

Artificial gravity for astronauts as a preventive method for weightlessness neuromuscular defects

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abstract

Background:

Adaptation to weightlessness involves sensory-motor coupling, autonomic nervous system functions, sleep disorders, and orthostatic intolerance, which are also common during and after spaceflight. There is no hydrostatic pressure in a weightless environment. As a result, the redistribution of body fluids toward the upper body causes a decrease in leg volume, which may affect muscle viscosity and compliance. An increase in intracranial pressure may also be responsible for a decrease in near visual acuity. In addition, muscle mass and strength decrease as a result of the reduced loading in weightlessness.

Purpose:

This study investigates the efficacy of a new method to create artificial gravity through an electromagnetic field.

Significance:

Astronauts may suffer from several health problems as a consequence of the weightless environment. Thus, creating artificial gravity within spacecraft may reduce these consequences.

Key words:

Artificial gravity – weightlessness – neuromuscular defects