A Comparative Study of Effectiveness of Interferential Therapy (IFT) and Shoulder Maitland Mobilization in Adhesive Capsulitis of Shoulder

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ABSTRACT

AIM:
The main aim of the study is to evaluate the efficacy of the selected therapy to control improve the pain, stiffness and ROM comparatively best in administration.
METHOD:
60 subjects were chosen based on inclusion and exclusion criteria. Both female and male subjects between 40- 60 years will be taken.The consent form was filled out by subjects stating the voluntary participant in the study.The subjects were informed about the procedure.
Group A – consists of 30 subjects who were given Maitland mobilization
Group B – consisted of 30 subjects who were given interferential therapy
Group A and Group B Subjects will be compared to know which treatment is more effective
RESULT:
The results of the present study and all the previous research done in the past, the Null hypothesis is rejected and the alternate hypothesis is accepted. As per the result, it has been concluded that Maitland mobilization and Interferential therapy both is very helpful in improving the VAS Score, and Disability index along with the Flexion, Extension, Abduction, and Internal rotation range of motion of subjects with Adhesive capsulitis. While both protocols was effective, there were Maitland mobilization statistically shows significant improvement over interferential therapy.

INTRODUCTION:
Frozen shoulder is a clinical syndrome with painful restriction of both active and passive shoulder movements. The condition is aggravated by a systemic problems like diabetes cardiovascular disease and reflex dystrophy. The term frozen shoulder is often used injudiciously for any painful condition of the shoulder joint.[1] Painful stiffness of the shoulder can adversely affect activities of daily living and consequently, impair the quality of life the physician describes The pathology which is called Scapulohumeral peri arthritis describes a painful shoulder syndrome that is distinct from arthritics.[2] Frozen shoulder given by Codman in 1934, he described frozen shoulders as a painful shoulder condition of insidious onset that was associated with stiffness in forward elevation, external rotation, and difficulty in sleeping on the affected side, Naviera's coined the term "adhesive capsulitis" in 1945.[3] Adhesive capsulitis peri arthritis and frozen shoulder are all terms used to describe a painful and stiff glenohumeral joint.[4] This is the most common condition in the arm. This condition is a challenge for physiotherapists as it is difficult to treat and may last for several weeks. It is a painful disabling condition and the actinology is unknown.[5] Adhesive capsulitis occurs in primary and secondary primary (or idiopathies) adhesive capsulitis can occur spontaneously without any specific trauma or inciting event secondary adhesive capsulitis is often observed afterparticularfracturedislocationof glenohumeral orothersevertrauma.[6] The incidence of adhesive capsulitis in the general population is approximately 3% to 5% butt as high as 20% in patients with diabetes, idiopathic adhesive capsulitis often involved the non-dominant extremely adhesive capsulitis often regarded as a self-limiting disease that resolves between 1 and 3 years. However various studies have shown that between 20% and 50% of patients may 90 on to developlong-lastingg symptoms.[7] Shoulder pain is associated with significant which leads to loss of mobility off disjoint and significant morbidity.[8] A number of causes for shoulder pairs exist among them frozen shoulder is a significant one with an incidence of 2% ingeneralpopulationinIndia.Clinicallyitisprogressesthroughfourphasesautopainfulphasefreezingphasefrozenphase and thawing phase. the duration of acute phases from 0 to 3 months along with pain and stiffness in more than two directions.[9] For pain, different strategies used are heat or ice application ultrasound interferential therapy tents and pulsed electrotherapy. To correct the stiffness of active and passive ROM. [10] .

METHODOLOGY:
60 subjects were chosen based on inclusion and exclusion criteria. Both female and male subjects between 40- 60 years will be taken. The consent form was filled out by subjects stating the voluntary participant in the study. The subjects were informed about the procedure.
Group A – consists of 30 subjects who were given Maitland mobilization
Group B – consisted of 30 subjects who were given interferential therapy
Group A and Group B Subjects will be compared to know which treatment is more effective
Subjects were divided into two groups, Group A and Group B each group consist of 30 subjects.

Group A – Maitland mobilization
Group B – interferential therapy
Treatment given for 15 days therapy will be given to the patient in different groups

STUDY DESIGN:

1**.** A pre-test and post-test comparative analysis design-based cross-sectional study will be done for the collection of data.

2. Grouping and sample size – the patient with adhesive capsulitis shoulder will be selected after the screening of physiotherapy OPD of the university institute of health science (U.I.H.S) C.S.J.M University for investigation and experiment total 60 patients will be selected as per inclusion and exclusion criteria. there will be two groups of patient s

Group A: the subject/patient will receive Maitland mobilization.
Total number of patients = 30
Group B The subject/patient will receive interferential therapy
Total number of patients = 30

INCLUSION CRITERIA:

- Age 40-60 years.
- Shoulder ROM restriction internal rotation greater than or equal to 60 and abduction greater than or equal to 30 internal rotations.
- Shoulder pain for more than 3 months.
- The patient will adhesive capsulitis abduction test and an external test positive.

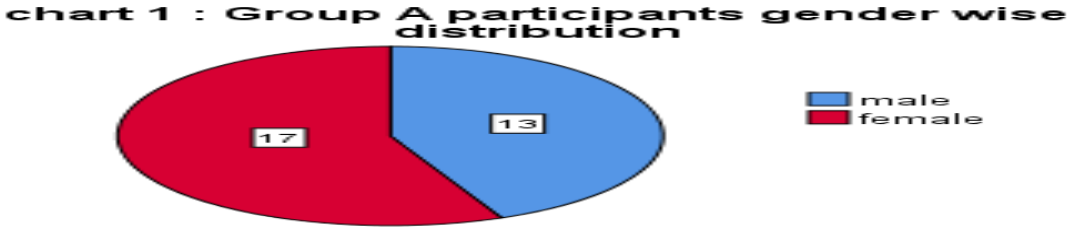
EXCLUSION CRITERIA:

- Diabetes mellitus.
- History of trauma and accidental injuries.
- Neurological involvement (stroke, perdition pain to arm)
- History of trauma.

Study Duration: The period of study will be 4-6 months.

DATA ANALYSIS:

Data was done using IBM SPSS statistics (software package used for statistical analysis 2019 version - 26). Descriptive statistics analysis was done to determine the demographic characteristics of the subjects recruited in the study; paired sample t-test used in the analysis of this study. P – value used in the study to test hypothesis, which help in deciding whether to reject or accept the Null hypothesis. The p – value is probability of obtaining a test value that is at least extreme as the actual calculated value, if the null hypothesis is true. A commonly used value for the p – value is 0.05.



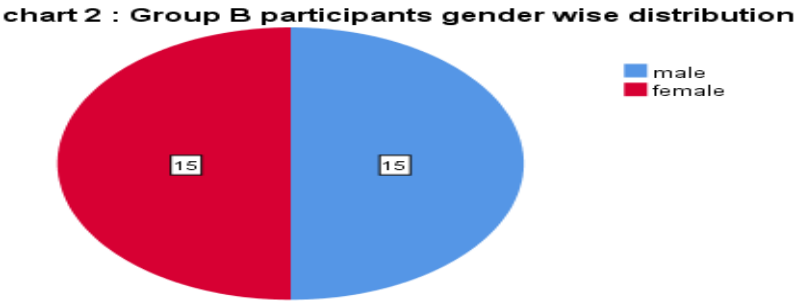
The descriptive data of **chart 1** shows the distribution of gender among the participants of Group A. the percentage of male participants is 57% and the percentage of female participants is 43%. This reflect that maximum number of participants is Male in group A in the current study.

Table 1 : Represents Group A (Maitland mobilization)

	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper	t	df	Sig. (2-tailed)
Post_vas - Pre_vas	4.267	1.680	.307	4.894	3.639	13.909	29	.000
Post_DI - Pre_DI	2.800	1.375	.251	3.313	2.287	11.156	29	.000
Post_FROM - pre_FROM	71.433	17.673	3.227	64.834	78.032	22.139	29	.000
Post_EROM - pre_EROM	32.833	5.453	.995	30.797	34.869	32.982	29	.000
Post_ABDROM - pre_ABDROM	72.567	13.883	2.535	67.383	77.751	28.630	29	.000
Post_IRROM - pre_IRROM	33.133	9.005	1.644	29.771	36.496	20.154	29	.000

Table **1** shows the statistical data of recruited participants of group A i.e.; Maitland mobilization, while analyzing the data of group A, it has been found that Maitland mobilization was found significant in improving the Range of Motion and decreasing the pain. There is a marked improvement in VAS with a mean (±SD) of 4.267 (±1.680) and t - value was 13.909 with a *p-value* of

.000, Disability index with a mean (±SD) of 2.800 (±1.375) and t - value was 11.156 with a *p-value* of .000, flexion range of motion with a mean (±SD) of 71.433 (±17.673) and t - value was 22.139 with a *p-value* of .000, Extension range of motion with a mean (±SD) of 32.833 (±5.453) and t - value was 32.982 with a *p-value* of .000, Abduction range of motion with a mean (±SD) of 72.567 (±13.883) and t - value was 28.630 with a *p-value* of .000, Internal rotation range of motion with mean (±SD) of 33.133 (±9.005) and t - value was 20.154 with *p* - value of .000. so, the table 1 shows that Maitland mobilization was significant at the 95% confidence level.



The descriptive data of **chart 2** shows the distribution of gender among the participants of Group B. the percentage of male participants is 50% and the percentage of female participants is 50%. This reflect that both gender Male and Female participants is equally participatesin group A in the current study.

The **table 2** shows the statistical data of recruited participants of group B i.e.; Interferential therapy,

Table 2 : Represents Group B (Interferential therapy)

	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
				Lower	Upper			
Post_vas - Pre_vas	2.433	1.104	.202	2.846	2.021	12.069	29	.000
Post_DI - Pre_DI	2.100	1.373	.251	2.613	1.587	8.375	29	.000
Post_FROM - pre_FROM	73.967	24.065	4.394	64.981	82.953	16.835	29	.000
Post_EROM - pre_EROM	28.467	10.102	1.844	24.695	32.239	15.434	29	.000
Post_ABDROM - pre_ABDROM	90.933	26.860	4.904	80.904	100.963	18.543	29	.000
Post_IRROM - pre_IRROM	40.667	13.890	2.536	35.480	45.853	16.037	29	.000

while analysing the data of group B, it has been found that Interferential therapy was found significant in improving the Range of Motion and decreasing the pain. There is a marked improvement in VAS with mean (±SD) of 2.433 (±1.104) and t - value was 12.069 with *p* value of .000, Disability index with mean (±SD) of 2.100 (±1.373) and t - value was 8.375 with *p* - value of .000, flexion range of motion with mean (±SD) of 73.967 (±24.065) and t - value was 16.835 with *p* - value of .000,Extension range of motion with mean (±SD) of 28.467 (±10.102) and t - value was 15.434 with *p* - value of .000,Abduction range of motion with mean (±SD) of 90.933 (±26.860) and t - value was 18.543 with *p* - value of .000, Internal rotation range of motion with mean (±SD) of 40.667 (±13.890) and t - value was 16.037 with *p* - value of .000. so, the table 2 shows that interferential therapy was significant at the 95% confidence level.

Result

The 95% confidence level of paired samples t - test shows significant improvement i.e., null hypothesis is rejected and alternate hypothesis is accepted and we statistically observed improvement along with effectiveness of Maitland mobilization and Interferential therapy along with VAS score, Disability index and all range of motion in Adhesive capsuliticshoulder.

Discussion

The present study was done to determine the efficacy of Maitland mobilization and Interferential therapy on VAS Score, Disability Index, and all ranges of motion of adhesive capsulitic shoulder. The subjects were recruited randomly. The pre and post-effect of Maitland mobilization and Interferential therapy are measured with the help of the VAS Score, Disability index, and Goniometer. There are a total of 60 subjects (30 subjects in each group) were recruited according to the inclusion and exclusion criteria. Those subjects who satisfied the criteria were allowed to perform the study. All the

total 60 subjects successfully completed the study. All the subjects were taken from OPD of the health science department of CSJM University.

The data collected from the study represents that the null hypothesis is rejected and the alternate hypothesis is accepted, which means both treatment protocols i.e., Maitland mobilization and Interferential therapy were effective in Adhesive capsulitis subjects. The study also represents that the *t-value* of both groups shows that Maitland mobilization is more statistically significant than Interferential therapy.

JM Green A et al 2018, result showed both the intervention resulted in positive outcomes, but comparing the highest level of positive outcome with the intervention the Maitland techniques composed a remarkable rate of recovery in regaining pain-free range of motion when compared to the ultrasound and is effective in the treatment of the frozen shoulder.

Jonathan Zawala-Gonzalez et al 2018, after analyzing 14 randomized clinical trials that used joint mobilization techniques with variable methodology in relation to potential sources of bias and were statistically heterogeneous when applied alone or as part of a treatment program compared to treatment that do not include joint mobilization. They seem to improve range of motion function and decrease pain. There was no evidence to support a clinical difference of any type of technique.

P. Rawat et al 2017, Strength training in adhesive capsulitis will help to improve the function ofthe shoulder joint by the effectiveness of rotator cuff strengthening exercise to joint mobilization and Maitland joint mobilization technique has been used.

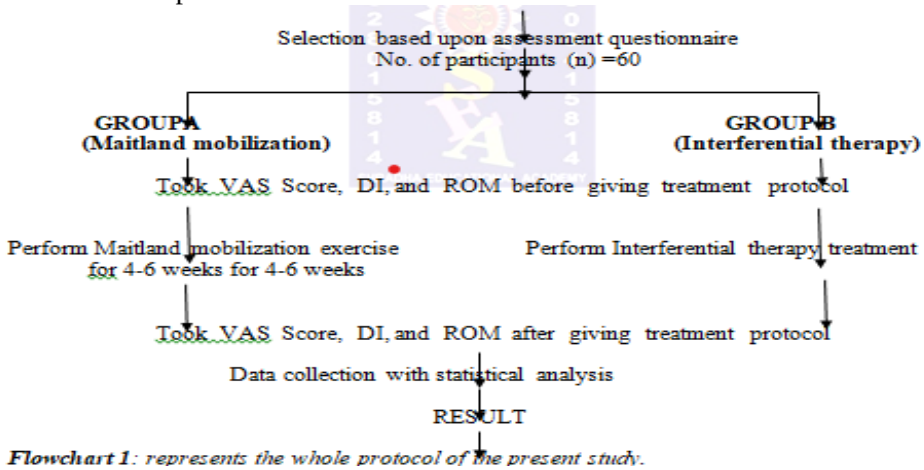
Daara N. Panchal charuEapen 2015, the result of the present study demonstrated the patient treated with end range mobilization shoulder greater improvement in range of motion when compared with the group treated with most heat and electrical modality and stretching exercises improvement in pain severity end disability was similar with both the treatment. End-range mobilization can be used for better improvement in the range of motion particularly in the acute stage.

JcobIsac Jason Ganesh et al 2015, this study has found a sufficient level of evidence for physiotherapy in the treatment of adhesive capsulitis in the shoulder. In particular, manual treatment must be combined with commonly indicated exercise or conventional physiotherapy, as if remain the standard care, this study is intended to guide physiotherapists in the appropriate use of MMT, soft tissue techniques exercise, and/or electrotherapy for the treatment to adhesive capsulitis in the context of available evidence. More studies are also needed for a more definitive conclusion about long-term outcomes.7

PT JayathosanAlagesonet al 2013, Stabilization exercise in subject with adhesive capsulitis shoulder was treated with technique IFT and Maitland mobilization is more effective than exercise in the management of Adhesive capsulitis.

Abhay Kumar Suraj Kumar et al 2012, this study found that mobilization of the shoulder must be added to the surprise exercise program to achieve the goals of reducing pain and improving ROM and function of adhesive capsulitis.

M. **Lokesh et al 2012,** Adhesive capsulitis affected 2.5 mobilization techniquewere applied with the intensities according to Maitland grades III and IFT was given per 15 minutesin the quadripular method to the shoulder for pain relief.



***Flowchart 1**: represents the whole protocol of the present study.*

The current study is very unique, so we can do a lot in the future. This study was conducted for a short period of time and with a small sample size; future research involving a long time period and a larger sample size and comparing two different interventions is also possible. The result of this study will help the physiotherapist to choose which intervention is best for subjects with Adhesive capsulitis.

On basis of inclusion & exclusion criteria

Conclusion

Hence, we concluded that based on the results of the present study and all the previous research done in the past, the Null hypothesis is rejected and the alternate hypothesis is accepted. As per the result, it has been concluded that Maitland mobilization and Interferential therapy both is very helpful in improving VAS Score, and Disability index along with the Flexion, Extension, Abduction, and Internal rotation range of motion of subjects with Adhesive capsulitis. While both protocols was effective, there were Maitland mobilization statistically shows significant improvement over interferential their

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