

## EFFECTIVENESS OF MAITLAND MANUAL THERAPY TECHNIQUE IN MANAGEMENT OF IDIOPATHIC ADHESIVE CAPSULITIS

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### ABSTRACT

**Objective:** To evaluate the effectiveness of Maitland manual therapy technique in management of idiopathic shoulder adhesive capsulitis.

**Material & Methods:** Overall 60 subjects were recruited for the analysis and randomly assigned into two groups; that are Manual therapy group and Conventional therapy. The participants selected from department of Physiotherapy Lady Reading Hospital Peshawar, were screened for exclusion and inclusion criteria, and then randomly allocated to the experimental and control groups using a sample random sampling. The intervention in the study was Maitland manual mobilization techniques to the experimental group and general supervised exercise regime to the control group for subjects with idiopathic adhesive capsulitis to decrease pain and disability. For data analysis SPSS 20 was used.

**Results:** The results indicated that Maitland mobilization was an effective technique in decreasing pain and disability in subjects with frozen shoulder with the scores of p-value of 0.000 for post SPADI scale and a p-value of 0.213 for visual analogue scale.

**Conclusion:** According to the findings of this research, it was concluded that Maitland Mobilization was an effective technique in reducing disability and pain in patients with frozen shoulder.

**Key Words:** Frozen Shoulder, Maitland, Mobilization, Manual therapy.

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### INTRODUCTION

Adhesive capsulitis also known as "Frozen Shoulder Symptoms (FSS)" is described as a aching, gradual limitation of active and passive glenohumeral movements as a result of continuing fibrosis and endmost contracture of the glenohumeral joint capsule.<sup>1,2</sup> FSS occurs in 2-5% of the young people and about 20-25% of patients due to diabetes while 70% of the patients were females, and there's been a tendency of increasing among women recently.<sup>3,4</sup>

Adhesive Capsulitis usually reveals in the 6th decade of life.<sup>5</sup> FSS might occur after concurrence with stress, cardiovascular lung

diseases, diabetes, tumor, stroke, prolong immobilization, thyroid disease and autoimmune disease in the individual.<sup>6</sup> Moreover, it is reported that protease inhibitors prescribed for antiretroviral treatment is also related with the progression of frozen shoulder. FSS is an illness with uncertain etiology whereas this can be a lifelong disease and needs fortitude from the subjects as well as physiotherapists.<sup>7</sup>

Patients with FSS possess pain, tenderness and soreness in the lateral brachial region, restriction and pain during make productive and unaggressive flexibility, specifically during flexion, exterior and inner rotation and with loss of function. Subjets with FSS have problems in

each day activities (wearing, cleaning, and undertaking overhead achieving accomplishments etc., for an interval of almost a year to several years) and glenohumeral joint pain troubling sleep during the night time on the damaged side, which really is a main diagnostic signal getting up at night supplementary to shoulder pain and muscle cramps are normal in subjects with FSS.<sup>8</sup>

The feature "shrug signal" emerges and progresses in subjects with FSS during the up going position of the shoulder joint, where in fact the scapula also goes upward subsequent to about 60 degrees of abduction (ABD). It means that there is reparation due to the insufficiency of the shoulder capsule. Adaptive postures can develop in some patients like protracted shoulder or thoracic kyphosis in the patients with FSS.<sup>9</sup> Usually, measurement of joint restorations are evaluated by measurements of AROM or PROM, pain and various disabilities through different questionnaires. Many treatments techniques have been promoted for FSS. The existence of innumerable different managements, each with its individual group of enthusiastic cohorts and this is patent from literature that there is no single gold standard treatment for shoulder adhesive capsulitis.<sup>10</sup>

General supervised exercises along with therapeutic modality are the traditional treatment in clinical practice for the management of idiopathic adhesive capsulitis in Pakistan. In literature there were very few evidences for sustenance to associate the effectiveness of Maitland manual mobilization with and without supervised exercises for the management of FSS to lessen the discomfort and disability and improve shoulder function. The aim of this of this study is to compare the effectiveness of Maitland manual mobilization with and without general supervised exercises in reducing pain and loss of glenohumeral joint motion in patients with FSS.

## **MATERIAL AND METHODS**

Experimental randomized control trial was conducted at department of Physiotherapy Lady Reading Hospital (LRH), Peshawar, Pakistan from July 2016 to Dec 2016 (6 months). Ethical clearance was obtained from Khyber Medical

University ethical board. After screening for exclusion, using a sample random sampling, 60 participants were recruited for the analysis. Informed consent was taken from all the participants and randomly allocated into two groups.

For both Manual therapy group and Conventional therapy group the computer created set of successive random figures were used. The sample size of this study was calculated through a sample size calculation formula. Sample size calculation formula =  $z^2 p (1-p) / d^2$  On the base of thorough examination done by trained Physiotherapist only those male and female patients were included who were diagnosed as idiopathic adhesive capsulitis having age 40 to 70 years and had Shoulder pain and disability for the last 2 months. For exclusion of other shoulder abnormal conditions different physiotherapy tests, lab tests and radiographs were used for differential diagnosis. Patients were excluded having rotator cuff injury, rheumatoid arthritis and tumors in the glenohumeral region. Patients having shoulder instabilities, recurrent dislocations frozen shoulder secondary to neurological disorders were also excluded from the study. Few patient had history of pathology or surgical procedure at shoulder. All the patients were numbered from 1-60 for random selection through a random number generating process. Data was collected using a standard self-directed questionnaire "Shoulder Pain & Disability Index" (SPADI) to assess pre-treatment and post-treatment shoulder pain & disability, along with Visual Analogue Scale (VAS) for pain.

In experimental group (Group A = 30 Patients) a trained physical therapist applied Maitland mobilization techniques which consist of Glenohumeral caudal glides, Glenohumeral Postero-anterior glides Glenohumeral Antero-posterior glides, 2-3 glides/ sec for 30 seconds and 5 sets for each glide along with General supervised exercises same as for control group. Maitland techniques were applied for 3 days/week along with supervised exercises 5 days/week for total 4 weeks.

In control group (Group B = 30 Patients) experienced physical therapist applied General

Supervised Exercises which were Wand Exercises, Pendulum (Codman’s exercises), Gear shift exercises, Table Dusting or Wall Washing, Self (sustained) stretching and strengthening exercises for shoulder muscle. 5 sets of each exercise with interval of 60 seconds in each exercise. Supervised exercises for 5 days /week for total 4 weeks. Descriptive statistics and inferential statistics tests were applied. The statistical tests applied were nonparametric and SPSS version 20 was used.

**RESULTS**

Total participants were 60, among which 26 (43.3%) were males and 34 (56.7%) were females. 30 (50%) were kept in each cluster. Mean age of all subjects was 53.02±1.055. Of the 60 patients 30 were Maitland's Group and 30 in Conventional Group with mean age 52.03±6.354±9.055 respectively.

Pre and post treatment SPADI score of Maitland's category were 80.6667±7.11159 and

4.8000±4.50593 respectively, while that of conventional group were 83.3000±7.99202 and 10.8000±5.97927 (Table-1). A Pre-Treatment p value= 0.183 and Post p value=0.00 for SPADI score there is a significant change in the follow up SPADI scores in both groups indicating that Maitland treatment Protocol was significantly (P<0.005) better than the conventional protocol at improving the shoulder disability (Table 1).

Pre and post-treatment VAS score of Maitland's Group were 8.3000±.79438 and 1.1333±0.93710 respectively, while that of Conventional Group was 8.1000±.88474 and 1.4667±1.10589 (Table-2). A Pre-Treatment p value= 0.361 and Post p value =0.213 for VAS score (p>0.005) was calculated in both groups, showing that Maitland intervention was not significantly better as compared to conventional Intervention at improving the pain (Table 2).

**Table 1: Independent T-test for pre and post SPADI of both clusters.**

	<b>Intervention Groups</b>	<b>Mean</b>	<b>Std. Deviation</b>
<b>Pre-Treatment SPADI score</b>	Maitland's Group (A)	80.6667	7.11159
	Conventional Group (B)	83.3000	7.99202
<b>Post-Treatment SPADI score</b>	Maitland's Group (A)	4.8000	4.50593
	Conventional Group (B)	10.8000	5.97927

**Table 2: Independent T-test for pre- and post visual analogue scale (VAS) of both groups**

	<b>Intervention Groups</b>	<b>Mean</b>	<b>Std. Deviation</b>
<b>Pre-Treatment VAS score</b>	Maitland's Group (A)	8.3000	.79438
	Conventional Group (B)	8.1000	.88474
<b>Post-Treatment VAS score</b>	Maitland's Group (A)	1.1333	.93710
	Conventional Group (B)	1.4667	1.10589

## DISCUSSION

To find out the efficiency of the Maitland mobilization techniques adjunct with exercises for the management of the idiopathic FSS the present analysis was made by evaluation through exercises by themselves. During inspection of the end results, it was observed that both communities show substantial improvement as time passes. Statistical study of the information in pre- and post-intervention VAS values showed variation.

However both groups showed decreased pain results significantly, the variation was within favors of Group A among group comparability. Both groups shown decrease in pain ratings, and it was similar with prior study recommending that mobilization lessens pain credited to neurophysiologic results about excitement of peripheral mechanoreceptor and the inhibitions of nociceptors.<sup>11</sup> Both groups showed decreased pain results significantly, the variation was more in favor of Group A among group comparability.

Both groups shown decrease in pain ratings, and it was similar with prior study recommending that mobilization lessens pain. Post treatment results revealed significant enhancements in all outcome measures ( $p < 0.001$ ). Mean of visual analogue (VAS) and SPADI score variance was 2.23 and 22 in common exercise and manual therapy group while 2.33 and 23 in general exercise group respectively showing that only exercises without manual therapy and combine exercises along with manual therapy were equally effective in the management of idiopathic shoulder adhesive capsulitis of the shoulder joint.<sup>12</sup> Another study compared Maitland and Kaltenborn mobilization approach for enhancement of shoulder pain and ROM in idiopathic shoulder adhesive capsulitis subjects. Results of both groups revealed remarkable decrease in pain post-intervention. In both the groups internal and external rotation improved remarkably in post-intervention. But, there was no notable variance between the categories with respect to pain enhancement or ROM.<sup>13</sup> A study comparing early response of idiopathic shoulder adhesive capsulitis patients to two methods of rehabilitation shown that mean age duration of symptoms, ratio of sex according to Reeves were alike in the two interventional groups.

Between the two categories comparison of the early pain scores and passive ROM values showed no statistical significance ( $p > 0.05$ ) while Cyriax method provided a quicker and healthier response than the conservative PT methods in the initial

phase of treatment.<sup>14</sup> A single-case design revealed that both exercise and Maitland mobilization improved shoulder movements even though more improvement in motion was observed by combining mobilizations with exercise program.<sup>15</sup> A Systematic Review presented that mobilization techniques were successful in patients with FSS. Latest evidence has shown that many mobilization techniques when applied along with Maitland technique where much more effective.<sup>16</sup>

## CONCLUSION

Maitland treatment Protocol was significantly better than the Conventional Protocol at improving the SPADI scores of the participants. Maitland intervention was not found significantly better than conventional treatment to improve the pain symptoms of the participants. While many studies have hypothesized the improvements in pain and disability after the Maitland's mobilization, categorical evidence is still not complete. To explicate the benefits of Maitland's mobilization, Randomized Controlled studies (RCTs) with an extra-large sample sizes and follow up for longer time period are required.

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