

O'Connell D, Wortham A, D'Arezzo M, Coxe B. WITHIN AND BETWEEN DAY RELIABILITY OF THE UNSUPPORTED UPPER LIMB EXERCISE TEST IN PATIENTS WITH PULMONARY FIBROSIS. Hardin-Simmons University Department of Physical Therapy, Abilene, TX.

Introduction: Pulmonary Fibrosis (PF) is a debilitating form of lung disease with patients complaining of upper extremity fatigue and decreased ability to perform activities of daily living. The unsupported upper limb exercise test (UULEX) has been shown to be an acceptable and reproducible test of upper extremity endurance in patients with chronic obstructive disease. However, the UULEX has not been tested for reliability in individuals with PF. **Purpose:** (1) To determine test-retest reliability of the UULEX in those with Pulmonary Fibrosis; (2) to determine the relationship between isometric upper extremity shoulder and elbow flexor strength with UULEX scores; and (3) and to determine the relationship between the UULEX and the GAP Risk Assessment Staging System (GAP). **Methods:** Eight participants were recruited from the Hendrick Pulmonary Rehabilitation Program. Subjects were measured for height, weight, strength (manual muscle tests-elbow and shoulder flexors), and vital signs. Six-minute walk test distance, and pulmonary function data was obtained via chart review for the GAP. Participants performed one UULEX trial on day 1 and two UULEX trials on day 2. The UULEX involves lifting a PVC pipe (30/lifts/min) to progressively increasing heights (each minute) until fatigued. Heart rate, oxygen consumption, and minute ventilation, oxygen saturation, perceived exertion of effort and breathing was recorded continually throughout the UULEX tests. Intraclass Correlation Coefficients (ICCs) were calculated (SPSS-25) to determine the test-retest reliability with the UULEX across three trials. Pearson correlations were calculated between UULEX trial 1 and average UULEX trial 2 and 3 values as well as between UULEX trials 2 and 3. Pearson correlations determined the relationship between upper extremity strength and the UULEX, and the relationship between the UULEX and the GAP. Statistical significance was set to <0.01 . **Results:** The ICC demonstrated that the UULEX had excellent retest reliability ($ICC = .908$). Pearson correlations for between day and within day (average of day two trials) UULEX trials were $r = .986$ and $r = .944$, respectively, indicating strong correlations. The Pearson correlation for UULEX scores and isometric shoulder and elbow flexor strength, respectively were weak ($r = -.075$ and $r = -.003$). UULEX and GAP scores were strongly inversely correlated ($r = -.992$). **Discussion:** UULEX muscular endurance test performance appears to be extremely reliable between and within days as indicated by the ICC and Pearson correlation coefficients. The weak correlations between upper extremity strength and UULEX scores (muscular endurance) suggest that they represent different constructs. The strong, inverse relationship between the GAP Risk Assessment score and the UULEX suggests they are both predictive of mortality. Despite interesting findings, generalizability is limited due to the small sample size. Continuation of this study is therefore recommended. **Clinical Relevance:** The UULEX, a test of upper extremity endurance, appears to be a reliable within and between-day measure for patients with PF. Muscular strength and endurance were poorly correlated, so therapists should not assume that patients with PF possess both constructs. Finally, since, therapists may not have access to GAP scores, UULEX scores appear to be predictive of mortality.