
INTRODUCTION. An A01 provides an auditory display of primary flight parameters. In theory allowing the pilot to maintain spatial orientation while flying in a consistent gravitational force vector created by a sustained linear acceleration is misinterpreted as a change in pitch or bank attitude. Since the SGI typically occurs under degraded visual conditions, reducing the visual contribution of the display to the pilot's visual search and ability to determine the location of his target. The experiments described herein were designed to evaluate the potential effects of the G-excess illusion on the Dynamic Environment Simulator, a head-up display that simulates the visual environment for a pilot in a high-G flight. The experiments were conducted in a jet aircraft, with the pilot seated in a seat that could be tilted at 45°. The pilot was instructed to maintain a constant visual orientation and to report any changes in orientation that they perceived. The results showed that the pilot's ability to maintain visual orientation was significantly reduced by the G-excess illusion. The ability of the scenes to reduce the SGI, even in the most visually complex environments, was significant. The ability of low-cost head-mounted displays to reliably reduce the magnitude of the SGI and other disorientation illusions remains uncertain. The capability to elicit vision may not be sufficient for overcoming the SGI.


INTRODUCTION. The G-excess illusion is increasingly recognized as a cause of disorientation illusions in high-G flight. The experiments described herein were designed to assess the possible effects of the G-excess illusion on the Dynamic Environment Simulator, a head-up display that simulates the visual environment for a pilot in a high-G flight. The experiments were conducted in a jet aircraft, with the pilot seated in a seat that could be tilted at 45°. The pilot was instructed to maintain a constant visual orientation and to report any changes in orientation that they perceived. The results showed that the pilot's ability to maintain visual orientation was significantly reduced by the G-excess illusion. The ability of the scenes to reduce the SGI, even in the most visually complex environments, was significant. The ability of low-cost head-mounted displays to reliably reduce the magnitude of the SGI and other disorientation illusions remains uncertain. The capability to elicit vision may not be sufficient for overcoming the SGI.


INTRODUCTION: Aeromedical evacuation is on the brink of some extraordinary advances in patient care technology. In the past, biometric technology for monitoring patient care was not available. The ability to monitor patient care in real-time is critical for ensuring the safety and effectiveness of evacuations. This technology presents a new opportunity for improving patient care, and reducing the time required for medical treatment. With the advent of biometric technology, it is now possible to monitor patient care in real-time, allowing for early detection of changes in patient condition and prompt intervention. This technology is particularly relevant to the context of aeromedical evacuation, where timely and accurate monitoring of patient care is essential for ensuring the safety and effectiveness of the operation.

RESULTS: An increase in the quality of in-flight patient care will be the major benefit derived from this process. CONCLUSION: The results of these efforts will culminate in the transformation of aeromedical patient care into the 21st century.
The final design configuration to date will be discussed with future space program delivery systems, and personnel (patient and crew medical officers). It must be acknowledged that equipment (Advanced Life Support packs, defibrillator, ventilator, portable oxygen) must be available in the Health Maintenance Facility (HMF) by providing a restraint/interface system for all vehicles (ACRV) for support of an ill or injured crewmember requiring stabilization. The Space Station Freedom (SSF), the Shuttle Transportation System (STS), and the Assured Crew Rescue System (ACRS) are possible locations for CPR. The delivery of CPR is possible in all configurations tested. Reliance on muscular force alone was quickly fatiguing to the rescuer. The CCAD was able to provide adequate compressive force, but positioning was problematic. CONCLUSIONS. Delivery of effective CPR in microgravity will be dependent on adequate restraint and patient restraint, technology, and adequacy of compressive force and frequency. Under conditions of parabolic flight, multiple restraint systems and ventilation methods were also assessed. Free-floating CPR may be employed as a stop-gap method until patient restraint is available. Development of an adequate CCAD would be desirable to compensate for the effects of deconditioning.

INTRODUCTION. The microgravity environment presents several challenges for delivering effective cardiopulmonary resuscitation (CPR). Chest compressions must be driven by muscular force rather than by the weight of the rescuer’s torso. Airway stabilization is influenced by the neutral body posture. CPR must be delivered with precision, crewmembers of varying sizes and degrees of physical deconditioning from space-flight. Several ACLS devices were designed to accommodate these factors. The delivery of CPR was possible in the one g environment, in parabolic flight, and on a recent shuttle flight. METHODS. Utilizing study participants of varying sizes, different techniques of CPR delivery were evaluated, including recording a CPR manskit to assess adequacy of compressive force and frequency. Under conditions of parabolic flight, methods tested included conventional positioning of rescuer and victim, free-floating CPR, and the utilization of a mechanical cardiac compression assist device (CCAD). Multiple restraint systems and ventilation methods were also assessed. RESULTS. Delivery of effective CPR in microgravity is hindered by the environment, but should be adequate. Factors specific to microgravity were identified for inclusion in the protocol, including immediate restraint of the patient, and early intubation to insure airway. External cardiac compressions of adequate force and frequency were administered using various methods. The more significant limiting factors appear to be crew training, crew size, and limited supplies. CONCLUSIONS. Although the environment is expected to be adequate, force and frequency were administered using various methods. The more significant limiting factors appear to be crew training, crew size, and limited supplies. Free-floating CPR may be employed as a stop-gap method until patient restraint is available. Development of an adequate CCAD would be desirable to compensate for the effects of deconditioning.