic intolerance. Additionally, aerobic and resistance exercises, along with rehabilitation devices such as ARED and TVIS, strengthen muscles and reduce bone loss. The results show that, as a result of strengthened muscles and improved blood circulation, astronauts experience less dizziness and fatigue upon their return to Earth. In conclusion, a comprehensive rehabilitation process during long-term spaceflight can significantly influence the maintenance of astronauts' health both during space and upon their return to Earth.