“Selection of Prosthetic Feet Based Upon Their Mechanical Properties”
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INTRODUCTION
The purpose of this work is to create a method for characterizing prosthetic feet by their mechanically verifiable properties. Through this work, a more objective method for prosthetic foot prescription can be constructed which should lead to better outcomes for the amputee.

METHOD
The challenge of this work is to develop methods that provide relevant and repeatable data for the evaluation of prosthetic feet. In order to provide this data, a servohydraulic test machine fitted with a Kistler force plate was used to load and move prosthetic feet in many different configurations in order to simulate different aspects of the gait cycle. Different experiments were developed using this test machine in order to correlate the outputs with both data gathered in a motion analysis laboratory and subjective feedback from amputees. The data was analyzed by a multi-disciplinary team of engineers, motion analysis experts and prosthetists to verify the accuracy and relevance of the data. Methods were developed to evaluate and rank the data in order to properly rate how an individual foot performs with respect to several clinically relevant parameters. The final step in the process is to create a system for propagating this information for everyday clinical usage.

- 8 Testing Profiles and 17 Tested Parameters
- Broken into Early Stance/Mid Stance/Late Stance
- Affect of foot during standing considered as well

RESULTS
The result of the work is a system for evaluation of prosthetic feet. The system utilizes a set of parameters that are essential to the function of prosthetic feet. These essential parameters have a score that can be used to evaluate how well a foot performs that function. The scores can be evaluated across different patient activity levels since certain features of a foot may work well for a certain patient and may not work well for a patient at a different activity level.

CONCLUSION
This work shows that it is possible to develop an accurate and repeatable method to evaluate the mechanical properties of prosthetic feet. This method can be used to help the prosthetist objectively determine the best possible foot option for their patient. This determination is based upon clinically relevant information of the individual. Such information should help to improve clinical outcomes.

REFERENCES