

IAA/IAF SPACE LIFE SCIENCES SYMPOSIUM (A1)  
Medical Care for Humans in Space (3)

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A MIXED REALITY INTERVENTION FOR AUGMENTING THE VISION OF VIIP IMPACTED  
ASTRONAUTS**Abstract**

Long duration human exploration into outer space can have adverse effects on the human body. These significant adverse effects of long-term weightlessness range from muscle atrophy and deterioration of the skeleton (spaceflight osteopenia) to slowing of cardiovascular system functions, decreased production of red blood cells, balance disorders, eyesight disorders and a weakening of the immune system. Additional symptoms include fluid redistribution, loss of body mass, nasal congestion, sleep disturbance, and excess flatulence. According to NASA, the problem of visual impairment and intracranial pressure syndrome (VIIP) involves changes in vision and the structure of the eyes and, consequently, has indirect signs of increased pressure in the brain. This problem is experienced by over 50% of astronauts. The purpose of the research was to investigate how an innovative mixed reality system combining virtual reality and augmented reality may be used as measurable intervention to compensate an astronaut for degraded sight during long term space missions. The research conducted investigates this mixed reality prototype to counter the problem of VIIP in astronauts during long duration space missions to Mars and beyond.