

Exoskeleton Readiness Testing with LEAP

Wearable assistive technologies (AT) have the potential to reduce physiological work and/or musculoskeletal loading; however, the suitability of these evolving technologies for dismounted combat requires operationally realistic assessments.

The Load Effects Assessment Program (LEAP) is the appropriate test for the function and operational compatibility of exoskeletons and other future assistive technologies.

“Due to rapidly maturing technologies and the increasing importance of reducing burden whilst also enhancing the capability of the Warfighter, there is a need to better understand the value proposition of AT for dismounted operations.”

Boynton (2017)¹

- Evaluation of wearable assistive technologies for warfighters must include movements that are specific to the dismounted combatant, including multiple movement transitions and changes in posture and tasks performed.
- LEAP has been successfully utilized to evaluate an exoskeleton by the Canadian Armed Forces.²

“The development of military specific testing recommendations should consider key mobility categories required of the dismounted combatant. [...] It is critical that a variety of tasks be included in the assessment protocol to encompass the full range of movement patterns, muscle groups and energy systems associated with dismounted operations”

Mudie et al. (2018)²

- LEAP evaluations of exoskeletons for military use improves the test specificity and relevance to the warfighter.

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¹Boynton, A. (2017). Wearable assistive devices for dismounted soldiers. *Journal of Science and Medicine in Sport*, 20, S99.

²Gruevski et al. (2020). A Pilot Investigation of the Influence of a Passive Military Exoskeleton on the Performance of Lab-Simulated Operational Tasks. *IIEE transactions on occupational ergonomics and human factors*, 8(4), 195-203.

³Mudie et al. (2018). Consensus paper on testing and evaluation of military exoskeletons for the dismounted combatant. *Journal of science and medicine in sport*, 21(11), 1154-1161.

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