

## **RELATIONSHIP OF CHANGE IN MEASURES OF IMPAIRMENT AND FUNCTION IN PATIENTS WITH SHOULDER DISORDERS**

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**Purpose:** To determine whether there is a relationship of change in impairments and function among patients presenting to physical therapy with shoulder disorders.

**Subjects:** 116 patients (mean age 51.17) with various nonoperative and postoperative shoulder pathologies treated at a hospital based outpatient physical therapy clinic.

**Materials/Methods:** Patients referred to an outpatient physical therapy clinic with a unilateral shoulder disorder underwent clinical examination at initial evaluation and discharge. The findings were entered into a central database. The following variables were examined: demographic data; time since onset; Penn Shoulder Score(PSS) (pain, satisfaction, function, and total score), active range of motion (AROM) of forward elevation (FE), external rotation (ER) at 0° and 90° of abduction, functional internal rotation (IR) by reaching the highest vertebral level behind the back; isometric muscle force, tested with a hand-held dynamometer, for ER and IR at 0° of abduction and FE at 45° of elevation. Correlation coefficients were performed to correlate the impairment measures with functional measures in patients with frozen shoulder. Regression analysis was used to predict the level of impairment associated with individual function items.

**Results:** The impairment measures exhibited moderate correlation with the PSS (range = 0.26-0.51). The AROM and muscle force measures correlated well to each other (range = 0.29-0.72). The 3 components of the PSS correlated well to each other and the overall score (range = 0.28-0.77). Regression analysis revealed that a patient would need at least a 3 level change in AROM IR to record a change of one Likert level on the PSS. A 22° change in AROM FE is required for a patient to achieve a one Likert level change in the ability to place objects on a shelf at and above shoulder level. To achieve a one level change in the ability to place objects on a shelf at or above shoulder level patients need to achieve the following changes in muscle force: ER = 4 lbs., IR = 7 lbs., FE = 8 lbs.

**Conclusions:** Relationships do exist among measures of impairment and function in patients with shoulder disorders. Minimum levels of change in impairment are required for patients to perceive an improvement in function.

**Clinical Relevance:** Clinicians can use the results of this study to make clinical decisions regarding progress in the treatment of patients with shoulder disorders.