

Proceedings of the Annual General Donald R. Keith Memorial Conference
West Point, New York, USA
April 28, 2016
A Regional Conference of the Society for Industrial and Systems Engineering

Developing an Exoskeleton Test Plan for the TALOS Program

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Abstract: As America's global adversaries increase their capabilities on the battlefield, US military forces must enhance warfighter's survivability, lethality, and mobility. These needs can be met by augmenting warfighters with additional equipment. The increased use of equipment, however, creates an additional need for an exoskeleton that can support the added equipment, while also augmenting the warfighter's mobility. Traditionally, exoskeletons have had acceptance issues related to poor operational mobility. USSOCOM is building the Tactical Assault Light operator Suit (TALOS) as the next generation of these armored exoskeletons. This paper explains the methodology for developing a test plan to ensure adequate mobility for the warfighter wearing the TALOS system. Operational missions were decomposed into tasks which were further broken down into individual movements. Motion capture data was used to determine the angles and angular velocities imposed on relevant joints during these movements. This information was mapped to a set of exercises that were then compiled into a test plan, which can be used during the testing phase to ensure proper mobility for operators utilizing the system.

Keywords: Survivability, Lethality, USSOCOM, TALOS, Exoskeleton, Mobility