Assessing rehabilitation of a recent unilateral transfemoral amputee: clinical outcome measures and Modus Trex™

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INTRODUCTION
Assessing rehabilitation potential and documenting clinical outcome for persons with lower limb loss has become increasingly important. The Veterans Administration (VA) has begun reimbursing for an activity monitor (Modus Health StewWatch™), and parameters calculated from step activity (Modus Trex™) may provide insight to mobility. These parameters have not been reported in literature and may not be well understood by everyday clinicians.

This case study highlights the clinical outcome measure and step activity data that can be collected during routine prosthetic rehabilitation and can be used to assess rehabilitation potential and document clinical outcomes.

METHOD
Subject: 60 year old female, recent unilateral transfemoral amputation secondary to failed knee surgery, 150 lb, MFCL K-3, lives independently

Apparatus: Amputee Mobility Predictor (AMPPRO), Prosthesis Evaluation Questionnaire – Mobility Subscale (PEQ-MS), Activities Specific Balance Confidence Scale (ABC), Prosthetic Limb Users Survey of Mobility (PLUS-M), Modus Trex™ (Modus Health)

Procedures: Patient was fit with a preparatory transfemoral prosthesis including an ischial containment socket, seal-in gel liner with suction suspension, 4-bar mechanical knee without hydraulic cylinder, hydraulic ankle/foot. A Modus Health StepWatch™ was attached to the prosthesis during her inpatient rehabilitation stay and the months following her discharge to home.

RESULTS
Outcome measure data and Modus Trex™ data were recorded during prosthetic delivery and follow up appointments. The results are depicted in Figures 1 and 2. Additionally, the patient walked an average of 832 steps/day at the initial time point, and 1,733 steps/day at the final time point.

DISCUSSION
The patient improved in all clinical outcome measures through the initial prosthetic rehabilitation. The initial AMPPRO score was outside of the range of published data for MFCL K-3 patients (Gailey 2002), but at the second time point, her score fell within the K-3 range. The patient exhibited an increase in balance (ABC) and perceived mobility in the community (PEQ-MS and PLUS-M) as she gained experience with her prosthesis. She increased step activity (steps/day) and increased all the Modus Trex™ parameters. The Cadence Variability Index showed that the patient was above the 50th percentile, and the Ambulation Energy Index increased faster than any other parameter.

CONCLUSION
The clinical outcome measures and data from Modus Trex™ showed improvement in functional mobility (AMPPRO) perceived balance (ABC) and mobility (PEQ-MS and PLUS-M), as well as performance in the community (StepWatch™). The specific parameters from Modus Trex™ will become more useful for interpreting as more results are published in the literature.

CLINICAL APPLICATIONS
This case study demonstrates how functional outcome measures, patient-reported outcome measures and a sensor instrument can be used to document mobility and rehabilitation in a comprehensive manner.

REFERENCES