

Alterations in Surgical Decision Making in Patients with Cerebral Palsy Based on Three-Dimensional Gait Analysis

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Abstract

Summary: The purpose of this study was to compare surgical recommendations made by clinicians experienced in gait analysis when using information provided from the clinical examination and videotape, with recommendations made after the addition of kinematic, kinetic, and electromyographic (EMG) data. Ninety-one patients with a diagnosis of cerebral palsy were seen in the gait laboratory as part of the surgical decision-making process. Experienced clinicians reviewed video and clinical examination data for each patient and made surgical recommendations. Joint kinematics and kinetics and EMG data were then reviewed, and a second set of surgical recommendations was made. Comparisons between these recommendations showed that the addition of gait-analysis data resulted in changes in surgical recommendations in 52% of the patients, with an associated reduction in cost of surgery, not to mention the human impact of an inappropriate surgical decision, which is more likely without gait analysis. When changes in recommendations were made, an increase in surgical recommendations was observed for the gastrocnemius (59%) and rectus femoris (65%), whereas decreases were observed for the hamstrings (61%), psoas (78%), hip adductors (83%), femur (86%), and tibia (64%).