COMPARISON OF THE PROPRIOCEPTIVE AND MOTION REDUCTION EFFECTS OF SHOULDER BRACES IN INDIVIDUALS WITH AND WITHOUT ANTERIOR SHOULDER DISLOCATIONS: A PILOT STUDY

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Disclosure of source of funding for this project (if none, indicate "no funding"): No funding.

Compliance Statement: This study was approved by the St. Catherine University Institutional Review Board, and participants read and signed an informed consent form.

Abstract (Limited to 300 Words):

BACKGROUND AND PURPOSE: Research has shown proprioception can become impaired after anterior shoulder dislocation. Conservative intervention often includes using a shoulder brace for activities. There is currently no research that compares the efficacy of shoulder braces in limiting range of motion (ROM) and providing proprioceptive feedback of the shoulder. The purpose of this pilot study was to investigate the effects of various shoulder braces on glenohumeral ROM and proprioception in individuals with a history of anterior shoulder dislocation. Subjects without a history of dislocation were also recruited to assess the feasibility of the methodology utilized in this study.

SUBJECTS: Eight male subjects.

METHODS AND MATERIALS: Maximal ROM and proprioception were tested in three conditions: 1) no brace; 2), Duke Wyre; and 3) Sully. Kinematic data for both proprioception and ROM was collected using an electromagnetic 3-dimensional motion capture system. Humeral motions tested were: 1) abduction; 2) maximal external rotation at 90° of abduction; and 3) combined motion. Proprioception was tested using active replication of three standardized external rotation (ER) positions of the shoulder. Outcome measures included motion restriction and the relative error in active replication for proprioception.

ANALYSES: ANOVA’s were run for each ROM and proprioception condition and if significant, post-hoc, independent t-tests were performed. Significance was set at 0.05.

RESULTS: Statistically significant findings between all brace conditions were found with glenohumeral ER and abduction. Significant differences in combined ROM were found between the no-brace and braced conditions. Proprioceptive testing revealed statistically significant findings between the no-brace condition and the Sully, and between the Sully and Duke Wyre at 10 degrees of ER. Ten degrees short of maximal ER revealed statistical significance between the Sully and other two conditions.
CONCLUSION AND IMPLICATIONS: Both the Duky Wyre and the Sully shoulder braces limit glenohumeral ROM. The Sully increased shoulder proprioception in positions vulnerable to dislocation. The study design and methods performed will enable future research to expand upon the data gathered in order to benefit both the clinician and athletic populations.