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Effects of scapular clock exercises and scapular proprioceptive neuromuscular facilitation on pain and functional activities in subjects with adhesive capsulitis

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Abstract
The study is to compare the effects of scapular clock exercises and scapular proprioceptive neuromuscular facilitation on pain and functional activities in subjects with adhesive capsulitis.
Introduction: Adhesive capsulitis is most commonly referred to as frozen shoulder or periarthiritis shoulder, a self-limiting condition of unknown aetiology. To determine the effect of scapular clock exercises on shoulder range of motion and pain in adhesive capsulitis and to determine the effect of scapular on proprioceptive neuromuscular facilitation shoulder range of motion and pain in adhesive capsulitis, to compare scapular clock exercises and scapular proprioceptive neuromuscular facilitation on shoulder range of motion and pain in adhesive capsulitis.
Methodology: This study is a comparative pre and post test study design. A total of 30 subjects, aged between 40-60 years both the genders having adhesive capsulitis were selected based on the inclusion and exclusion criteria. Group A consist of 15 subjects were treated with scapular clock exercises for 10 repetitions 2 sets for 8 weeks (24 Session) and Group B consist of 15 subjects were treated with scapular proprioceptive neuromuscular facilitation exercises for 10 repetitions 2 sets for 8 weeks (24 Session).
Outcome measure: Visual Analog Scale & Shoulder Pain and Disability Index.
Results: On comparing the mean values of Group A & Group B between Pre test and Post test on VAS score & SPADI score shows significant difference in the mean values at $P \leq 0.05$.

Keywords: Adhesive capsulitis, scapular clock exercises, scapular proprioceptive neuromuscular facilitation

Introduction
Adhesive capsulitis, also known as frozen shoulder, is an inflammatory condition characterized by shoulder stiffness and pain [1]. The American Academy of Orthopedic Surgeons defines adhesive capsulitis as "a condition of varying severity characterized by the gradual development of global limitation of active and passive shoulder motion where radiographic findings other than osteopenia are absent" [2]. Adhesive capsulitis can be classified as either primary or secondary. The primary disease typically has an insidious onset, is idiopathic, and is often associated with other diseases such as diabetes mellitus, thyroid disease, drugs, hypertriglyceridemia, or cervical spondylosis [5]. The secondary disease typically follows trauma or injuries to the shoulder. Common injuries include rotator cuff tears, fractures, surgery, or immobilization [6]. The exact pathophysiology of adhesive capsulitis is unknown. The key clinical sign of adhesive capsulitis is reduced active and passive range of motion with forward flexion, abduction, and external and internal rotation [8]. The natural arm swing that happens when walking may be lost in patients with severe illness. Muscular atrophy may be discovered upon further evaluation of the afflicted shoulder. Scapular stabilization exercises likewise help to keep up the length strain relationship of the scapular muscles in this manner giving stabilized scapula which adequately diminishes the time taken by the patient dealing with adhesive capsulitis of the glenohumeral joint [10]. The scapular-clock exercise facilitates the scapular motions of elevation, depression, protraction, and retraction [13]. The low row exercise activates the lower trapezius. The arm, placed on the Fitter, creates scapular retraction and arm extension through combined hip and trunk extension [14]. Based on clinical experience, the push-up with a plus might be too stressful on the healing

shoulder if performed early in rehabilitation [15].PNF treatment has an idea of four hypothetical systems, alluded to as autogenic inhibition, reciprocal inhibition, stress relaxation, and the gate control hypothesis, that do upgrade ROM and muscular activation. A Visual Analogue Scale (VAS) is one of the pain rating scales used for the first time in 1921 by Hayes and Patterso were Pain measured using Visual Analogue Scale (VAS). It is often used in epidemiologic and clinical research to measure the intensity or frequency of various symptoms. For example, the amount of pain that a patient feels ranges across a continuum from none to an extreme amount of pain. From the patient's perspective, this spectrum appears continuous ± their pain does not take discrete jumps, as a categorization of none, mild, moderate and severe would suggest. It was to capture this idea of an underlying continuum that the VAS was devised. The SPADI was developed to assess shoulder pain and disability. The Shoulder Pain and Disability Index (SPADI) was developed to measure shoulder pain and disability in an outpatient setting. The SPADI is divided into two subscales: a "pain" subscale and a "disability" subscale. The subscales comprise series of 5 items for "pain" and 8 items for "disability", referring to various problems with their shoulder encountered over the last week. Reported scoring procedures vary slightly in different validity studies. The 13-item outcome measure assesses 2 modules: pain (5 items) and disability (8 items).

Methods and Materials

The study design was experimental study with comparative analysis of pre and post test. The study was done at Chennai. The sample was collected simple random with 30 subjects. The study was conducted for 8 weeks with 24 sessions. The inclusion criteria was consist of subject with age group of 40-60 years with unilateral adhesive capsulitis. Both the gender was choosen. The pain intensity should be moderate level. The excluded part was previous manipulation under anesthesia, acromial clavicular joint arthritis, cervical spondylosis and adhesive capsulitis. The outcome measure were shoulder pain and disability index and visual analog scale.

Procedure

A Total of 30 subjects were selected based on the inclusion and exclusion criteria. The subjects were selected and divided into two groups by simple random sampling method. VAS and SPADI were used as an outcome measuring tool. Group A consist of 15 subjects were treated with scapular clock exercises for 10 repetitions 2 sets for 8 weeks (24 Session) and Group B consist of 15 subjects were treated with scapular Proprioceptive Neuromuscular Facilitation exercises for 10 repetitions 2 sets for 8 weeks (24 Session). Pre-test and post test were measured. Pre-test were taken before initation of the treatment program and post test were taken at the end of last treatment session. The Group A has scapular clock exercises whereas Group B has scapular proprioception neuromuscular facilitation techniques.

Results

On comparing the Mean Values of Group A & Group B on VAS Score, it shows a significant decrease in the post test mean values in both groups, but (Group B - Scapular PNF Exercises) shows 2.13 ± .833 which has the lower mean value is more effective than (Group A - Scapular Clock Exercises) 3.20 ± .774 at $P \leq 0.05$. Hence the null hypothesis is rejected. On comparing the Mean Values of Group A & Group B on SPADI Score, it shows a significant decrease in the post test mean values in both groups, but (Group B - Scapular PNF Exercises) shows 35.06 ± 5.67 which has the lower mean value is more effective than (Group A - Scapular Clock Exercises) 50.66 ± 4.82 at $P \leq 0.05$. Hence the null hypothesis is rejected. On comparing Pre test and Post test within Group A & Group B on VAS score & SPADI score shows significant difference in the mean values at $P \leq 0.05$.

Discussion

The study was conducted to compare the effect of scapular clock exercises and scapular proprioceptive neuromuscular facilitation exercises in pain and functional activities with adhesive capsulitis. In the treatment of adhesive capsulitis for 8 weeks in terms of pain on visual analog scale, shoulder pain and disability index. It was noticed that there was improvement in both the groups. In the study 30 subjects fulfilling criteria into two groups. All the subjects were screened by VAS and SPADI score. Each group was taught to perform scapular clock exercises and scapular proprioceptive neuromuscular facilitation exercises for 30 minutes for 3 sessions per week. On comparing the mean values of Group A & Group B on Shoulder Pain and Disability Index (SPADI) Score, it shows a significant increase in the post test mean values in both groups, but (Group B - Scapular Proprioceptive Neuromuscular Facilitation Exercises) shows which has the higher mean value is more effective than (Group A - Scapular Clock Exercises). Hence the null hypothesis is rejected. On comparing Pre test and Post test within Group A & Group B on Visual Analog Scale (VAS), Shoulder Pain and Disability Index (SPADI) shows highly significant difference in mean values at Gonzalez Rave *et al*., (2014) Concluded that the results of the expressed that after the utilization of PNF procedures there is an improvement in patients shoulder and hip joint range of movement. It has been seen that when contrasted with different group the group which got PNF strategy was found to have expanded useful exercises and range of movement alongside the decrease in pain. Alaca *et al*., (2011) - Conducted the study on 30 patients and they were randomly assigned to two groups. In addition to the standard rehabilitation program the PNF group received proprioceptive neuromuscular facilitation techniques 10 repetitions and the rest period is 10 seconds and the other group received shoulder exercises. Administration of PNF resulted in earlier functional gains in patients with shoulder syndrome.

Bertoft *et al*., (1999) did a study to compare the effect of enhanced versus limited Therapeutic Alliance on pain intensity and muscle pain sensitivity in patients with Shoulder pain receiving active interferential current therapy (IFC). 117 participants were randomly divided into 4 groups. He concluded that IFC appears to lead to clinically meaningful improvements in outcomes when treating patients with Persistent Shoulder Pain. Scapular Clock Exercises and Scapular Proprioceptive Neuromuscular Facilitation Exercises are important components of rehabilitation programs of adhesive capsulitis. However, to our knowledge, this is the study to examine the efficacy of scapular clock exercises and scapular proprioceptive facilitation exercises as a method of improving range of motion, reducing pain in subjects with adhesive capsulitis. Result revealed that both groups had significant improvements in the outcome measures. However, Scapular Proprioceptive Neuromuscular Facilitation Exercises (Group B) had greater improvements than Scapular Clock Exercises (Group A).

Conclusion

The study concluded that 8 weeks of scapular clock exercises and scapular proprioceptive neuromuscular facilitation exercises have decreased pain and improved shoulder functional activity in patients with adhesive capsulitis and Further, more it is observed that scapular proprioceptive neuromuscular facilitation exercises have shown better results and more effective than scapular clock exercises in patients with adhesive capsulitis.

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References

1. Allen GM. The diagnosis and management of shoulder pain. J Ultrasonogr. 2018. PubMed PMID: 30451406.
2. McKean D, Yoong P, Brooks R, Papanikitas J, Hughes R, Pendse A, McElroy BJ. Shoulder manipulation under targeted ultrasound-guided rotator interval block for adhesive capsulitis. Skeletal Radiol. 2018 Nov 16. PubMed PMID: 30446788.
3. Gumina S, Candela V, Castagna A, Carnovale M, Passaretti E, Venditto T, Giannicola G, Villani C. Shoulder adhesive capsulitis and hypercholesterolemia: role of APO A1 lipoprotein polymorphism on etiology and severity. Musculoskelet Surg. 2018 Oct. PubMed PMID: 30343478.
4. Kingston K, Curry EJ, Galvin JW, Li X. Shoulder adhesive capsulitis: epidemiology and predictors of surgery. J Shoulder Elbow Surg. 2018 Aug. PubMed PMID: 29807717.
5. Expert Panel on Musculoskeletal Imaging, Small KM, Adler RS, Shah SH, Roberts CC, Bencardino JT, Appel M, Gyftopoulos S, Metter DF, Mintz DN, Morrison WB, Subhas N, Thiele R, Towers JD, Tynus KM, Weissman BN, Yu JS, Kransdorf MJ. ACR Appropriateness Criteria® Shoulder Pain-Atraumatic. J Am Coll Radiol. 2018 Nov. PubMed PMID: 30392607.
6. Papalia R, Torre G, Papalia G, Baums MH, Narbona P, Di Lazzaro V, Denaro V. Frozen shoulder or shoulder stiffness from Parkinson disease? Musculoskelet Surg. 2018 Oct 1. PubMed PMID: 30276531.
7. Dias R, Cutts S, Massoud S. Frozen shoulder. BMJ. 2005 Dec 17. PubMed PMID: 16356983.
8. Ewald A. Adhesive capsulitis: a review. Am Fam Physician. 2011 Feb 15. PubMed PMID: 21322517.
9. Ramirez J. Adhesive capsulitis: diagnosis and management. Am Fam Physician. 2019 Mar 1. PubMed PMID: 30811157.
10. Voight ML, Thomson BC. The role of the scapula in the rehabilitation of shoulder injuries. J Athl Train. 2000;35(3):364.
11. Jobe FW. Adhesive capsulitis: a case report. 1993.
12. Kibler WB, McMullen J, Uhl T. Shoulder rehabilitation strategies, guidelines, and practice. Orthop Clin North Am. 2001;32(3):527-538.
13. Kibler WB. The role of the scapula in athletic shoulder function. Am J Sports Med. 1998;26(2):325-337.
14. Kibler WB. Rehabilitation of rotator cuff tendinopathy. Clin Sports Med. 2003;22(4):837-847.
15. Lear LJ, Gross MT. An electromyographical analysis of the scapular stabilizing synergists during a push-up progression. J Orthop Sports Phys Ther. 1998;28(3):146-157.