



# A Comparative Study To Find Out The Effectiveness Of Ultrasound Therapy Versus Ultrasound Therapy Combined With Deep Friction Massage And Therapeutic Exercises In Subject With Supraspinatus Tendinitis

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## Background of the study

The supraspinatus tendinitis is a most common cause for shoulder pain. Treatment includes surgical and non-surgical modalities. Non-surgical treatment is used to reduce pain, to decrease the inflammation, to heal the compromised rotator cuff and to restore satisfactory function of the shoulder. The purpose of this study was to evaluate the possible additive effect of ultrasound therapy and ultrasound therapy combined with deep friction massage and therapeutic exercise.

## Methods:

A total of 30 patients were selected from outpatient physiotherapy department at Aarupadai veedu medical college and hospital. The inclusion and exclusion data were both male and female sex aged between 30-65 were taken. Before starting the treatment, shoulder ability was graded by SPADI and the pain was graded by VAS score. The measurement was repeated at the end of the study sessions. The duration of study was 3 weeks. Statistical analysis was conducted according to SPADI and VAS pre and post score value.

## Results:

In VAS the significance difference between group A and group B is 5.802, the mean difference between group A (2.4) and group B (4.27). It shows group B scored higher Mean value than group A. In SPADI the significance difference between group A and group B is 19.59, the mean difference between group A (10.6) and group B (41.6). It shows group B scored higher Mean value than group A.

## Conclusion:

This study confirms that there is significant difference in reduction of pain, and improving Shoulder ability in both groups but when comparing the mean value, it is found out that the Group B treated with ultrasound therapy combined with deep friction massage and therapeutic exercise is more effective than Group A ultrasound therapy in patients with supraspinatus tendinitis.

Keywords: Supraspinatus tendinitis, pain, shoulder ability, deep friction massage, Codman's exercise, VAS, SPADI

## **Introduction:**

Supraspinatus tendinitis is an inflammation of supraspinatus tendon from overuse and repetitive strain. Most commonly affected structure in rotator cuff muscle that lead to development of pain due to impingement of shoulder. Most frequently irritated tendon is superior tendon of glenohumeral joint. The vulnerability of this tendon to inflammation is due to its anatomical location.[3]The main cause of supraspinatus tendinitis can be primary impingement,which is a result of subacromial loading,and secondary impingement which result of overloading and muscle imbalance.It can also be caused by extrinsic(trauma, muscle imbalance with poor posture) and intrinsic factors (aging,impaired rotator cuff vascularity,,secondary impingement).

Multiple studies detail the prevalence of rotator cuff pathology by age group. One landmark magnetic resonance imaging (MRI) study of asymptomatic shoulders detailed that partial rotator cuff tears were present in 20% of the population, and 15% had full-thickness tearing.[13] Sher et al. reported pathology was found significantly more often in shoulders over the age of 60 years compared to younger patients.

Many physiotherapy treatments are used for the treatment of supraspinatus tendinitis. Hot or cold pack application, Ultrasound therapy, Iontophoresis, Deep friction massage, Low level laser therapy, Short wave diathermy .The purpose of the treatment is to manage pain and resolve mechanical problems to improve function and alleviate pain through the reduction of swelling.

The current study is intended to compare the effects of two technique namely ultrasound therapy and ultrasound therapy combined with deep friction massage and therapeutic exercise. The resultant effective treatment can be incorporated in reducing pain and disability in subjects with supraspinatus tendinitis.

## **METHODOLOGY:**

The design of this study was comparative study. This study was done in outpatient department of Physiotherapy at Aarupadi Veedu Medical College and Hospital. The period of this study was three weeks. The study group included 30 patients. Patients were selected in simple random sampling method. The study included only 30 patients of both male and female with the age group between 30-60 years. The patients must have had Empty can test positive: This is performed in 2 stages and is used to determine the presence of supraspinatus pathology. The patient's shoulder is abducted to 90 degree in the plane of the scapula. The humerus is in neutral rotation. Resistance to abduction was applied to the floor and the same resistance was applied. Pain or painful weakness in the second part of the test is a positive finding and indicates supraspinatus pathology and was used in the investigation to support the clinical diagnosis of supraspinatus tendinitis.

Visual analogue scale and Shoulder pain And Disability Index questionnaire were used as a outcome measures.

## Intervention:

The pre treatment score was taken before initiating the exercise by using Shoulder pain And Disability Index questionnaire and visual analogue scale. Thirty subjects those who fulfilled the inclusion were considered for the study. The study population consisted of subjects between 30 and 60 years of age. The subjects were explained about the treatment and written consent was taken. Pre –assessment was taken using VAS and SPADI. 30 subjects both male and female were randomly allocated into two study groups A & B. Group A: consisted of 15 subjects who received ultrasound.

Ultrasound was given with an intensity of 1 w/cm<sup>2</sup> and 1 MHz, mode-1:4 for 5-8 minutes. The treatment was given for 3 weeks with 6 days per week. The post test scores of VAS and SPADI were taken on day 21.

Group B consisted of 15 subjects who received ultrasound combined with deep friction massage and therapeutics exercise (Codman's exercise).

Ultrasound was given with 1 MHz, mode-1:4 for 5-8 minutes. The patients were instructed the benefits of soft tissue massage and also the duration of treatment. The patient was made to bend his/ her elbow to 90 degree and put the forearm behind the back and lean back in half lying position, to fix the arm in adduction and medial rotation. Deep friction massage was given with the tip of index finger to the supraspinatus tendon reinforced by middle finger for 10- 12 minutes and Codman's exercises were taught to the patients. The treatment was given for 3 weeks with 6 days per week. The post test scores of VAS and SPADI were taken on day 21.

### GROUP A: ultrasound therapy



Figure 1: Ultrasound therapy

**GROUP B: ultrasound therapy combined with deep friction massage and therapeutic exercise (Codman's exercise)**



**Figure 2: Deep friction massage**

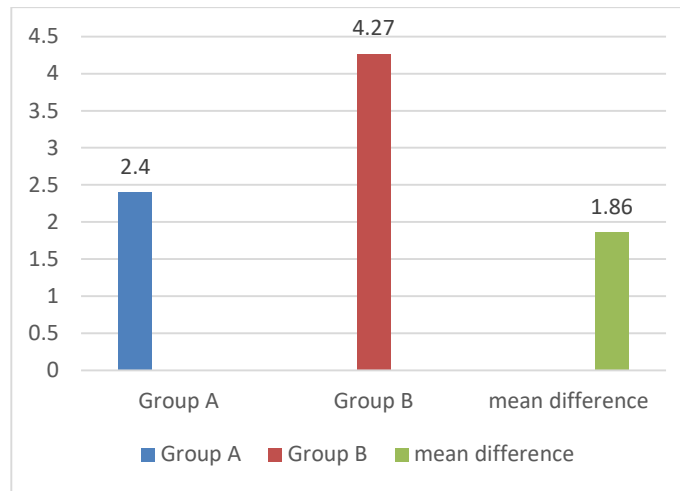


**Figure 3: Therapeutic exercise (codman's exercise)**

**Data analysis:**

**Table 1: Comparison of Visual Analogue Scale between Group-A and Group-B in Pre – Test & Post -Test Values**

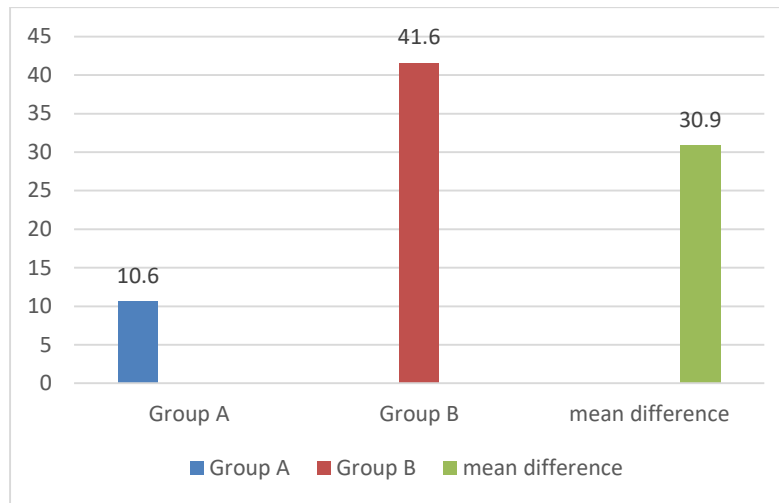
Measurement	Mean	Mean difference	Standard deviation	't' value
Group A	2.4		1.06	
Group B	4.27	1.86	0.46	5.802



**Graph 1:** shows the graphical representation of group A mean, group B mean and mean difference for VAS .

**Table 2: Comparison of Shoulder Pain and Disability Index between Group-A and Group-B in Pre –Test & Post -Test Values**

Measurement	Mean	Mean difference	Standard deviation	Unpaired 't' value
Group A	10.6	30.9	4.17	19.49
Group B	41.6		5.49	



**Graph 2: Shows the graphical representation of group A mean, group B mean and mean difference for SPADI .**

## RESULTS

The calculated unpaired 't' value is 5.802 and table value 0.001 level of significance. It shows that there is significant difference in group A and Group B. When comparing the mean values of Group A and Group B, Group B subjects those were treated with ultrasound therapy combined with deep friction massage and therapeutic exercise shows more difference than Group A treated with ultrasound therapy.

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## Discussion:

A comparative study with 30 patients with supraspinatus tendinitis was undertaken. 30 patients were divided into two groups, Group A and Group B. Each Group consisted of 15 patients. Group A received ultrasound therapy and Group B received ultrasound therapy combined with deep friction massage and therapeutic exercise. This study was intended to find the effectiveness of ultrasound therapy and in comparison with ultrasound therapy combined with deep friction massage and therapeutic exercise.

The study done by De Berardino T concluded supraspinatus tendinitis was reported to be more common in people with repetitive overhead motion and also for athletes in swimming, throwing sports, volleyball. In this

study ultrasound therapy and deep friction massage were beneficial in the treatment of acute supraspinatus tendinitis. Statistically significant improvement was seen in Group B compared to Group A.

Therapeutic Ultrasound is effective in treating supraspinatus tendinitis which supports the Results of Nauslund (2001).

Soft Tissue Massage is highly effective in treating supraspinatus tendinitis according to Guler UF et al (2004) and Gimblett PA et al (1999). The results of this study supports the work by ShamshiSharick (2013) that ultrasound and deep friction massage relieves pain symptoms in supraspinatus tendinitis.

According to this study both ultrasound therapy and ultrasound therapy and deep friction massage with therapeutic exercise can be used for treating patients with Supraspinatus tendinitis but ultrasound therapy and deep friction massage with therapeutic exercise had better outcome in subjects with Supraspinatus tendinitis.

## **CONCLUSIONS:**

The study concluded that therapeutic ultrasound and therapeutic ultrasound and deep friction massage with therapeutic exercise are efficient in the rehabilitation of subjects with supraspinatus tendinitis. They improved the functional ability and relieved pain considerably but ultrasound therapy and deep friction massage with therapeutic exercise proved to be more effective than ultrasound therapy.

