



## Original Article

## Comparison of Effectiveness of Movement with Mobilization and Muscle Energy Technique in reducing Pain and improving Functional Status in patients with Frozen Shoulder

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## ARTICLE INFO

## Key Words:

Adhesive Capsulitis, Movement with Mobilization, Muscle Energy Technique

## How to Cite:

Ghaffar Awan, N. ., Rehman, F. ur, Asma, ., Bilal, H., Azfar, H. ., Arif, R. ., & Muhammad Arslan, H. R. .(2022). Comparison of Effectiveness of Movement with Mobilization and Muscle Energy Technique in reducing Pain and improving Functional Status in patients with Frozen Shoulder: Technique Effectiveness in Patients with Frozen Shoulder. Pakistan BioMedical Journal, 5(5). <https://doi.org/10.54393/pbmj.v5i5.474>

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Received Date: 14th May, 2022

Acceptance Date: 26th May, 2022

Published Date: 31st May, 2022

## ABSTRACT

Adhesive capsulitis, "popularly is a condition with an unclear etiology known as Frozen Shoulder (FS)". This disorder limits the range of motion of the shoulder joint. **Objective:** To compare the effectiveness of movement with mobilization and muscle energy technique (METs) in reducing pain and improving functional status in patients with frozen shoulder **Methods:** Study was conducted at Department of Physiotherapy, Mayo Hospital Lahore after obtaining the consent from 36 patients. Patients were divided into Two groups. For two weeks, Group 1 received Movement with Mobilization Protest movements (MMM) while Group 2 received METs. The data was processed into SPSS and evaluated using the *Independent Sample t test* and *Paired Sample t test*. **Results:** The outcome assessment instruments, "goniometer for ROM" and "shoulder pain, and disability index," revealed that "Motion by Mobility is more effective than Muscle Energy Technique in increasing ROM and operational condition" of the patient having frozen shoulder. **Conclusions:** There was a considerable improvement in pain and ROM from pre-treatment levels in both the study groups. Whereas "Movement with Mobilization is more effective than Muscle Energy Technique" in alleviating pain, enhancing range of motion, and enhancing functional capacity in "patients with shoulder pain."

## INTRODUCTION

"Adhesive Capsulitis" is a self-limiting disorder characterised by pain and reduced direct and indirect strength and flexibility in the Glenohumeral joint. "Exterior movement is more restricted than flexion, which is followed by internal rotation in the capsular pattern" [1]. Frozen shoulder (FS) is another name for adhesive capsulitis, which has two types: active and passive [2].

Adhesive capsulitis is treated differently than other shoulder disorders, and it can be detrimental to sufferers if misdiagnosed [3]. Therapists should constantly be aware of the characteristics of adhesive capsulitis and the therapeutic stages associated with it [4,5]. The prevalence of frozen shoulder has been estimated to range between 2.4-26%. Intrinsic sticky capsulitis affects 2% to 5.3% of

the total population. The prevalence of subsequent adhesive capsulitis linked to diabetes and thyroid disease has been estimated to be between 4.3 % and 38%. Milgram et al., likened 126 sick people (76 females; age, 55.0 50 males; age, 54.7) with idiopathic frozen shoulder to incidence metrics, then created a substantively higher number of diabetes in females (23.7 % against 4.7%) than males (38.0% against 6.5%) via shoulder pain [3,6]. Idiopathic frozen shoulder was found to cause a significantly higher prevalence of hypothyroidism in females (21.1% vs. 7.9%) when compared to the age-matched local residents [7,8]. In several additional studies, physiotherapist treatments have been used to treat frozen shoulder in serious illnesses, and they have proven to be impressive in reduction of hurting and increasing limiting strength and flexibility [9]. Different treatments, such as MMM and METs, have been shown to be useful in the care of frozen shoulder customers in different studies. These strategies have been contrasted to cautious treatment in several studies [10,11]. MMM when compared to METs in the Treatment of Adhesive Capsulitis was found to be more effective. This research found that MET is more successful in reducing discomfort [12-14]. The purpose of this study is to see how efficient mobility with mobilisation and muscle power methods are at reducing pain severity and improving functional ability in patients with adhesive capsulitis.

## METHODS

A controlled trial experiment was conducted in Pakistan at the Physiotherapy Department of Mayo Hospital Lahore. A total of 36 participants were enrolled in this study were divided into two categories at random to use a Random Number Table. In both groups of patients (SPADI), the same parameters, Range of Motion and Shoulder Pain and Disability Index were assessed. The study included patients who had been afflicted with frozen shoulder. For two weeks, the patients were monitored. The participants were divided into two groups: Group A and Group B. Pre-test measurements were made through using Severity Index Measure, the Shoulder Pain intensity Score, and a goniometer to quantify strength and flexibility intervention period. The activation technique of MMM was employed on participants in Group 1. 12 glides per set, 30 seconds among glides, 5 sets total. So over course of two weeks, 12 sessions were held in total. Quiet sinusoidal movements were performed at a frequency of 2-3 per second. So over course of two weeks, Group 2 patients got muscle stimulation treatments for 12 sessions. 5 repetitions of 3-5 muscle contractions lasting 5-7 seconds each. Physical therapy was prescribed to people six days a week. All participants receive a moist hand warmer applied to the

affected shoulder for 10 minutes, as well as a personal exercise plan. Patients were directed to repeat each activity 2-3 times per day for 10-15 repeats on the first day of treatment. Both groups received two weeks of counselling. On the first day and again at the end of the second week, subjects were evaluated. A questionnaire with a visual analogue scale (VAS) and a shoulder pain and disability score was used to collect all data. Range of motion (ROM), shoulder pain and disability index (SPADI) enhancements were evaluated. People over 40 years of age with restricted shoulder proactive and reactive planes of motion in the capsular region, shoulders pain persisting beyond a month, and diabetic patients with frozen shoulder were included in the study. Those with cancer, memory deficits or mental disabilities, neurologic dysfunction, or an injury were all ruled out of the study.

## RESULTS

Results showed that there was significant difference between the pain before and after the treatment among both groups as p value is 0.00 (Table 1).

Paired Samples Statistics		Mean	N	SD	SE Mean	Sig. (2-tailed)
Group 1	"VAS Pre Treatment"	8.83	18	1.383	0.326	0.00
	"VAS Post Treatment"	3.39	18	0.916	0.216	
Group 2	"VAS Pre Treatment"	9.11	18	0.963	0.227	0.00
	"VAS Post Treatment"	2.67	18	0.686	0.162	

**Table 1:** Pain before and after the treatment among both groups

There was significant difference between the Shoulder pain and disability index before and after the treatment among both groups as p Value is 0.00 (Table 2).

Paired Samples Statistics		Mean	N	SD	SE Mean	Sig. (2-tailed)
Group 1	"SPADI Pre Treatment"	85.5189	18	10.5762	2.49283	0.00
	"SPADI Post Treatment"	28.0611	18	10.3333	2.43558	
Group 2	"SPADI Pre Treatment"	84.8444	18	9.62172	2.26786	0.00
	"SPADI Post Treatment"	42.7756	18	16.2838	3.83813	

**Table 2:** Shoulder pain and disability index before and after the treatment

There was significant difference between the Shoulder ROM including External rotation, abduction and Internal Rotation before and after the treatment among both groups as p value is 0.00 (Table 3).

Paired Samples Statistics		Mean	N	SD	SE Mean	Sig.
Group 1	"Pre Treatment External Rotation"	34.22	18	6.16	1.452	0.00
	"Post Treatment External Rotation"	69.72	18	4.127	0.973	
Group 2	"Pre Treatment External Rotation"	33.39	18	7.964	1.877	0.00
	"Post Treatment External Rotation"	47.78	18	8.987	2.118	
Group 1	"Pre Treatment Abduction"	76.22	18	14.086	3.32	0.00
	"Post Treatment Abduction"	139.56	18	15.194	3.581	
Group 2	"Pre Treatment Abduction"	83.11	18	8.138	1.918	0.00
	"Post Treatment Abduction"	110.94	18	6.966	1.642	

Paired Samples Statistics		Mean	N	SD	SE Mean	Sig.
Group 1	"Pre Treatment Internal Rotation"	33.89	18	6.676	1.574	0.00
	"Post Treatment Internal Rotation"	59.83	18	5.618	1.324	
Group 2	"Pre Treatment Internal Rotation"	31.89	18	6.425	1.514	0.00
	"Post Treatment Internal Rotation"	44.61	18	6.844	1.613	

**Table 3:** Shoulder Range of Motion including External rotation, Abduction and Internal Rotation

The Visual Analogue Scale (VAS), SPADI and ROM including External Rotation, Abduction, and Internal Rotation across Team 1 and Group 2 were compared using an independent sample t test. The statistical information revealed that the mean value of VAS, SPADI and ROM encompassing External Rotation, Abduction, and Internal Rotation between the two groups was significantly different. MMM is more effective than MET at relieving pain, increasing scope of movement, and enhancing serviceable power in individuals with frozen shoulder (Table 4).

Group Statistics	Study Group	N	Mean	SD	P Value
VAS	Group 1	18	3.39	.916	.012
	Group 2	18	2.67	.686	
SPADI score	Group 1	18	42.7756	16.28381	.003
	Group 2	18	28.0611	10.33330	
External rotation	Group 1	18	69.72	4.127	.000
	Group 2	18	47.78	8.987	
Abduction	Group 1	18	139.56	15.194	.000
	Group 2	18	110.94	6.966	
Internal rotation	Group 1	18	59.83	5.618	.000
	Group 2	18	44.61	6.844	

**Table 4:** Independent Sample t test Results VAS, SPADI and Shoulder ROM

## DISCUSSION

The purpose of the study was to compare the two procedures on patients with frozen shoulder. Motion with Activation and Muscular Power Method were the two strategies used. Interview for Frozen Shoulder and Impairment Score was used to gather data [15]. Shah Atika Suri et al., collected a survey in 2013. The goal of this study was to see how Motion by Activation and muscular power approach helped individuals with adhesive capsulitis. Both groups display significant changes in symptom and compass of motion before therapy, according to this study. The MMM group had a greater change in ROM and a greater reduction in pain than the MET category. Yet there is a substantial disparity values of the VAS, SPADI, and ROM including External Rotation, Abduction, and Internal Rotation between the two groups, according to our research. MMM is more effective than MET at relieving pain, increasing range of motion, and increasing effectiveness in individuals suffering frozen shoulder [12,13].

Arvind Kumar et al., did a study in 2015 to check the effectiveness of MMM with muscular power approach in individuals suffering frozen shoulder. MMM is more successful than MET in enhancing strength and flexibility and reducing operational impairment in patients with this illness [20] according to this study. In our investigation, we discovered substantial variations in pain and ROM which was before phases in both categories. Although the MMM Community showed higher ROM improvement and discomfort alleviation than the MET team. While there is a significant difference in mean score of the VAS, the SPADI, and the ROM including External Rotation, Abduction, and Internal Rotation between the two groups, according to our study [16,17]. MMM is more effective than MET at relieving pain, increasing range of motion, and increasing affective people with frozen shoulder [18,19].

## CONCLUSION

In both categories, there was a considerable improvement in pain and ROM from pre-treatment levels. Although Movement with Mobilization is more effective than Muscle Energy Technique in reducing pain, enhancing strength and flexibility, and increasing physical function in individuals with shoulder pain.

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