

Most of these devices are expensive, have limited availability and have not had their repeatability evaluated for the thoracic spine. Furthermore little is known about the ability of these devices to detect the differences that are perceived as relevant by therapists.

**Purpose:** The purposes of this study were 1) to evaluate the reliability of a simple, low cost method of measuring FD curves of the thoracic spine and 2) to determine how the FD curves of spinal levels differ with differences in therapist-perceived mobility.

**Methods:** Ten female participants aged 18–25 had PA glides up to a force of 40 N applied to each level of their thoracic spine from T3 to T7. To assess repeatability, each glide was applied four times. To determine what characteristics of the FD curves are related to therapist perception of mobility, an experienced musculoskeletal physiotherapist selected two of these locations - one perceived to have less movement than the other. The PA force was applied through a FDX Wagner Digital Force Gauge with a digital readout and each application was videotaped.

The point of force application was tracked by automated tracking software (Kinovea) enabling calculation of frame-by-frame displacement. Reading the digital output from the force gauge enabled synchronisation of the force and displacement data points. The resulting FD curve was smoothed and interpolated using a one way spline function (Srs1software.com). The limits of agreement that indicate the difference in displacement within which 95% of repeated measures would be likely to occur for that magnitude of force were calculated at each N of force. Confidence bands of the mean were calculated for the locations on each participant that had been judged to have different degrees of mobility. Areas where the confidence bands did not overlap were considered to be significantly different.

**Results:** Limits of agreement ranged from 1.2 to 2.4 mm or 15–25%. For nine out of ten of the stiff/less stiff comparisons, the curves diverged at levels of force below 10 N and most were significantly different by 5 N.

**Conclusion:** The method described is able to produce force displacement curves of PA movements where repeated measures are within 15–25% at each level of force. While this may seem like a large error, differences between locations perceived as having different levels of movement often varied by 50% to over 100% particularly in the lower force ranges of 5–10 N.

**Implications:** A simple, low cost method of measuring force displacement curves of the thoracic spine is described. While the measurement error may seem large, the repeatability is sufficient to be able to detect differences that are perceived by a clinician. Differences in movement are most obvious at forces as low as five N (approximately the force necessary to click a retractable pen) which is far lower than what is often used.

**Funding acknowledgements:** No funding was received to support this work

**Ethics approval:** Ethics approval was granted through the Griffith University Ethics Review Board

**Disclosure of interest:** None Declared

**Keywords:** Assessment, measurement, Thoracic spine mobility

### Intergrating Research into practice

#### PO1-CS-024

#### EFFECTIVENESS OF PHYSIOTHERAPY TREATMENT THROUGH DIACUTANEOUS FIBROLYSIS IN PATIENTS WITH CARPAL TUNNEL SYNDROME. 12 CASE SERIES

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**Background:** The objective of the study was to analyze the effectiveness of physiotherapy treatment through diacutaneous fibrolysis in 12 case series of patients with carpal tunnel syndrome (mild to moderate intensity).

**Purpose:** It has developed a series of 12 cases diagnosed medically by electrodiagnostic testing.

There have applied 5 sessions with diacutaneous fibrolysis in forearm and hand. Before and after the treatment the variables considered have been measured.

**Methods:** 12 subjects (47,25 years) medically diagnosed with mild to moderate intensity (8 patients, 4 bilateral, 4 unilateral) participated voluntarily. In these patients it was applied 5 sessions of diacutaneous fibrolysis. Before and after these variables were measured: nocturnal and daytime symptoms, functional capacity, mechanosensitivity of the nervous system, sensitivity and strength. A month after treatment symptoms and functional capacity were assessed. For statistical analysis it was used nonparametric Wilcoxon test.

**Results:** After treatment nocturnal symptoms improved statistically ( $p=0,01$ ). Also we found statistically significant improvements in pain after treatment ( $p=0,008$ ) and in numbness ( $p=0,002$ ). Functional capacity improvements are also observed after treatment ( $p=0,002$ ). Mechanosensitivity of the nervous system measured with neurodynamic test showed significant improvement after treatment ( $p=0,033 - 0,003$ ). Improvements were also observed for grip strength and pinch measured by a dynamometer ( $p=0,025$ ). One month after treatment there were observed improvements in nocturnal symptoms, pain ( $p=0,465$ ), numbness ( $p=0,932$ ) and functional capacity ( $p=0,109$ ).

**Conclusion:** Diacutaneous fibrolysis in a 12 cases series with carpal tunnel syndrome with mild to moderate intensity has shown improvements statistically significant in terms of symptoms, functional capacity, mechanosensitivity of the nervous system, strength and sensitivity in the second and third finger.

**Implications:** This study supports the effectiveness of effective management with fibrolysis diacutaneous in carpal tunnel syndrome (mild to moderate intensity)

**Funding acknowledgements:** Researching Unit of Physiotherapy, OMT Spain.

**Ethics approval:** Comite Etica Aragón

**Disclosure of interest:** None Declared

**Keywords:** Carpal tunnel syndrome, Outcome measure, Physical Therapy

### Intergrating Research into practice

#### PO1-CS-026

#### EFFECTS OF POSTERIOR SHOULDER STRETCHES ON THE ISOKINETIC STRENGTH OF ROTATOR CUFF MUSCLES IN YOUTH BASEBALL PLAYERS WITH SCAPULAR DYSKINESIS

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**Background:** Shoulder injuries are common in youth baseball players, it caused by repetitive high-velocity dynamic overhead throwing motion. The repeated throwing motion leads to alters the scapular kinematics defined as scapular dyskinesis (SD), it has been associated with RC muscles strength. Recently, posterior shoulder tightness (PST) has been suggested as an important factor causing the SD. Furthermore, PST is considered a risk factor for various shoulder injuries, and leads to imbalance of shoulder muscles. Therefore, it should focus on the posterior shoulder stretches with a scapular stabilization exercise (PSSE). Some authors reported that effects of PSSE on the RC muscles isometric strength however, no studies have investigated the effects of PSSE on the isokinetic strength of RC muscles.

**Purpose:** The purpose of present study was to determine the effects of PSSE on the isokinetic strength of RC muscles, range of motion (ROM), and shoulder pain in youth baseball players with SD.

**Methods:** Twenty-four youth baseball players in Busan, Korea, participated in this study. They all had scapular dyskinesis, 15° to 20° glenohumeral internal rotation deficit (GIRD) on the throwing shoulder, and shoulder pain during participation training or baseball game. The subjects were allocated in to two groups: PSSE (n=12) and scapular stabilization exercise (SSE) (n=12). PSSE group performed sleeper stretches with four SSE for 6 weeks and SSE group performed four SSE for 6 weeks, respectively. The main outcome measures were concentric, eccentric internal