

**Extraterrestrial Physiological Changes**  
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The gravitational force of the Earth has shaped our anatomy and physiology over millions of years. When exposed to the microgravity of space, all cells, organs, and body systems are affected. The vestibular system is one of the first organs to react to microgravity exposure, with a quick and sometimes intense response to the lack of gravity, during which the body spatial orientation, coordination and balance are very affected. The amount of weight that bones must support while in space is known to be reduced to almost zero, leading to bone loss, especially after long-term missions. Microgravity has the same detrimental impact on skeletal muscles, especially those that normally act against the force of gravity, which become weaker and atrophic during a space mission. Microgravity also affects the immune system, which seems to become less active. Furthermore, the cardiovascular system adapts to the space environment by redistributing blood and fluids from the lower to the upper body, subsequently decreasing its plasma volume and heart size. In addition, astronauts also present a reduction in number of red blood cells, known as space anemia. The psychosocial aspects faced by astronauts include confinement, monotony and isolation from family and friends. All of these alterations become even more relevant considering the imminent increase in space tourism and longer-duration crewed missions to the Moon and Mars.