

RESEARCH ARTICLE



A Study on the Effect of Shoulder Stability Exercises and Stretching Exercises in Shoulder Impingement Syndrome Among Adult Population

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Abstract

BACKGROUND OF THE STUDY: Shoulder pain is a result of rotator cuff pathology; it is a second most common musculoskeletal condition that causes shoulder pain in the general population. Shoulder muscle imbalance and posterior capsule tightness have been implicated as contributing factors.

AIM OF THE STUDY: To find the effect of shoulder stability exercise and stretching exercise on disability status in shoulder impingement syndrome.

MATERIAL AND METHOD: 30 patients were recruited and equally divided into two groups. Group A(Stability exercise), Group B(Stretching exercise). The subjects in the both groups were examined for functional status through shoulder pain disability index, range of motion, and numerical pain rating scale for before and after intervention. The intervention period was 4 weeks.

RESULT: The result shows the outcome of Group A with a P- value of 0.000(<0.05) and Group B with a P- value of 0.000(<0.05) but Group A statistically significant improvement than Group B.

CONCLUSION: Stability and Stretching exercise were significantly improves the functional status, ROM, and reduces the pain. Compare with stretching exercise stability exercise are more effective.

Keywords: Stability exercise, stretching exercise, shoulder pain disability index, range of motion, numerical pain rating scale.

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1 | INTRODUCTION

Shoulder joint is a synovial joint, ball and socket variety, it is most mobile joint sur-

rounded by capsule, ligament, tendon, bursa and muscles. Shoulder impingement syndrome is a common musculoskeletal condition. It affects the shoulder joint and functional activities of daily life.

In SIS (Shoulder impingement syndrome) is a Increased pressure in the rotator cuff, long head of biceps tendon, subacromial bursa, coracoacromial ligament.

Its occurs due to narrowing of the subacromial space because the humeral head moves superiorly 1mm to 3mm during active arm elevation, these translation of humeral head leads to decrease in the subacromial space during elevation. (1–3) Progressive micro trauma to the articular side, Due to repeated loading of the subacromial structure, Rotator cuff weakness posterior capsule tightness has been reported in patient with Primary shoulder impingement.

Secondary impingement is typically occurs in Athletes who perform frequent overhead activity there will be Increased Laxity or Instability of the Gleno humeral joint. Shoulder impingement syndrome is either primary or secondary, the shoulder muscle strength, flexibility and joint mobility improvement generally required for patient with shoulder impingement syndrome.

The conformation of the shoulder impingement syndrome based on positive special test, patient chief complaints, and diagnostic findings. Shoulder strengthening, stretching and neuromuscular control is important to prevent the shoulder impingement.

Exercises are mainly to strengthen scapular muscles which will lift shoulder blade up and cuff muscle which pulls shoulder down hence increase in subacromian space. The treatment is to restore the muscle imbalance through stretching, these exercises reduce the pain; restore the muscle strength in patient with SIS. There are numerous therapeutic interventions for shoulder impingement syndrome for example cryotherapy, Ultrasound, TENS, massage, acupuncture these intervention, those intervention are patient pain but not preventing the recurrence of shoulder impingement syndrome.

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Nowadays shoulder stability exercises are given to prevent the pain and improve the muscle strength. Stability of the shoulder joint is very important, because it is the most mobile joint and Muscle actions are important to maintain the shoulder rhythm. (4–10) 2PNF-D2 flexion can improve the joint range of motion and proprioception and reduce the pain. Low row exercise –the benefits of a stronger shoulder and back include strengthen the scapula, improved posture as well as reduce pain.

Rhythmic stabilization is used to reduce the muscles surrounding the shoulder, improves the proprioception. (4) 1 Stretching exercise are increases soft tissue flexibility and mobility. Posterior capsule stretch is an exercise that improves Range of motion and internal rotation in the shoulder. It targets the rotator cuff muscle. Levator scapula stretching – levator scapula muscle helps in elevating the scapula. Such that the lateral angle moves inferiorly rotates the point of the shoulder. (2) Pectoralis minor stretching –shortening of the pectoralis minor muscle is expected to restrain scapula movement in the superior movement in the superior and posterior direction. (11–13) Latissimus dorsi stretching is improves the internal rotation of the shoulder joint. The purpose of the study is to investigate the effect of shoulder stability and stretching exercise on disability status in shoulder impingement syndrome.

2 | OBJECTIVE OF THE STUDY

- To evaluate the effect of shoulder stability exercise on disability status in Shoulder impingement syndrome.
- To evaluate the effect of stretching exercise on disability status in Shoulder impingement syndrome.
- To compare the effect of stability and stretching exercises on disability status in shoulder impingement syndrome. (14–18)

3 | PROCEDURE

The subjects of 30 shoulder impingement syndrome patient clinically diagnosed shoulder impingement syndrome is involved in this study, the participants

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are selected randomly by lottery method, after getting informed consent, they were divided into two groups based on inclusion and exclusion criteria such as inclusion: AGE GROUP: 25-42 Years. Both gender with Shoulder impingement syndrome. Include least 3-5 positive special tests Ø Hawkins –Kennedy test, Ø Neer impingement test, Ø Painful arch test, Ø Empty can test, Ø Painful external rotation test. (19–23)

4 | EXCLUSION CRITERIA

1. Previous Shoulder surgery, 2. Post spurling test, 3. Traumatic Shoulder dislocation, 4. Inability in last 3 months.. Each group consists of 15 participants. Cryotherapy is used to the patient to relieve the pain. GROUP- A is treated with Low Row Exercise, D2 Flexion PNF, Rhythmic Stabilization. Group-B is treated with Pectoralis Minor Stretching: Posterior Capsule Stretching: Levator Scapular Stretching, Latissimus Dorsi Stretch. (24, 25)

5 | DATA ANALYSIS AND INTERPRETATION

Data analysis is a method by which the validity of a research study is evaluated and is essential for constructing the validity of a research study purpose. It requires number of closely related operations beginning from the establishment of a category to raw data through coding, drawing statistical interference and also finally tabulated of data that have been collected. Data collected statistically analyzed and the data reported as mean as mean and standard deviation were used to find out the statistical difference. The 'P' value was set as <0.05. Statistical package for the social science (SPSS) computer program (version20) for windows was used for data analysis. Tables 1 and 2

6 | RESULT

GROUP A SPADI Pre test values are 69.3; Post test values are 53.93. RANGES OF MOTION – ABDUCTION pre test values are 84.00; post test

values are 107.86. INTERNAL ROTATION pre test values are 18.60; post test values are 32.46. EXTERNAL ROTATION pre test values are 18.20; post test values are 31.80. NPRS pre test values are 6.86; post test values are 3.60. GROUP B SPADI pre test values are 67.5; post test values are 60.0. RANGES OF MOTION – ABDUCTION pre test values are 80.4; post test values are 89.53. INTERNAL ROTATION pre test values are 20.6; post test values are 24.6. EXTERNAL ROTATION pre test values are 19.6; post test values are 24.7. NPRS pre test values are 6.73; post test values are 5.66. SPADI – Group A values are 53.93; Group B values are 60; $p < 0.031$. ABDUCTION – Group A values are 107.8; Group B values are 83.3; T value 4.567, and $p < 0.000$. INTERNAL ROTATION – Group A values are 32.46; Group B values are 24.06; $p < 0.000$. EXTERNAL RAOTATION – Group A values are 31.80; Group B values are 24.73; $p < 0.001$. NPRS – Group A values are 3.60; Group B values are 5.66; $p < 0.000$.

7 | DISCUSSION

The main purpose of this study is to investigate the effect investigate the effect of shoulder stability exercise in patient with unilateral shoulder impingement syndrome. The study assumed that the effect of stability exercise and stretching exercise on functional status are significance. The values shows significance, when compare with stability and stretching exercise stability can improve than stretching. (26–30)

In patient with shoulder impingement syndrome have inability to do the functional activity; muscles can aggravate the illness and some factors affecting the sub acromial space, due to shortened pectoral muscle, levator scapula and bad posture Investigation of shoulder impingement done by radiological examination in current practice.^{4,7} The most common physical examination is Neer impingement test and Hawkins-Kennedy test.

However flexion, extension, adduction range of motion was not determined as one of the outcome measure for this study since the main complaint was not limited range of motion for participants with shoulder impingement syndrome. In a study carries on in

TABLE 1: shows Group A and Group B data analysis of RANGE OF MOTION

ROM	GROUP	MEAN	STANDARD DEVIATION	T VALUE	SIGNIFICANCE
ABDUCTION	GROUP A	107.8	9.39	4.567	0.000
	GROUP B	83.3	18.56		
INTERNAL ROTATION	GROUP A	32.46	5.19	4.832	0.000
	GROUP B	24.06	4.28		
EXTERNAL ROTATION	GROUP A	31.80	6.33	3.824	0.001
	GROUP B	24.73	3.32		

TABLE 2: shows Group A and Group B data analysis of NUMERICAL PAIN RATING SCALE

NPRS	MEAN	STANDARD DEVIATION	T VALUE	SIGNIFICANCE
GROUP A	3.60	1.24	-4.681	0.000
GROUP B	5.66	1.17		

asymptomatic shoulders, 4-week stretching program increase the mobility of the glenohumeral joint. (31–34)

This study prescribes stability exercise for abnormal location of the scapula and muscle imbalance. In order to determine its effect and range of motion, strength and pain and to provide basic information for rehabilitation of present with shoulder impingement syndrome. Posterior shoulder muscle imbalance, overdeveloped internal over external rotators, which cause excessive anterior-superior humeral head translation, glenohumeral instability may be the reason for a shoulder impingement syndrome.

The study was obtained from the middle aged group with shoulder impingement syndrome, but does not indicate for those have more chronic stage. Further research is needed to improve understanding of effectiveness of training in stretching exercise in this study to create more awareness among people in management of shoulder impingement syndrome. Some participants are instead of taking rest they used to continue their repeated works, sports activities and overhead activities, aggravated their injury levels at worst. Reduced range of motion also due to the pain and muscle spasm.

8 | CONCLUSION

According to the statistical analysis, Shoulder stability exercise (Group A) and stretching exercise

(Group B) shows significant changes in the functional status, ROM, and reduction of pain in shoulder impingement syndrome. By comparing the both groups, shoulder stability exercises (Group A) shows more significant change than stretching exercises (Group B).

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