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CIRCADIAN RYTHM MONITORING WRIST WATCH FOR ASTRONAUTS

Abstract

In this era of space exploration, manned missions are an integral part of all space organizations. Soon manned expeditions to our nearby planets, such as Mars, will become a reality in the near future, and these long flights would require crew members to reside on board for months, if not years. It is vital for an astronaut to maintain peak alertness and a healthy calm mind during these lengthy space trips in order to accomplish intricate responsibilities and handle emergency or dangerous situations wisely, as there is no room for error. To maintain a healthy mind and attain maximum performance, a specific quantity of suitable, uninterrupted sleep is essential. However, data suggests that unpredictable work hours, lengthy duty periods, a heavy workload, stress, and the presence of light within the spaceship at irregular intervals as a result of its spin reduce crew members' sleep lengths and performance. In this study, we present a design for a new wristwatch for the crew members that tell the user when it's time to sleep by measuring changes in body temperature, recording sleep activity, and other biological markers that signal the circadian cycle. The study presents a novel technology that can improve crew members' performance and mental health while also reducing psychological issues that may occur due to their solitude in space.