

Effects of Space and Lymphatic Correction Technique of Kinesiotaping among Patients with Shoulder Impingement Syndrome

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ABSTRACT

Objective: To determine the effects of space and lymphatic correction technique of kinesiotaping among patients with shoulder impingement syndrome.

Methodology: This study was a Quasi-experimental trial. The study was conducted in Tahir Hospital Lahore. The study was completed within the time duration from September 2019 to April 2020 after the approval from ethical committee. Forty Patients of age 25-50 years were included in study. The total sample size of 40 was divided into Group A (Conventional Exercises) and Group B (Conventional Exercises and Kinesiology Taping) through concealment by envelope method. Patients were evaluated with Disabilities of the Arm, Shoulder and Hand (DASH) and Numeric Pain Rating Scale (NPRS) for functional assessment and pain respectively. The patients of both groups were assessed at baseline, after the 4th, 8th and 12th treatment session. Data was analyzed on SPSS 22.

Results: The mean treatment differences of group A (Conventional) Pre-treatment NPRS was 9, and Post-treatment NPRS was 4.8. Pre-treatment DASH score was 75 and Post-treatment DASH score was 48.8 with p-value < 0.001. The mean treatment difference of group B (Experimental group) Pre-treatment NPRS was 10 and Post-treatment NPRS 4.2, Pre-treatment DASH score was 74.6 and Post-treatment DASH score was 28.9 with p-value < 0.001.

Conclusion: Space and lymphatic correction technique of kinesiotaping along with conventional exercises is more effective than conventional exercises alone in shoulder impingement syndrome.

Key words: Athletic Tape, shoulder impingement syndrome, shoulder pain, Physical Therapy Modalities.

INTRODUCTION

Subacromial pain is one of the most common problems of the musculoskeletal system. It includes rotator cuff tears, rotator cuff tendinitis (RCT), calcific tendinitis, and subacromial bursitis. The working staff who continuously position their arms in a horizontal position or higher, carpenters, and individuals involved in different sports, such as swimming and throwing, comprise the risk group.(1, 2) The kinesiology taping is a conservative care therapy to reduce musculoskeletal pain and is used to improve patient health. In recent times, the taping technique is used to treat patients having shoulder problems to provide support during movements.(3) The study showed that Kinesiology Tape (KT) can be used to protect the further injuries in players.(4) Different types of elastic and rigid tapes are used to reduce functional shoulder dysfunction and improve the strength and mobility of the shoulder resulting from Shoulder Impingement Syndrome (SIS). The kinesiology tape (KT) is used to increase physiological function and reduce dysfunction such as pain, inflammation, muscle activity, and circulation and support rehabilitation procedures.(5) Short and long-term treatment effects of taping are also studied in patients presented with trapezius muscle pain.(6) Application of kinesiology tape (KT) lowers the hemiplegic shoulder pain, increases the upper extremity function after the stroke, and improves circulation.(7) Studies have proved that the KT is good for preventing or treating musculoskeletal injuries.(8,

9) In sports, the use of kinesiology tape is essential. Kinesiology tape (KT) is an elastic, therapeutic tape specially designed to promote the healing of traumatized tissue, joint position, increasing pain-free range of motion, and maintaining muscular strength. Recent studies observed that KT's use improves blood circulation and improves the lymphatic drainage.(10) According to another study, the joint position sense (JPS) also improved by the use of kinesiology tapes.(11) Taping is a new technique used for the first time in 1970 to treat the several disorders of the musculoskeletal system. KT is very popular in sports injury that is applied to the patient's skin under tension.(12) Negative side effects were not observed by recent studies; the taping technique is found to be best alternative method to treat the shoulder impingement pain. (13)

The special use of tape in rehabilitation and prevention of shoulder abnormalities proved that the pain during activity has been reduced and also prevents the frictional forces during functional movement like sliding.(14) Condition was much improved through the taping.The kinesiology taping technique claimed four effects: pain reduction, blood circulation, increased functional capacity, and malalignments.(15) Kinesiotaping have a significant impact on improving the space & lymphatics correction in patients with shoulder impingement syndrome. Kinesiotaping improves the subacromial space and reduces the severity of shoulder impingement syndrome.

METHODOLOGY

A Quasi experimental study was conducted from September 2019 to April 2020 on Shoulder impingement syndrome patients. After approval from the ethical committee (RCR & AHS/REC/MS-OMPT/039), informed consent from the participants and assurance concerning the confidentiality of their data, a total of 40 patients were included in the study at Tahir Hospital, Lahore. Both females and males who fulfilled the inclusion criteria were included in the study. The study sample size was calculated through Epitool Software. The sample was selected through non-probability consecutive sampling technique. Patients aged 25 -50 years whose shoulder pain aggravated during active flexion and abduction before 150 degrees and had a positive empty can and Hawkins-Kennedy test were included in the study.

Group A patients were treated with the conventional exercise program. Group of different conventional exercises were used to treat the pain, including isometric exercises, range of motion exercises, stretching (posterior shoulder and pectoralis minor), strengthening (serratus anterior, trapezius, and external rotation) and relaxation exercises of the trapezius twice a day.(2)

Group B patients were provided with space and lymphatic correction techniques. By lifting the skin, the increased space was believed to reduce pressure. During the lymphatic correction technique, KT minimized the pressure below the taping, which served the canals to pass the exudates to the nearest lymph nodes. During the treatment sessions taping was applied to these three muscles (supraspinatus, deltoid, and teres minor). Firstly, applied to the supraspinatus muscle that provided stability to the scapular region, strips were applied 3 cm below the greater tuberosity of the humerus without any tension. Then, the therapist asked the patient to adduct the shoulder with neck side flexion to the opposite side. The remaining part of the strip was applied within the spinous process of the scapula with minimum tension, which is most probably 15–25% of the full stretch application. After the supraspinatus muscle the tapping was applied to the deltoid muscle. The Y-shaped strip's base applied 3 cm below the greater tuberosity of deltoid of humerus without tension. Both end of strips were applied with light (15–25%) tension. The tails of Y shaped strip were placed within the outer borders of the deltoid muscle, respectively, without tension. Then, tapping was applied to the teres minor muscle in the last. Another type of I-shaped strips were used for this purpose to apply on greater tuberosity of humerus Then; the patient was asked to abduct the shoulder in linear flexion with rotation. And then the remaining part of the strip was placed within the axillary border of the scapula with light (15–25%) tension.(1) Tapes were replaced 3 times per week. The assessor assessed the patients at baseline, 4th, 8th and 12th sessions.

RESULTS

In Table-I Mean age of patients in group A was 35.85±9.32 years with a maximum age of 48 and minimum age of 25 years. The mean age of patients in Group B was 31.15±7.62 years with a maximum age of 50 and minimum age of 26 years. Out of 16 patients of group A, 40% (n=8) were males and 60% (n=12) were females whereas in

group B 35% (n=8) were males and 65% (n=12) were females. .The mean BMI of patients was 24.81±3.46, with a maximum BMI of 32.37 and minimum BMI of 19.11 in group A however mean BMI of patients was 25.4±5.2, with a maximum BMI of 41.42 and minimum BMI of 19.61 in group B.

Table-II shows that in group A, Mean Difference value on NPRS Pre Treatment – Post Treatment 1 after 4 sessions was 0.90 with p value < 0.001, and Post Treatment 1 after 4 sessions – Post Treatment 2 after 8 sessions was 1.55 with p value < 0.001, and Post Treatment 2 after 8 sessions – Post Treatment 3 after 12 sessions 1.75 with p value < 0.001, and Post Treatment 3 after 12 sessions – Pre Treatment was 5.20 with p value < 0.001 after 12 sessions. In group B, Mean Difference value on NPRS Pre Treatment – Post Treatment 1 after 4 sessions was 2.70 with p value < 0.001 and Post Treatment 1 after 4 sessions – Post Treatment 2 after 8 sessions was 1.45 with p value < 0.001, and Post Treatment 2 after 8 sessions – Post Treatment 3 after 12 sessions was 1.65 with p value < 0.001, and Post Treatment 3 after 12 sessions – Pre Treatment was 5.80 with p value < 0.001.

Table-I: Demographics of Patients across Both Group

| Treatment groups of patients | | Minimum | Maximum | Mean ± SD. |
|------------------------------|--------|---------|---------|--------------|
| Conventional exercise group | Age | 25.00 | 48.00 | 35.85 ± 9.32 |
| | Weight | 63.00 | 86.00 | 70.80 ± 6.77 |
| | Height | 1.61 | 1.83 | 1.69 ± 0.075 |
| | BMI | 19.11 | 32.37 | 24.81 ± 3.46 |
| Kinesiotaping group | Age | 26.00 | 50.00 | 31.15 ± 7.62 |
| | Weight | 56.00 | 80.00 | 71.35 ± 6.58 |
| | Height | 1.30 | 1.81 | 1.68 ± .11 |
| | BMI | 19.61 | 41.42 | 25.47 ± 5.22 |

Table-II: Pair wise across Groups comparison of NPRS (Mixed Model ANOVA)

| | Estimated Marginal Mean | |
|--|-------------------------|--------------|
| Pre Treatment NPRS | 9 | |
| Post Treatment NPRS after 4 sessions | 7.6 | |
| Post Treatment NPRS after 8 sessions | 6.2 | |
| Post Treatment NPRS after 12 sessions | 4.5 | |
| | Mean Diff. | Significance |
| Pre Treatment – Post Treatment 1 after 4 sessions | 1.3 | <0.001 |
| Post Treatment 1 after 4 sessions – Post Treatment 2 after 8 sessions | 1.4 | <0.001 |
| Post Treatment 2 after 8 sessions – Post Treatment 3 after 12 sessions | 1.67 | <0.001 |
| Post Treatment 3 after 12 sessions – Pre Treatment | 4.5 | <0.001 |

Table-III showed that Mean Difference across groups at pre-treatment DASH was 9, which were reduced to 7.6 after 4 sessions, further reduced to 6.2 after 8 sessions, were further reduced to 4.5 after 12 sessions. Mean difference (I-J) in Pairwise comparison of DASH across the Groups A Pre Treatment – Post Treatment 1 after 4 sessions was 17.8 with p-value <0.001. Mean difference (I-J) at Post Treatment 1 after 4 sessions – Post Treatment 2 after 8 sessions was with p-value <0.001. Mean

difference (I-J) at Post Treatment 2 after 8 sessions – Post Treatment 3 after 12 sessions was 9.3 with p-value <0.001. Mean difference (I-J) at Post Treatment 3 after 12 sessions – Pre Treatment sessions was 36.2 with p-value <0.001.

Table-III: Pair Wise across the Groups Comparison of DASH. (Mixed Model ANOVA)

| | Estimated Marginal Mean | |
|--|-------------------------|--------------|
| Pre Treatment DASH | 9 | |
| Post Treatment DASH after 4 sessions | 7.6 | |
| Post Treatment DASH after 8 sessions | 6.2 | |
| Post Treatment DASH after 12 sessions | 4.5 | |
| | Mean Diff. | Significance |
| Pre Treatment – Post Treatment 1 after 4 sessions | 17.8 | <0.001 |
| Post Treatment 1 after 4 sessions – Post Treatment 2 after 8 sessions | 9.1 | <0.001 |
| Post Treatment 2 after 8 sessions – Post Treatment 3 after 12 sessions | 9.3 | <0.001 |
| Post Treatment 3 after 12 sessions – Pre Treatment | 36.2 | <0.001 |

DISCUSSION

In rehabilitation programs, the kinesiotope is relatively latest technique used while orthopedic and sports settings commonly use it. For musculoskeletal impairments, it is increasingly becoming a best treatment option. The purpose of this study was to compare the effects of kinesiotope with respect to conventional exercises in shoulder impingement syndrome. Different taping techniques have been used clinically for patients with shoulder problems. Kinesiology Taping is a best treatment option to improve functional recovery during the rehabilitation program.

Kaya conducted research in 2011 on Kinesio taping compared to physical therapy modalities for treating shoulder impingement syndrome to evaluate the best treatment method to cure the shoulder impingement pain. In current study, 20 patients were treated with kinesiotope taping and 20 patients were treated conventional treatment. The DASH scale checked response to treatment. The scores from the DASH scales were significantly lower at the end of second week of treatment as compared to the physical therapy group. The taping technique was found to be more useful than the local treatment modalities in starting. But after treatment both groups were effectively responded. According to Kaya, both methods of treating shoulder impingement pain were effective and for immediate recovery, Kinesio taping may be used. This research aimed to see the effects of space and lymphatic correction techniques of kinesiotope taping in patients with shoulder impingement syndrome. Patients were equally divided into two groups, one group (experimental group) and the other group (conventional group). The experimental group were treated with kinesiology taping techniques and the conventional group were treated with exercises. The results were observed with DASH and NPRS scales after the treatment sessions given to each group. Pre-treatment and post-treatment readings showed that the kinesiology taping group has more recovery than the exercise group. At the end of the 4th session of

treatment, the experimental group showed the immediate response of taping compared to the exercise group, and after the 8th sessions, the results have the same ratio but post-treatment results showed that the kinesio taping was found to be more effective than the exercise group.(2)

In 2016, Tantawy studied on the effect of kinesio taping with exercise compared with exercise alone on pain, range of motion and disability of shoulder. The study found the greater decrease in the pain in the experimental group by the second session of treatment than the control group (receiving physiotherapy exercises only). In current study, only kinesiology taping was applied to the patients in experimental group and the patients in control group received conventional exercises only. The experimental group showed more promising results than the control group as endorsed by this study. (16)

In 2017, Silvia Gianola et al studied on effects of kinesiology taping on rotator cuff diseases. The patients with shoulder pain as a result of any supraspinatus or rotator cuff tear were treated by kinesiology taping to overcome the pain. During the initial treatment session, the patients were not satisfied but after sixth sessions of treatment the response was positive and patient's pain was reduced at this stage. In recent research the patient in conventional and experimental groups both progressively responded to the treatment but the patients in experimental group showed better results.(17)

The results suggested that the use of kinesiology taping gives significant improvement. The pre-post treatment session results explained a significant change in the patient's level of disability of arm, shoulder and hand.

CONCLUSION

Space and lymphatic correction technique of kinesiotope along with conventional exercises is more effective than conventional exercises alone in shoulder impingement syndrome. Conventional treatment was also found to be effective however kinesiotope was found to be more effective in term of immediate symptom relief.

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