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A Study to Compare the Effectiveness of Maitland Mobilization Versus Proprioceptive Neuromuscular Facilitation with Wax Therapy in Shoulder Adhesive Capsulitis

Dhanasekar[1], Velpari[2], Balchandar[3]

[1]dhanasekarbpt1999[at]gmail.com
[2]kutty11111976[at]gmail.com
[3]balaisright[at]gmail.com

Abstract: ***Adhesive capsulitis is a shoulder condition defined as an insidious onset of pain and a gradual loss of both passive and active range of motion (ROM) in the affected shoulder. The aim of the study to compare the effect between two treatments named, Maitland Technique ans PNF Technique The capsular pattern in the shoulder is characterized by limitation of passive range. Proprioceptive Neuromuscular Facilitation (PNF) is a stretching technique utilized to improve muscle elasticity and has been shown to have a positive effect on active and passive range of motions Within group comparison of pre-test and post-test scores in both groups demonstrated reduction in VAS scores [Graph 1] with P = 0<0.05, Goniometry EXT [Graph 2] with P = 0 > 0.05, Goniometry ABD [Graph 3] with P = 0 < 0.05 and SPADI scores [Graph 4] with P = 0.18 > 0.05. The intra-group analysis showed that both the treatments are effective in terms of improvementin the values of measures namely GONIOMETRY (ABD & EXT) and in terms of reduction in the values of measures, namely VAS & SPADI. However, the inter-group analysis showed that Treatment A is effective than Treatment B in terms of improvement in the values of measures namely GONIOMETRY (ABD & EXT) and in terms of reduction in the value of a measure namely VAS. Hence, we conclude that Treatment A is effective than Treatment B in terms of measures VAS, GONIOMETRY-ABD, and GONIOMETRY-EXT.***

Keywords: Frozen Shoulder, Maitland Technique, PNF, Paraffin Wax Therapy, Range of Motion

1.Introduction

Adhesive capsulitis is a shoulder condition defined as an insidious onset of pain and a gradual loss of both passive and active range of motion (ROM) in the affected shoulder. The capsular pattern in the shoulder is characterized by limitation of passive range. According to G. D. Maitland, passive oscillatory movements two or three per second of small or large amplitude can be applied anywhere in a range of motion for treating joint dysfunction. Maitland's description of grades of joint movements has been a major contribution to manual therapy. Grade I & II oscillations are used for pain relief, Grade III & IV oscillations are used for joint stiffness.

Proprioceptive Neuromuscular Facilitation (PNF) is a stretching technique utilized to improve muscle elasticity and has been shown to have a positive effect on active and passive range of motions Recent research has been focused on the efficacy of the intervention on certain outcome measures, such as passive range of motion (PROM), active range of motion (AROM), peak torque and muscular strength. This review is important for the justification of its usage within therapeutic and athletic settings in order to rehabilitate injuries by gaining AROM and PROM or improving performance. In clinical settings, PNF is already utilized by therapists to restore functional range of motion (ROM) and increase strength in patients who have sustained soft tissue damage or received invasive surgeries. Currently, research has proven that PNF techniques do increase ROM. Two techniques are seen in the literature more frequently than others, the contract-relax method (CR) and the contract-relax-antagonist-contract method (CRAC) of PNF. Currently this study focus on the effectiveness the treatments, Maitland Technique and PNF Technique to improve ROM and reduce Pain.

2.Design and Methodology

The present clinical trial was conducted in Jaya College Of Paramedical Sciences, College Of Physiotherapy. The study contains both males and females patients above 40 years of age and willing to participate in the study. The purpose of the study was explained to all subjects and consent from each subject was obtained. The subjects were randomly assigned into either Maitland Technique with Paraffin Wax Therapy (Group A) and PNF Technique with Paraffin Wax Therapy (Group B). Maitland Technique with Paraffin Wax Therapy and PNF Technique with Paraffin Wax Therapy were performed for atleast 15 to 20 minutes, for 3 times in a week for 4 weeks duration. Thirty patients, who fulfilled the inclusion criteria are randomly assigned as: Group A received Maitland Technique with Paraffin Wax Therapy and Group B received. PNF Technique with Paraffin Wax Therapy.

Methodology:

For the study, 30 subjects were selected. Subjects were selected in the study on the basis of inclusion criteria (Age 40-60 yrs, Shoulder ROM restriction, Shoulder Pain more than 3 months). Subjects were evaluated using a special evaluation form. ROM was assessed by Goniometry and Disability Index was assessed by SPADI. Subjects were

informed about the procedure, merits and demerits of the treatment. Consent is obtained from each subject for voluntary participation. Participants were randomly assigned as Group A and Group B.

Procedure

Wax Therapy was give befioir starting the treatmentrt to reduce pain.

GROUP A: Maitland mobilization

Group A was treated with Maitland mobilization technique. the initial position for maitland mobilization group was in supine position with arm abducted to 30 degrees the therapist in was standing position hold subject proximal end of the humerus and maintain a lateral humeral distraction in its mid-range position and the GLENOHUMERAL CAUDAL GLIDE mobilization was given at the rate of 2-3 glides per second for 30 sec and every glide was given for 5 sets for to improve the abduction.

For giving POSTRO ANTERIOR GLIDE the subject was made to lie on prone postion and at the end range of the abduction and external rotation, lateral humeral distraction is given and stretch mobilization is performed by utilizing the subjects body weight and gravity to generate the mobilizing force, an postero-anterior glide is given, both the glide were given at the rate of 2-3 glides per second for 30 sec and every glides was given for 5 sets to improve the external rotation. The technique was applied was applied thrice a week for four week.

Anterior and Posterior gliding

Group B: Proprioceptive Neuromuscular Facilitation Stretch

D2 proprioceptive neuromuscular facilitation flexion:

In supine position, the subject's head and neck in a comfortable position, as close to neutral as possible. The involved upper extremity was positioned in shoulder extension, adduction and internal rotation; elbow extension; forearm pronation; wrist and finger flexion with forearm lying across the umbilicus. One hand of the therapist grasps the dorsum of subject's hand using a lumbrical grip. Other hand grasps the subjects forearm close to the elbow. Therapist stands in a stride position by the subject's shoulder with his one foot forward. Therapist starts with weight on his front foot and lets the subject's motion pushes therapist's weight towards back foot.

Therapist applies stretch to the subject's involved shoulder through his proximal grip by a rapid traction. Distal grip gives traction to the wrist. The subjects were commanded to "open their hand and turn it toward their face" or "lift their arm up and out."

PNF Stretching with Flexion

D2 proprioceptive neuromuscular facilitation extension:

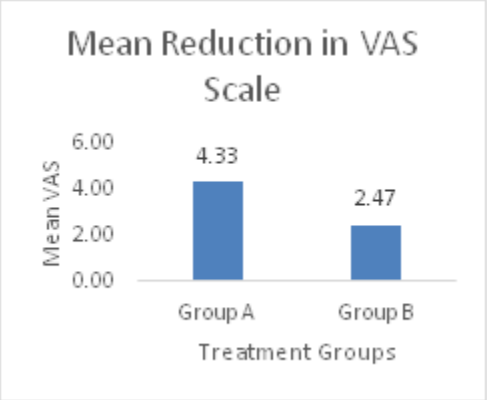
The starting position begins as described for completion of D2 flexion. Therapist placed the index and middle fingers of one hand in the palm of subject's hand. Other hand grasps the subjects forearm on the volar surface or distal humerus.complete the pattern in shoulder extension, adduction, internal rotation; elbow extension; forearm pronation and wrist, fingers flexed.

PNF Stretching with Extension

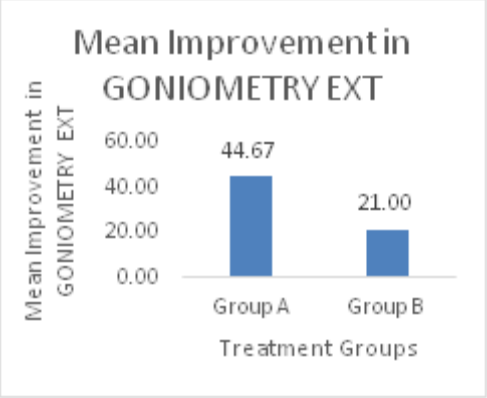
Statistical Analysis

The present study included thirty subjects, in which fifteen subjects were on Group A who received Maitland Technique with Paraffin Wax Therapy and fifteen subjects were on Group B who received PNF Technique with Paraffin Wax Therapy. [Table 1], [Table 2] represents demographic data of the study participants.

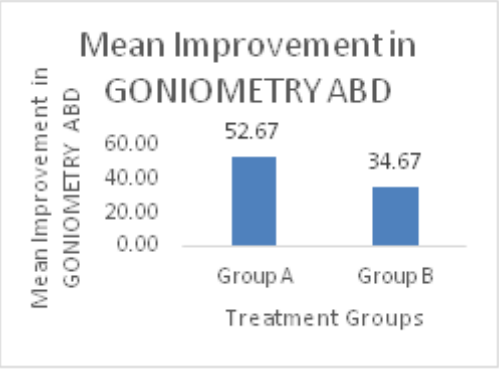
Within group comparison of pre-test and post-test scores in both groups demonstrated reduction in VAS scores [Graph 1] with P = 0<0.05, Goniometry EXT [Graph 2] with P = 0 > 0.05, Goniometry ABD [Graph 3] with P = 0 < 0.05 and SPADI scores [Graph 4] with P = 0.18 > 0.05.



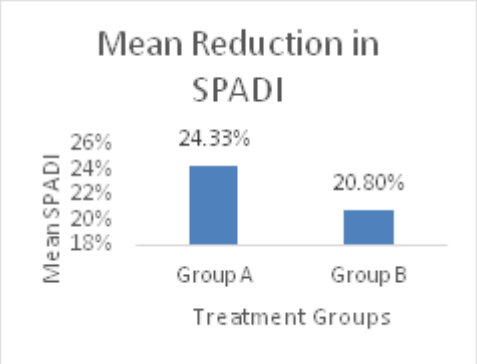
Graph 1



Graph 2



Graph 3



Graph 4

3.Conclusion

The intra-group analysis showed that both the treatments are effective in terms of improvementin the values of measures namely GONIOMETRY (ABD & EXT) and in terms of reduction in the values of measures, namely VAS & SPADI. However, the inter-group analysis showed that Treatment A is effective than Treatment B in terms of improvement in the values of measures namely GONIOMETRY (ABD & EXT) and in terms of reduction in the value of a measure namely VAS. Hence, we **conclude that Treatment A is effective than Treatment B** in terms of measures VAS, GONIOMETRY-ABD, and GONIOMETRY-EXT.

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Table 1

S. NO	AGE	Sex	GROUP	VAS (PRE)	VAS (POST)	SPADI (PRE)	SPADI (POST)	GONIOMETRY TEST			
								EXTERNAL ROTATION (PRE)	ABDUCTION (PRE)	EXTERNAL ROTATION (POST)	ABDUCTION (POST)
1	52	F	A	7	1	51%	16%	25^0	100^0	70^0	160^0
2	48	M	A	5	0	45%	20%	25^0	120^0	55^0	175^0
3	42	M	A	6	4	52%	22%	30^0	120^0	60^0	175^0
4	40	F	A	8	3	42%	21%	30^0	100^0	60^0	160^0
5	48	F	A	6	2	44%	23%	20^0	130^0	80^0	180^0
6	45	M	A	7	4	42%	15%	20^0	120^0	70^0	165^0
7	43	F	A	5	3	48%	26%	20^0	100^0	60^0	170^0
8	60	M	A	6	3	49%	24%	25^0	90^0	70^0	170^0
9	43	F	A	7	0	44%	23%	20^0	120^0	70^0	175^0
10	45	F	A	6	0	46%	30%	30^0	135^0	60^0	175^0
11	41	F	A	6	1	37%	15%	20^0	140^0	70^0	180^0
12	48	F	A	8	4	43%	20%	25^0	130^0	85^0	180^0
13	50	M	A	5	2	50%	25%	20^0	120^0	80^0	170^0
14	53	F	A	6	3	42%	16%	30^0	135^0	75^0	175^0
15	42	M	A	7	4	38%	12%	35^0	130^0	80^0	170^0

Table 2

S. NO	AGE	Sex	GROUP	VAS (PRE)	VAS (POST)	SPADI (PRE)	SPADI (POST)	GONIOMETRY TEST			
								EXTERNAL ROTATION (PRE)	ABDUCTION (PRE)	EXTERNAL ROTATION (POST)	ABDUCTION (POST)
1	48	F	B	8	4	78%	55%	20^0	90^0	40^0	140^0
2	58	F	B	5	3	64%	46%	25^0	100^0	50^0	150^0
3	53	F	B	8	5	71%	50%	30^0	110^0	55^0	140^0
4	46	F	B	7	4	50%	44%	20^0	100^0	60^0	140^0
5	41	M	B	8	6	55%	42%	25^0	90^0	40^0	130^0
6	46	F	B	6	4	75%	38%	30^0	120^0	60^0	160^0
7	59	M	B	6	5	60%	50%	20^0	100^0	40^0	130^0
8	60	F	B	5	4	65%	45%	20^0	120^0	40^0	160^0
9	41	F	B	6	4	60%	45%	30^0	130^0	50^0	150^0
10	44	M	B	8	5	70%	54%	25^0	90^0	40^0	130^0
11	41	M	B	7	5	70%	54%	30^0	110^0	50^0	140^0
12	45	M	B	7	3	75%	43%	25^0	100^0	40^0	120^0
13	46	M	B	6	4	70%	45%	20^0	120^0	30^0	140^0
14	43	F	B	8	5	75%	40%	20^0	100^0	50^0	150^0
15	46	M	B	7	4	65%	40%	30^0	110^0	40^0	130^0