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TITLE: Metabolic and Biomechanical Measures of Gait Efficiency of Three Multi-Axial, Vertical Shock and Energy Storing Return Prosthetic Feet During Simple & Complex Mobility Activities

PRINCIPAL INVESTIGATOR: Dr. William S. Quillen

CONTRACTING ORGANIZATION: University of South Florida  
Tampa, FL 33620-9951

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<b>14. ABSTRACT</b> The purpose of the study is to assess the performance of ten highly mobile transtibial amputees on an obstacle course and laboratory setting utilizing three different multi-function prosthetic feet (vertical shock, torsion control, multiaxial and energy storing). At this time, the study is still underway; therefore we do not have significant findings to report. The equipment to be used for metabolic and timing has been evaluated and tested, and performed satisfactorily.						
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## **Introduction**

The purpose of the study is to assess the performance of 14 highly mobile transtibial amputees on an obstacle course and laboratory setting utilizing three different multi-function prosthetic feet (vertical shock, torsion control, multiaxial and energy storing). Subjects will be recruited based on a history of active military service, recent military service, active service as a first-responder or highly accomplished recreational/competitive amputee athlete. Amputee performance will also be compared to a non-amputee control group.

## **Body**

As of the submission of this annual report, we have obtained Institutional Review Board approval from both the University of South Florida and the Department of Defense (tasks 1 and 2, respectively, in the Statement of Work). We have purchased and are presently assessing the timing lights system that will be utilized in the obstacle course. We have also tested the Cosmed metabolic system that will be used in the study to ensure correct functionality for the laboratory portion of the assessment. Additionally, we have refined our use of the Polar 800 telemetric heart rate field assessment system.

A meeting of the study's leadership team is planned in the next three to four weeks to discuss scheduling and logistics. Further, initial contact has been made with several control subjects. Subsequent to this meeting, participants will be contacted for scheduling to complete informed consent and testing. A preliminary planning meeting with local military leadership took place on October 11, 2012.

At this time, we do not foresee a need to revise any of the tasks approved in the original Statement of Work.

## **Key Research Accomplishments**

- Based on field and laboratory studies, a prosthetic foot recommendation for rigorous activities as undertaken in this study will likely be available upon study completion.
- Comparative efficacy research of the interventions will add to the body of knowledge to facilitate informed clinical decision-making.

## **Reportable Outcomes**

The technology that will be used to collect outcomes measures have been assessed and tested. Given that the study is still underway, we do not have any other reportable outcomes at this time.

## **Conclusion**

As stated in our anticipated results in the proposal, the expectation is to recommend a prosthetic foot that will optimize performance in rigorous activities such as those undertaken in this study.

**References**

None

**Appendices**

None