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SPACE TRAVEL AND ITS IMPACT ON HUMAN PHYSIOLOGY: IS SPACE TRULY FOR ALL?

Abstract

Commercial space flight might take humanity to the next era of human space exploration, i.e. space tourism for civilians. At the launch of human spaceflights, the selection criteria were very challenging. Astronauts would have to be in superior health, with no pre-existing health conditions, and undergo a rigorous training before embarking on their journey. However, with commercial space tourism on the rise, anyone with the desire and finances to go to space has the opportunity to do so. There are currently no set parameters to determine the safety of individuals during space travel. The purpose of this study is to analyse the safety and impact of space travel on civilians, on the basis of their physiological and psychological health. Studies show that space travel may impact our gene expression, and increase susceptibility to disease. Space travel can have a significant impact on the human body, both physically and mentally. Microgravity alone can cause bones to demineralize, and skeletal muscles to lose mass and strength. Exposure to radiation, novel microorganisms, varying pressure can have a stronger effect on individuals with pre-existing health conditions. Therefore, it is necessary to determine the safety of space travel for people who have cardiopulmonary or musculoskeletal conditions such as arthritis, people with anxiety, depression, immunosuppressed individuals or people with certain genetic disorders, babies, gravidas etc. The magnitude at which these factors affect the health of an individual during space travel is still not very well known. We conducted a systematic review by searching the literature pertaining to human physiology, psychology, pathology, microgravity, space medicine, various medical conditions etc. This study primarily aims to discern if space travel is safe for everyone and determine the medical contraindications that can restrict space travel.