

Making Assistive Technology and Rehabilitation Engineering a Sure Bet

Mechanical Testing of Heavy Duty Prosthetic Feet

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ABSTRACT:

Limited research has been published to provide validated information about the quality and functional reliability of prosthetic feet. Soldiers with amputations frequently wish to continue on active duty requiring rigorous testing of prosthetic feet to ensure reliable performance on the battlefield. Prosthetic feet are exposed to a series of impacts, shear stresses, and exposure to extreme weather in Iraq and Afghanistan. In this study, we used International Standards Organization (ISO) 10328 testing methods to test the impact sustainability of active duty prosthetic feet from three different manufacturers, and also to analyze and compare the findings. Sierra and VSP Re-flex successfully passed during static proof testing, ultimate strength and fatigue testing. The Pathfinder failed during fatigue testing. The long-term goal of this project is to conduct testing of prosthetic feet at the highest loading level of ISO 10328 to determine if it reproduces the prosthetic foot failures experienced by active-duty amputees.

KEYWORDS:

Prosthetics testing, ISO 10328, amputation, prosthetic feet, activity

ACKNOWLEDGEMENTS:

The funding for this research was provided by the DOD Grant # W81XWH-07-1-0716

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