

Reduce pain and fatigue during rotary wing flight

Luna Innovations is developing a low-cost, low-profile wearable aircrew endurance system (ACES) designed to mitigate pain and fatigue common to aviators. Computational modeling and biomechanical analysis in a simulated aircrew environment has informed a design specifically targeted to promote good flight posture in helicopter pilots and aircrew members. The final system will reduce musculoskeletal load along the spine and minimize fatigue. ACES is a realistic approach to rapidly provide relief to the military rotary aviator without hindering mobility within the aircraft.



Over 50% of helicopter pilots experience musculoskeletal pain

Pain and discomfort are prevalent issues within the rotary wing community, where a combination of poor seat ergonomics and cockpit design result in airframes that actively promote poor posture and induce high rates of musculoskeletal fatigue and pain. Over 50% of helicopter pilots and crewmen experience musculoskeletal pain, which is commonly accepted as “part of the job” and can represent an operational hazard and make aircrew retention difficult.

There is a critical need for a biomechanically-informed solution that can be rapidly implemented to reduce the incidence and severity of this pain.

Alleviate stress and pain in the lower back

Biomechanically informed to reduce stresses in vulnerable lower back musculature and improve aviator posture, reducing the tendency towards the “helo-hunch” position.

Foam cushioning within lower support system reduces vibrations and redistributes pressure along sit bones.

Comfortable for high endurance operations

Low-profile beneath the flight vest and ballistic plates.

Tensioning elements easily accessed and adjusted for customized fit.

Heat management for reduction of thermal load.

Rapid integration

Fits all rotary airframes.

Produced using high-quality, low-cost materials and techniques.

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