Effectiveness of Edinburgh Visual Gait Score as a Valid Measure to Assess Influence of an Ankle Foot Orthosis on Adult Gait

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INTRODUCTION
The purpose of this study is to assess the clinical effectiveness of the Edinburgh Visual Gait Score (EVGS) for measuring improvement in gait related to the provision of an Ankle-Foot Orthotic (AFO) device. While practitioners are familiar with visual gait analysis, a method for quantifying those observations is not commonly used in clinical practice. Previous studies demonstrated that EVGS was an effective measure of gait in children with Cerebral Palsy (CP) in a clinical setting (Ong, 2008). In this study, the EVGS will be used to evaluate gait in subjects prescribed an AFO with and without the device present. The change in score will be examined to determine if the scale is an effective means of assessing improvement in gait between with and without AFO conditions.

METHOD
Subjects: Two female and four male subjects were tested with an average age of 43. All subjects were prescribed an AFO and participated in two trials: ambulating with and without an AFO. Average time since diagnosis was 4 years, with varying diagnoses.

Apparatus: EVGS is a video-based gait analysis scale. The scale used in the study was derived from its original content and modified in format for ease of use. It is comprised of a one page document separated into two phases and five anatomical levels for each phase. Observations were made on each of the two phases, stance and swing. The range of motion angles used in each segment were derived from data and graphs obtained from gait analysis of normal subjects using the Vicon system (Read, 2003). Scores are tallied with a three-point scale: 0 = normal; 1 = moderate deviation; and 2 = marked deviation. A total score was compiled for each subject trial.

Procedures: Each subject was observed in a clinical setting. Research was conducted by one observer clinically trained in assessing gait. Subjects were video recorded in the coronal and sagittal planes. Subjects walked at a comfortable speed and were allowed to use an assistive walking device of their choosing. Several full strides were recorded for each subject, the distance of ambulation varied. Recordings were made for before and after the assistance of an AFO. The types of AFOs used included custom fabricated or off-the-shelf devices, according to patient-specific needs.

Data Analysis: Data was entered into spreadsheet application for analysis. Mean and standard deviation were computed to measure correlation. A paired T-Test was used to determine the statistical significance of scores for each trial by using each subject as their own control.

RESULTS
The average score of trials with an AFO was 4.0 compared with an average score of 10.7 for trials without an AFO. The trial scores are depicted in Figure 1. The standard deviation of subject scores with and without an AFO were 4.64 and 2.52 respectively. The T-Test resulted in a score of 0.006 which was below the threshold chosen for statistical significance of 0.05.

DISCUSSION & CONCLUSION
The results from this study support the effectiveness of the EVGS in measuring improvement in gait related to the provision of an AFO. The lower mean scores supports that perceived improvement can be measured quantitatively with the EVGS. The paired T-Test further supported this by showing the change in the mean scores was statistically significant. Widespread use of EVGS in a clinical setting would allow for improved documentation and ability to quantitatively measure improvement in gait when determining the use of an orthotic device. With the increased focus on evidence-based practice in the field of orthotics the need for standardization in scales of measure and clinical documentation is paramount.

REFERENCES

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