EFFECT OF MYOFASICAL RALEASE VERUS SPECIFIC INFERIOR CASPULAR STRTCH IN FROZEN SHOULDER PATIENTS

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ABSTRACT

BACKGROUD: Shoulder joint is the most mobile joint in the human body. The joint structure around the shoulder is capsule, disk, ligament, bursae, and Glenoid labrum and muscle. The most common structure affected in frozen shoulder is the inferior joint capsule because the inferior capsule is thin and deficient for the passage of long head of biceps.

Methods: Experimental study was conducted at Krishna college of physiotherapy, karad. 46 participants the age group of 40-70 years both genders were selected according to the inclusion criteria. Group A (23) participants were treated with myofasical release along with exercises while Group B (23) were treated with specific inferior capsular stretch along with exercises. Then the statistical analysis was done between the two group to find the result.

Results: Out of 46 selected subjects. Statistical analysis was done using paired and unpaired t test. The pre and post assessment was done among Group A Group B . It was observed that the there was statistical significance with p<0.5. The mean difference among VAS and variables among Group B was more as compared to Group A. hence we had proved that Group B was better than Group A.

Conclusion: Thus ,from the conducted study it concludes that specific inferior capsular stretch had significant improvement clinically and statistically than myofasical release on SPADI ,VAS and ROM scores thus facilitating functional outcomes.

Keywords: Frozen shoulder, Inferior capsular stretch, Diabetes mellitus, Myofascial Ralease,

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I. INTRODUCTION:

Shoulder Joint the ball and socket type of synovial joint is the most mobile joint in the human body and hence it is more prone to undergo shoulder pathology because less stability is provided by the adjacent structure like ligaments and muscles.The shoulder complex joint made up of five joints.[1] They are – Glenohumeral Joint Strenoclavicular Joint, Acromioclavicular Joint, Scapulothoracic Joint, Coracoacromial arch.The joint structure around the shoulder are capsule, disk, ligament, bursae, and Glenoid labrum and muscle.[1]

Frozen shoulder is a self limiting condition that affects the people in their 4th to 6th decade of life. The population which is more commonly affected with this condition are often women's. The diabetic group of individual are more prone to suffer from this condition. The predominant features of this condition are pain, and restriction of joint motion which leads to stiffness of shoulder joint. Due to the restriction in shoulder joint motion the individuals suffering from frozen shoulder have greater functional disability. More commonly it affects overhead activity. [3,5]

The clinical presentation of this condition is shown in 3 stages: Freezing stage, frozen stage, thawing stage with pain presented more during freezing stage and severe restriction in activities of daily living seen in frozen stage.[6,7]

Myofascial Release is a very effective, gentle and safe hands-on method of soft tissue mobilization, developed by John Barnes that involves applying gentle sustained pressure to the subcutaneous and myofascial connective tissue.[19] The goal of myofascial release is to release fascia restriction and restore its tissue[19]

II. METHODS:

The patients coming to physiotherapy Out patient department of Krishna hospital were taken into the study.

All patients diagnosed with primary frozen shoulder by certified Ethical committee KIMSDU. All patients diagnosed with primary frozen shoulder by certified physiotherapist and orthopedic surgeon. All patients diagnosed with frozen shoulder at out patient department karad who reported to physiotherapy department of Krishna hospital &volunteered to participate in the study were selected as subjects each of the subjects were screened as per inclusion and exclusion criteria and they were briefed about the study and intervention. Informed consent was taken from the subject. Inclusion criteria was as follows: Both Male & Female Participants between the age 40-70,The diagnosed with primary frozen shoulder by certified physiotherapist and orthopaedic   Surgeon, Subject having symptoms for more than 1 month of duration, Minimum 50% of restriction in abduction and external rotation of shoulder joint.

Exclusion criteria as follows: secondary frozen shoulder ,Rotator cuff injuries, Intrinsic glenohumeral pathology such as glenohumeral arthritis ,Previous surgeries, Arthritic conditions.

Initial thorough assessment of each subject was taken as per data collection sheet .VAS score Shoulder ROM, Shoulder Pain and Disability Index was taken pre interventional and 3weeks post-interventional.

A total no. of 46 subjects were divied into 2 groups (23 subjects in each group) with consecutive sampling method.

Group A : Participants were treated with Myofasical release along with hot moist pack & Maitland Mobilization.

23 participants were selected and were treated with Myofascial Release for

Subscapularis

Serratus Anterior

Pectrolis Major Muscle

GROUP B: : Participants were treated with Inferior capsular stretch along with hot moist pack & Maitland Mobilization.

STATISTICAL ANALYSIS :

The statistical analysis of non-parametric data (VAS, Shoulder Pain and Disability index scores) was done by Wilcoxon matched pairs test and Mann-Whitney test.The statistical analysis of the parametric data (Shoulder ROM) was done using 'Student's paired t-test' and 'Unpaired-t' test,

'Student's paired t-test' was used for statistical analysis of pre and post intervention within group.Student's Unpaired-t' test was used for between group statistical analysis of Group A and Group B

III. RESULT:

1.VISUAL ANALOGUE SCALE (VAS):

Group	Pre- treatment		Post-treatment		'p'
	Mean ± SD	Median	Mean ± SD	Median	
A	7.35 ± 1.23	7.00	2.52 ± 0.73	2.00	<0.0001
B	7.21 ± 1.34	7.00	1.96 ± 0.82	2.00	<0.0001

Table no 1: Comparison of pre and post VAS score within groups

In the present study pre interventional mean VAS score was 7.35 ± 1.23 in Group A and 7.21 ± 1.34 in Group B whereas post-interventional mean of VAS score was 2.52 ± 0.73 in Group A and 1.96 ± 0.82 in Group B respectively. Intra group analysis of VAS score revealed statistically reduction in pain post interventional for both the groups, this was done using Wilcoxon matched paired test Group A ($p<0.0001$), Group B ($p<0.0001$) which is extremely significant.

2.SHOULDER PAIN AND DISABILITY INDEX (SPADI):

Group	Pre- treatment		Post-treatment		'p'
	Mean ± SD	Median	Mean ± SD	Median	
A	39.46± 5.67	38.46	18.93 ± 3.51	18.46	<0.0001
B	35.15 ± 5.22	34.61	15.81± 3.52	15.38	<0.0001

Table no 2: Comparison of pre and post SPADI score within groups.

In the present study pre interventional mean SPADI score was 39.46± 5.67 in Group A and 35.15 ± 5.22 in Group B whereas post-interventional mean of SPADI score was 18.93 ± 3.51 in Group A and 15.81± 3.52 in Group B respectively. Intra group analysis of SPADI score revealed statistically reduction in pain and functional disability scores post interventional for both the groups. This was done by using Wilcoxon matched paired test Group A (p<0.0001), Group B (p<0.0001) which is extremely significant.

3. RANGE OF MOTION (ROM):

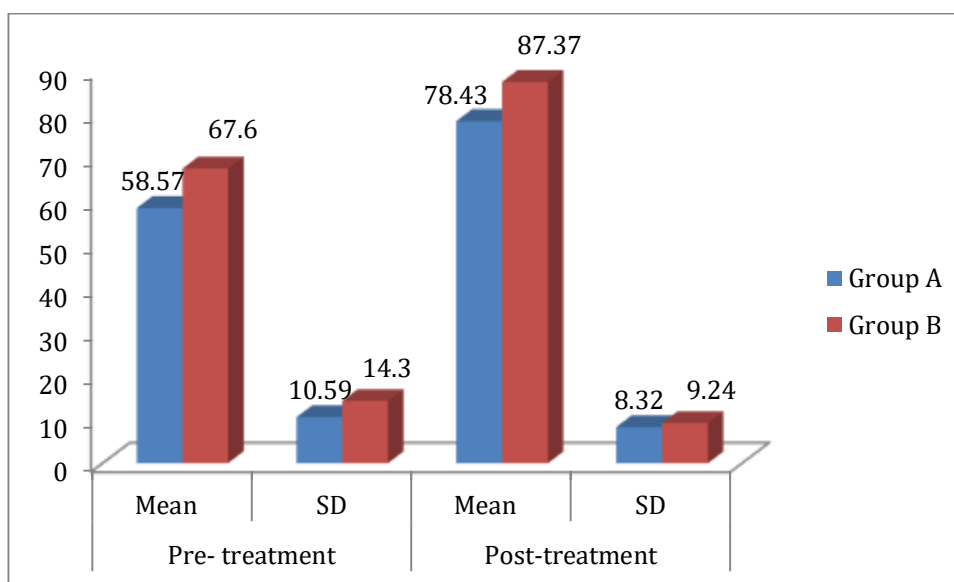| Group	Pre- treatment		Post-treatment		'p'
	Mean ± SD	Median	Mean ± SD	Median	
A	58.57± 10.59	58.00	78.43 ± 8.32	78.00	<0.0001
B	67.6 ± 14.30	62.8	87.37± 9.24	85.6	<0.0001

Table no 3: Comparison of pre and post ROM score within groups.

In the present study pre interventional mean ROM score was 58.57± 10.59 in Group A and 67.6 ± 14.30 in Group B whereas post-interventional mean of ROM score was 78.43 ± 8.32 in Group A and 87.37± 9.24 in Group B respectively. Intra group analysis of ROM score revealed statistically reduction in pain and functional disability scores post interventional for both the groups. This was done by using Wilcoxon matched pairs test Group A (p<0.0001), Group B (p<0.0001).

Group	Pre- treatment		Post-treatment		'p'
	Mean ± SD	Median	Mean ± SD	Median	
A	58.57± 10.59	58.00	78.43 ± 8.32	78.00	<0.0001
B	67.6 ± 14.30	62.8	87.37± 9.24	85.6	<0.0001
'p'	0.0258		0.0025		

Table no 4: Comparison of pre-pre and post-post ROM score in between groups.

In the present study pre interventional means of ROM score was 58.57± 10.59 in Group A and 67.6 ± 14.30 in Group B whereas post-interventional means ROM score was 78.43 ± 8.32 in Group A and 87.37± 9.24 in Group B respectively. Inter group analysis of ROM score was done by using Mann-Whitney test. Post intervention analysis showed significant difference between Group A and Group B (p<0.05).

Graph 1: Mean ROM Scores

A) **Flexion:**

Group	Pre- treatment		Post-treatment		'p'	df	T
	Mean ± SD	Median	Mean ± SD	Median			
A	89.44	85	122.26 ±	125	<0.0001	22	13.867

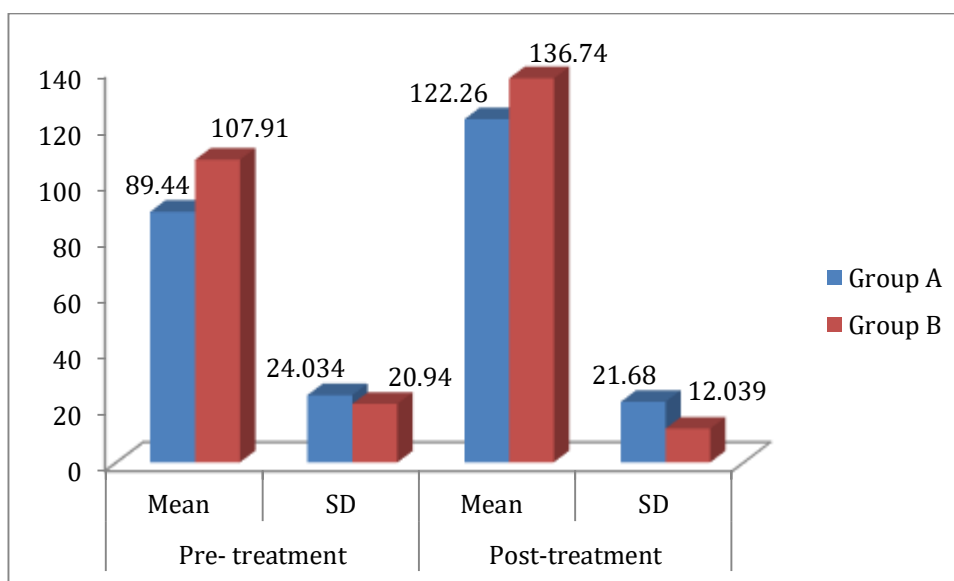|							
	± 24.034		21.68				
B	107.91 ± 20.94	105	136.74 ± 12.039	135	<0.0001	22	11.562

Table.no. 5.Comparison of pre and post shoulder flexion ROM within groups

In the present study pre interventional mean shoulder flexion range was 89.44 ± 24.034 in Group A and 107.91 ± 20.94 in Group B whereas post-interventional mean of shoulder flexion range was 122.26 ± 21.68 in Group A and 136.74 ± 12.039 in Group B respectively. Intra group statistical analysis revealed statistically extremely significant increase in shoulder flexion range post interventional for both the groups. This was done by using paired t test Group A (t=13.867, p<0.0001), Group B (t=11.562, p<0.0001).

Group	Pre- treatment		Post-treatment	
	Mean ± SD	Median	Mean ± SD	Median
A	89.44 ± 24.034	85	122.26 ± 21.68	125
B	107.91 ± 20.94	105	136.74 ± 12.039	135
'p'	0.0080		0.0011	
df	44		44	
t	2.780		3.739	

Table.no. 6.Comparison of pre-pre and post-post shoulder flexion ROM in between groups

In the present study pre interventional mean shoulder flexion range was 89.44 ± 24.034 in Group A and 107.91 ± 20.94 in Group B whereas post-interventional mean of shoulder flexion range was 122.26 ± 21.68 in Group A and 136.74 ± 12.039 in Group B respectively. Inter group analysis of shoulder flexion range was done by using unpaired t test. Pre interventional analysis showed statistical significant difference between group A and group B (p=0.0080). Post intervention analysis showed statistical significant difference between Group A and Group B (p=0.0011)

Graph 2: Mean Flexion of ROM

b) Abduction:

Group	Pre- treatment		Post-treatment		'p'	df	T
	Mean ± SD	**Median**	**Mean ± SD**	**Median**			
A	93.174 ± 20.588	105	115.57 ± 21.84	125	0.0009	22	19.525
B	103.74 ± 19.16	105	128.52 ± 15.84	125	<0.0001	22	9.354

Table No. 7.Comparison of pre and post shoulder abduction ROM within groups.

In the present study pre interventional mean shoulder abduction range was 93.174 ± 20.588 in Group A and 103.74 ± 19.16 in Group B whereas post-interventional mean of shoulder abduction range was 115.57 ± 21.84in Group A and 128.52 ± 15.84 in Group B respectively. Intra group statistical analysis revealed statistically extremely significant increase in abduction range pot interventional for both the groups. This was done by using paired t test Group A (t=19.525, p<0.0001), Group B (t=9.354, p<0.0001).

Group	Pre- treatment		Post-treatment	
	Mean ± SD	**Median**	**Mean ± SD**	**Median**
A	93.174 ± 20.588	105	115.57 ± 21.84	125

B	103.74 ± 19.16	105	128.52 ± 15.84	125
'p'	0.0785		0.0261	
df	44		44	
t	1.802		2.303	

Table No. 8.Comparison of pre-pre and post-post shoulder abduction ROM in between groups.

In the present study pre interventional mean shoulder abduction range was 93.174 ± 20.588 in Group A and 103.74 ± 19.16 in Group B whereas post-interventional mean of shoulder abduction range was 115.57 ± 21.84in Group A and 128.52 ± 15.84 in Group B respectively. Inter group analysis of shoulder abduction was done by using unpaired t test. Pre interventional analysis showed no significant difference between group A and group B (p=0.0785). Post intervention analysis showed very significant difference between Group A and Group B (p<0.05).
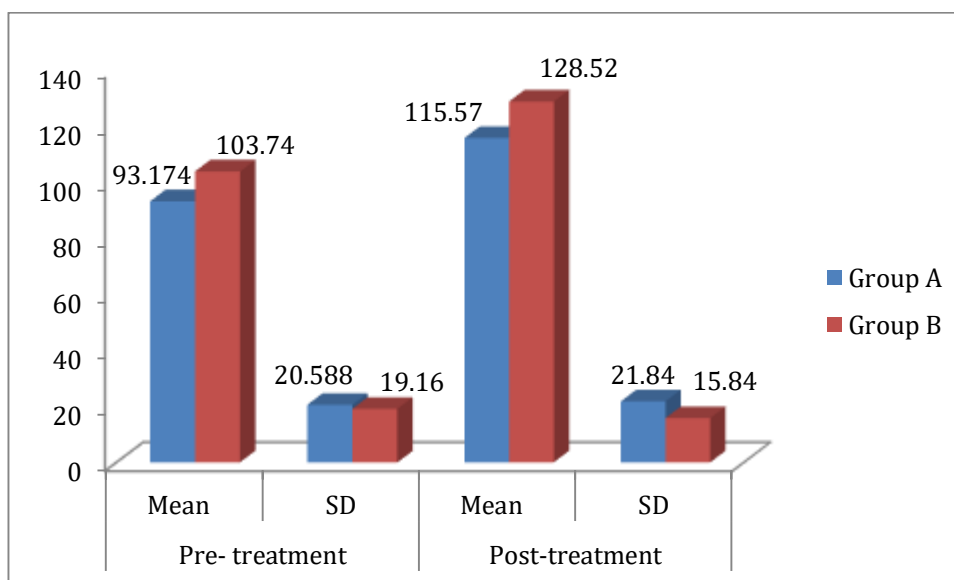
Graph 3: Mean Abduction of ROM

c)**Internal Rotation:**

Group	Pre- treatment		Post-treatment		'p'	df	T
	Mean ± SD	Median	Mean ± SD	Median			
A	39.22 ± 13.50	35	52.21 ± 10.88	52	<0.0001	22	9.094

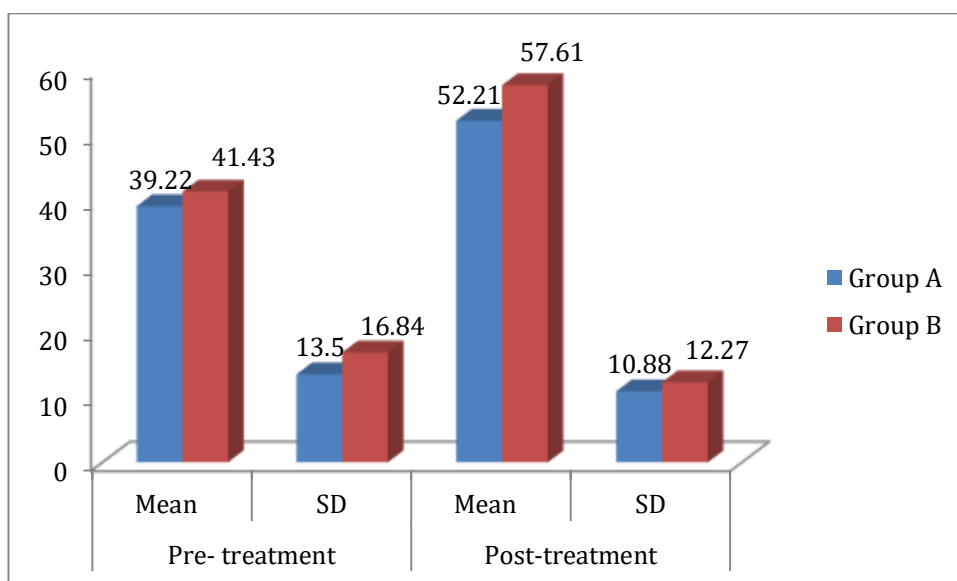| B | 41.43 ± 16.84 | 32 | 57.61 ± 12.27 | 57 | <0.0001 | 22 | 11.320 |

Table No. 9.Comparison of pre and post shoulder internal rotation ROM within groups.

In the present study pre interventional mean shoulder internal rotation range was 39.22 ± 13.50 in Group A and 52.21 ± 10.88in Group B whereas post-interventional mean of shoulder internal rotation range was 41.43 ± 16.84 in Group A and 57.61 ± 12.27 in Group B respectively. Intra group statistical analysis revealed statistically extremely significant increase in shoulder internal rotation range post interventional for both the groups. This was done by using paired t test Group A (t=9.094, p<0.0001), Group B (t=11.320, p<0.0001).

Group	Pre- treatment		Post-treatment	
	Mean ± SD	Median	Mean ± SD	Median
A	39.22 ± 13.50	35	52.21± 10.88	52
B	41.43 ± 16.84	32	57.61 ± 12.27	57
'p'	0.68		0.12	
Df	44		44	
T	0.40		1.58	

Table.no.10. Comparison of pre-pre and post-post shoulder internal rotation ROM in between groups.

In the present study pre interventional mean shoulder internal rotation range was 39.22 ± 13.50 in Group A and 41.43 ± 16.84 in Group B whereas post-interventional mean of shoulder internal rotation range 52.21 ± 10.88 was in Group A and 57.61 ± 12.27 in Group B respectively. Inter group analysis of shoulder flexion range was done by using unpaired t test. Both Pre & Post interventional analysis showed no statistical significant difference between group A and group B (p>0.05).

Graph 4: Mean Internal Rotation of ROM

D) External Rotation:

Group	Pre- treatment		Post-treatment		'p'	Df	T
	Mean ± SD	Median	Mean ± SD	Median			
A	39.82 ± 14.98	37	54.44 ± 15.91	55	<0.0001	22	10.48
B	45.65 ± 16.95	37	63.57 ± 12.57	65	<0.0001	22	9.843

Table No. 11. Comparison of pre and post shoulder external rotation ROM within groups.

In the present study pre interventional mean shoulder external rotation range was 39.82 ± 14.98 in Group A and 45.65 ± 16.95 in Group B whereas post-interventional mean of shoulder external rotation range was 54.44± 15.91 in Group A and 63.57± 12.57 in Group B respectively. Intra group statistical analysis revealed statistically extremely significant increase in shoulder flexion range pot interventional for both the groups. This was done by using paired t test Group A (t=10.48, p<0.0001), Group B (t=9.843, p<0.0001)

Group	Pre- treatment		Post-treatment	
	Mean ± SD	Median	Mean ± SD	Median

A	39.82 ± 14.98	37	54.44 ± 15.91	55
B	45.65 ± 16.95	37	63.57 ± 12.57	65
'p'	0.1548		0.0363	
Df	44		44	
T	1.448		2.160	

Table No. 12. Comparison of pre-pre and post-post shoulder external rotation ROM in between groups.

In the present study pre interventional mean shoulder external rotation range was 23.53 ± 14.154 in Group A and 27.26 ± 7.478 in Group B whereas post-interventional mean of shoulder flexion range was 62.73 ± 12.764 in Group A and 43.86 ± 10.070 in Group B respectively. Inter group analysis of shoulder flexion range was done by using unpaired t test. Pre interventional analysis showed no significant difference between group A and group B (p=0.3895). Post intervention analysis showed very significant difference between Group A and Group B (p=<0.0001).
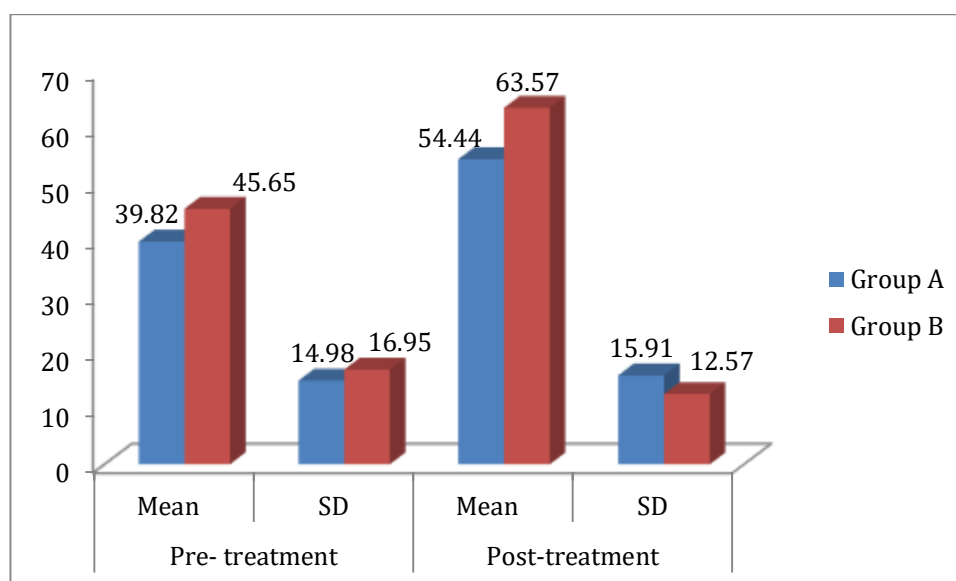
Graph 5: Mean External Rotation of ROM

IV. DISCUSSION:-

The purpose of present study was to find out the effect of myofasical release versus specific inferior capsular stretching frozen shoulder.

Frozen Shoulder is considered as a serious complication since it restricts the activities of daily living. 46 patients diagnosed as frozen Shoulder of age group 40-70 years approaching to OPD of Krishna College of Physiotherapy participated in the study.

Pre treatment outcome measures for pain intensity, strength and functional disability was done with VAS, ROM, and SPADI score.

In the study 30 subjects were taken in the study with the age group of 40-70 years in that the mean age group is 55.65 for group A and 57.22 for group B. and the P= 0.6205 and t=0.4987.

The study age group ranges from 40-70 years, which is within the inclusive criteria of the study.

In the study pre-interventional VAS value was 7.35 and post-interventional VAS value was 2.52.in group A and pre -interventional VAS value was 7.21and post-interventional VAS was 1.96. in group B and the P=<0.0001.Intra Group Changes in VAS value reveals statistically extremely significant reason for both the groups shown reduction in pain scores , and this is in agreement with previous study suggesting that mobilization reduces pain.[38] due to neurophysiologic effects on the stimulation of peripheral mechanoreceptors and the inhibition of nociceptors.[15,16.]

In the study Group A pre-interventional SPADI was 39.46 whereas post-interventional SPADI was 18.93 Group B pre-interventional SPADI was 35.15 whereas post-interventional SPADI was15.81.p=<0.0001, intra Group Changes in SPADI score reveals statistically extremely significant, reasons for Both groups have shown statistically significant improvement in shoulder pain and disability index score (SPADI) proving the improvement in shoulder function in both groups. Both groups had reduction in their pain and improved their range of motion so this could be the reason that both groups revealed a reduction in their SPADI scores.

In the present study pre interventional mean ROM score was 58.57± 10.59 in Group A and 67.6 ± 14.30 in Group B whereas post-interventional mean of AROM score was 78.43 ± 8.32 in Group A and 87.37± 9.24 in Group B respectively. Intra group analysis of ROM score revealed statistically reduction in pain and functional disability scores post interventional for both the groups.(p<0.0001). reason for pain reduction and ROM improvement because: Joint motion help to relieve pain due to its neurophysiologic effect on the joint and also help to maintain extensibility of the articular and periarticular structures due to its biomechanical effect which is focused directly on the tension of periarticular tissue to prevent complications resulting from immobilization and trauma. Range of motion exercises also help to improve joint and soft tissue mobility to minimize loss of tissue flexibility and contracture formation.[17]

Use of modalities and other physical agents in patients with frozen shoulder helped in pain relief and muscle relaxation. Hot Moist Fermentation were given which helped in muscle relaxation, pain relief, and control Spasm.[18]

Inferior capsular Stretch helps in improving Shoulder ROM. The Benefits of inferior capsular Stretching is the deliberate lengthening of inferior capsule in order to increase joint range of motion. Stretching

activities are an important part of any exercises or rehabilitation Program .they help warm the body up prior to activity thus decreasing the risk of injury as well as muscle soreness.[19]

In this study the range of motion has shown significant improvement due to Stretching. Participants of various ages in the study have benefitted from stretching since the stretching techniques helps in increasing flexibility and joint range of motion, Improve blood circulation to the muscle, helps in maintaining proper posture by preventing muscle tightness. It also helps in decreasing stress.

A hypothesis behind this technique of using counter traction was the concept of axial distraction, which when provided to the shoulder, allows for a greater gain in mobility at the end range. This subsequently increases shoulder mobility. For continuous sustained axial traction, suspended weights by counter traction were used for the affected limb.[19]

Range of motion exercises also help to improve joint and soft tissue mobility to minimize loss of tissue flexibility and contracture formation.[18]

Group A received both the approaches compared to group B .the statistical significant improvement in VAS.ROM, and SPADI Score was seen in group A then Group B.

V. CONCLUSION:

The present study concludes that effect of myofasical release and specific inferior capsular stretching had significant improvement clinically and statistically on SPADl score, VAS and ROM thus facilitating functional outcomes.

Thus this study accepts the alternate hypothesis.

CONFLICT OF INTREST: Nil

ETHICAL CLEARANCE: Institutional Ethical committees of Krishna Insittute of medical science Deemed To be university ,karad.

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