Gait evaluation of young adults wearing a Bledsoe-Extender-Plus© knee brace at two different degrees of flexion

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ABSTRACT

Summary. As students of the LeTourneau University WHEELS team, we are recording outcomes measures of the Bledsoe-Extender-Plus© knee brace. Using the GAITRite© mat, several skills tests and a questionnaire, this comparative study will investigate differences in gait performance for students wearing the brace locked at 10° and 0° flexion. Introduction. Outcomes measures are used to evaluate the functionality of assistive devices utilized in a variety of rehabilitation settings. Athletes commonly tear their anterior cruciate ligament (ACL) in sports injuries; many of these injuries require the use of a knee brace, particularly in female athletes. This study investigates whether wearing the brace locked at 10° or 0° flexion provides lower energy cost, more normal gait characteristics and greater user satisfaction. In studies with prosthetic users in less resourced settings the Gait Function Questionnaire (GFQ) was developed. The GFQ has been used to evaluate the subjects’ experiences using the brace at 10° and 0° flexion. This brace study is presently being done for the ongoing validation of the GFQ. We hypothesize that the 10° knee position will promote more symmetrical gait, lower energy cost, and higher user satisfaction for specific aspects of gait function. Methods. Wearing the brace locked at 10° and then 0° flexion, each subject will complete a suite of tests including the following: Timed Up-and-Go test (TUG), a six minute Timed Walk Test (TWT), a ten-minute Physiological Cost Index (PCI) performed on a treadmill, and a two minute PCI performed during three skills tests: stairs, around chairs, and on a ramp. Heart rates will be measured during walking and resting using a Polar RS400 Heart Rate Monitor. The GAITRite© pressure sensitive gait analysis mat will be utilized to record spatial and temporal gait characteristics. All subjects will walk across the GAITRite© mat 15 times. Subjects will answer the GFQ upon completion of the tests. Preliminary Results and Conclusion. This study is currently underway. Preliminary results should be available by the conference date.