



## Comparative Study Between the Effect of Myofascial Release Using M2T Blade and Kinesiotape on Recreational Badminton Shoulder Pain Subjects: A Randomised Clinical Trial

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### ABSTRACT

**Background:** Shoulder pain is one of the most common conditions seen in recreational badminton players. It is caused due to repeated movements at the shoulder joint which further limits the range of motion and hence hampers the activities of daily living. M2T helps to release the myofascial tightness which causes the pain. Kinesiotape also helps in increasing the range of motion. **Patients and Methods:** Thirty recreational shoulder pain subjects were assessed and treated between the age group of 18-30 years at the KLE University's Indoor Stadium, Jawaharlal Nehru Medical College, Belagavi, Karnataka, India. **Methods:** The recreational shoulder pain subjects were divided into Group "A" and Group "B" by Randomized clinical trial. Outcome measures used were the visual analogue scale (VAS) for pain and the Disability of Arm, Hand, and Shoulder (DASH). VAS and DASH were assessed pre-treatment and post-treatment. **Results:** Inter-group comparison for both the groups had differences but showed no statistical significance. Hence based on results it can be concluded that both the treatment techniques are effective in reducing pain and increasing ability at the shoulder joint.

**Keywords:** M2T blade, Kinesiotape, Recreational badminton players, VAS, DASH

### INTRODUCTION

Shoulder pain is a common musculoskeletal problem that affects people's daily activities. It may arise from pathologies at the shoulder joint itself or from any of the many surrounding muscles, tendons and ligaments. Shoulder joint is a ball and socket type of joint where the head of the humerus fits into the glenoid fossa, surrounded by various muscles and ligaments [1].

Badminton is a sport in which there is repeated abduction and external rotation motion at the shoulder joint which may cause shoulder pain. Shoulder pain is one of the common joint pains in recreational players [2]. Shoulder pain affects over 50% of elite and recreational badminton players [3].

Physical risk factors include lifting, repetitive movements, and overhead activities at the shoulder joint which is commonly seen in persons playing sports like volleyball, badminton, swimming, tennis. Shoulder pain is more common in badminton players as there is repeated flexion, external rotation and abduction motion at the shoulder joint [4].

Kinesiotape was first introduced by Dr. Kenzo Kase in the year 1973 and was introduced officially in United Kingdom in 2004. The popularity of the use of tape increased after the Beijing Olympics. The kinesiotape mimics human skin quality through its specific thickness and high elasticity [5].

M2T blade (Figure 1) introduced by Mr. Adam Boger first in Canada is a newer invention in the field of instrument assessed myofascial release. It is used to reduced pain and increases the range of motion of a particular joint. The blade consists of 8-treatment plane, which are used, in various ways on different parts of the body. The part of the body is assessed and accordingly the treatment plane of the blade is used [6].

The primary objective of this study is to compare the effectiveness of both M2T and kinesiotape on recreational badminton shoulder pain subjects.



**Figure 1 M2T blade**

## **MATERIALS AND METHODS**

### **Materials used**

- Data collection sheet
- Informed consent form
- Pen and paper

### **Instruments and apparatus**

- M2T Blade (Myofascial Mobilization Tool Blade)
- Kinesiotape (KT)
- Visual Analogue Scale (VAS)
- Disability of Arm, Shoulder and Hand (DASH)

### **Inclusion criteria**

- Recreational badminton players
- Age 18-30 years
- Shoulder pain without any trauma or any pathological condition
- Subjects willing to participate

### **Exclusion criteria**

- Any neurological deficits (shoulder and hand)
- Hypersensitive skin
- Trauma to shoulder joint in past 6 months

• Source of Data: The subjects for this study are the recreational badminton players who were assessed and treated at the KLE University's Indoor Stadium, JNMC Campus, Belagavi, Karnataka.

### **Method of collection of data:**

**Study design:** Randomized clinical trial

**Sample size:** 30

**Duration of data collection:** 3 months (November 2016 to January 2017)

**Type of data:** Primary data

**Sampling design:** Convenient sampling

**Sampling method:** Allocated via Envelope method

## **RESULTS**

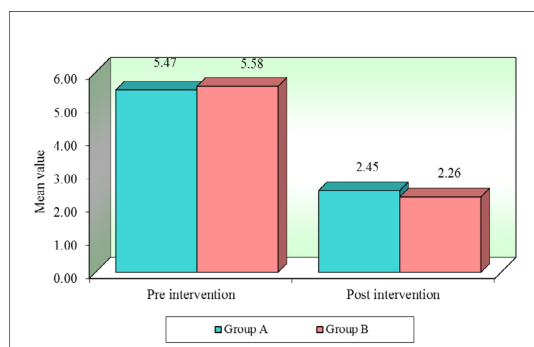
**Table 1 Normality of pre-intervention and post intervention VAS and disability of arm shoulder hand (DASH) scores in Group A and Group B by Kolmogorov Smirnov test**

Variables	Test	Group A		Group B	
		Z-value	p-value	Z-value	p-value
VAS	Pre-intervention	0.364	0.999	0.705	0.7028
	Post intervention	0.533	0.939	0.579	0.8908
DASH	Pre-intervention	0.54	0.932	0.4572	0.985
	Post intervention	0.684	0.737	0.5505	0.9223

Note: Pre-intervention and post intervention VAS and disability of arm shoulder hand (DASH) scores in Group A and Group B are following a normal distribution. Therefore, the parametric tests were applied.

**Table 2 Comparison of Group A and Group B with respect to VAS scores at pre-intervention and post-intervention**

Time points	Groups	Mean	SD	SE	t-value	P-value
Pre-intervention	Group A	5.47	1.48	0.38	-0.2119	0.8337
	Group B	5.58	1.27	0.33		
Post intervention	Group A	2.45	1	0.26	0.6535	0.5188
	Group B	2.26	0.48	0.12		
Changes	Group A	3.03	1.42	0.37	-0.5875	0.5616
	Group B	3.32	1.31	0.34		

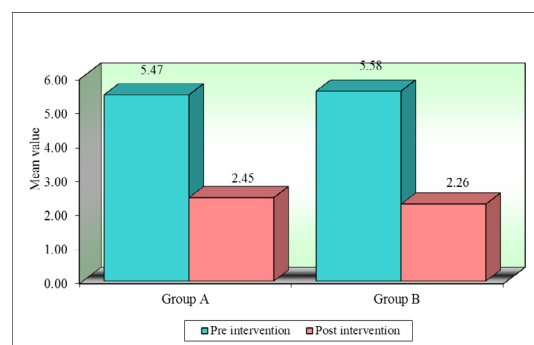


**Figure 2 Comparison of Group A and Group B with respect to VAS scores at pre-intervention and post-intervention time points**

**Table 3 Comparison of pre-intervention and post-intervention time points with respect to VAS scores in Group A and Group B**

Groups	Time points	Mean	SD	Mean Diff.	SD Diff.	% of change	Paired t	p-value
Group A	Pre intervention	5.47	1.48	3.03	1.42	55.3	8.2464	0.0001*
	Post intervention	2.45	1					
Group B	Pre intervention	5.58	1.27	3.32	1.31	59.5	9.8076	0.0001*
	Post intervention	2.26	0.48					

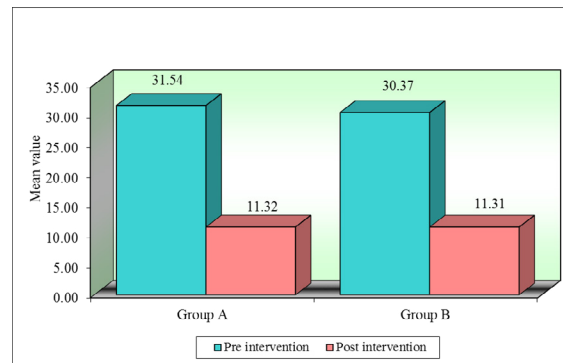
\*p<0.05



**Figure 3 Comparison of pre-intervention and post-intervention time points with respect to VAS scores in Group A and Group B**

**Table 4 Comparison of Group A and Group B with respect to disability of arm shoulder hand (DASH) scores at Pre-intervention and Post intervention**

Time points	Groups	Mean	SD	SE	t-value	P-value
Pre-intervention	Group A	31.54	10.47	2.7	0.3183	0.7526
	Group B	30.37	9.67	2.5		
Post intervention	Group A	11.32	5.51	1.42	0.0018	0.9986
	Group B	11.31	6.89	1.78		
Changes	Group A	20.23	6.86	1.77	0.5022	0.6194
	Group B	19.06	5.83	1.51		



**Figure 4 Comparison of Group A and Group B with respect to disability of arm shoulder hand (DASH) scores at pre-intervention and post-intervention time points**

**Table 5 Comparison of pre-intervention and post-intervention time points with respect to disability of arm shoulder hand (DASH) scores in Group A and Group B**

Groups	Time points	Mean	SD	Mean Diff.	SD Diff.	% of change	Paired t	p-value
Group A	pre-intervention	31.54	10.47	20.23	6.86	64.13	11.4233	0.0001*
	post-intervention	11.32	5.51					
Group B	pre-intervention	30.37	9.67	19.06	5.83	62.76	12.6613	0.0001*
	post-intervention	11.31	6.89					

\*p<0.05

**DISCUSSION**

The present study compared the effect of kinesiotape and M2T blade on recreational badminton shoulder pain subjects (Tables 1-5) (Figures 2-4).

The results of this study showed that M2T was more effective in reducing pain as compared to kinesiotape with regards to the VAS scores. Whereas there was no much difference in the effect of M2T and kinesiotape when compared the two regarding the DASH scores. M2T works on the principle of myofascial release.

As seen in myofascial release technique a stretch is applied to the tight fascia which is maintained for 90-120 seconds, this has been proved to lengthen the tight fascia similarly the M2T blade also caused a stretch on the tight fascia by its to and from movement on the tight fascia till the adhesions were broken leading to lengthening and release of the tight fascia [7,8].

In myofascial release technique, repetitive stretch on the tight fascia softens it, likewise in this study the repetitive use of M2T blade on tight softens the tight fascia [7,8].

The possible mechanism of reduction in pain using M2T blade will be stretching the tight fascia around shoulder joint by means of instrument assisted soft tissue mobilization (IASTM).

The present study is in consensus with previous studies with improvement in pain by restoring the length of the fascia and as the fascia is lengthened the pressure of over the pain sensitive areas (blood vessels and nerves) are relieved, the pressure relieved pain sensitive areas restored the alignment of joint and increases the mobility which reduced the pain around the joint.

There may be a couple of possibilities as to how kinesiotope improves the flexibility of the soft tissue. Whenever kinesiotope is applied to the skin there is an additional space below the area of application as the soft tissue and fascia is lifted, due to this the muscle tension is normalized by realigning the fascial tissue function. This results in increasing the flexibility of the soft tissue and improves the fascial tightness of the affected muscle. Similarly effects were seen in this study where the tight fascia around the shoulder joint was relieved and range was increased [9,10].

Modulation and reduction in the pain could probably be explained via the pain gate theory. There are not much evidences about it but however the tape stimulates the neuromuscular pathway and increases the afferent feedback [10].

The other hypothesis suggests that there is improvement in pain as there is less subcutaneous nociceptor pressure in the skin [9,10].

A study conducted by Gulcan Ozturk, et al. in which 37 patients with active upper trapezius myofascial trigger point were randomly divide into 2 groups to determine the short term and mid-term effects of kinesiotope on trapezius muscle in patients with myofascial pain syndrome. Kinesiotope for upper trapezius muscle was given to group 1 while group 2 received sham kinesiotope. The outcome of the study was visual analogue scale, which was collected immediately after application of kinesiotope and after month. The results of the study showed that the VAS scores of group 1 were lesser as compared to group 2 which concluded that kinesiotope application showed significant improvement in pain in individuals with myofascial pain syndrome. The present study shows similar effect of kinesiotope application on shoulder in Group A.

The present study states that the use of M2T blade on shoulder joint in recreational badminton shoulder pain subjects reduces pain and has slight improvement in the DASH scores. This can be supported by a study conducted by Michele, et al. which is a randomized control trial which included 14 over head athletes with decreased shoulder range of motion were treated with IASTM. Participants were divided into 2 groups and both the groups received treatment twice a week for four consecutive weeks. ROM was taken pre and post treatment, which showed that IASTM proves to help in increase the ROM and hence decreases disability at the shoulder joint.

Another study by Dr Varun Naik, et al. which was carried out on 7 recreational shoulder pain subjects in which the immediate effect of M2T was measured using the VAS and ROM the outcome measures were taken pre and post intervention which showed improvement in the ROM and reduction in pain. However, our study suggests that M2T reduces pain as compared to kinesiotope in recreational badminton shoulder pain subjects.

### CONCLUSION

The result of the present study showed improved response in terms of pain and improved quality of life. Hence the use of M2T blade and kinesiotope is equally effective in reducing pain and improving the ability in subjects with shoulder pain in recreational badminton players.

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