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COMPARATIVE EFFECTS OF DYNAMIC TAPING AND KINESIOLOGY TAPING ON PAIN AND SHOULDER FUNCTION IN PATIENTS WITH SUPRASPINATUS TENDINOPATHY

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ABSTRACT

Introduction: Supraspinatus tendinopathy is one of the most common causes of shoulder pain, leading to reduced functional ability and limitation in daily activities. Taping techniques were widely used in physiotherapy to manage pain and improve function. Among them, Kinesio taping and Dynamic taping are commonly applied, but their comparative effectiveness remains an area of interest. **Aim:** To compare the effectiveness of Dynamic taping and Kinesio taping on pain and functional ability in individxals with Supraspinatus tendinopathy. **Methods:** A comparative experimental study was conducted on subjects diagnosed with Supraspinatus tendinopathy. Participants were divided into two groups: Group A received Kinesio taping, and Group B received Dynamic taping. Both groups followed a structured exercise program for a duration of 2 weeks. Pain intensity was measured using the Numeric Pain Rating Scale (NPRS), and functional ability was assessed using the Disabilities of the Arm, Shoulder and Hand (DASH) questionnaire before and after the intervention. **Result**: Both groups showed improvement in pain and functional ability following the intervention. However, Group B (Dynamic taping) demonstrated greater reduction in pain and better improvement in functional outcomes compared to Group A (Kinesio taping). **Conclusion**: Both Kinesio taping and Dynamic taping are effective in managing Supraspinatus tendinopathy. However, Dynamic taping was found to be more effective in reducing pain and improving functional ability.

KEYWORDS: Supraspinatus tendinopathy, Kinesio taping, Dynamic taping, NPRS, DASH, shoulder pain.

INTRODUCTION

Shoulder pain is one of the most common musculoskeletal disorders, second only to low back pain. Among the various causes of shoulder pain, shoulder impingement syndrome is considered one of the most frequently occurring conditions. More than half of the general population experience shoulder pain at least once a year, and its lifetime prevalence is estimated to be around 10% approximately 2% of the adult population seeks medical attention annually for specific or non-specific shoulder pain. Furthermore, studies suggest that nearly 25–50% of individuals with shoulder symptoms consult a physician due to the disabling nature of the condition.

A study comparing the effectiveness of Kinesio taping and conventional physical therapy modalities in the management of shoulder impingement was conducted by Shakeri et al. In the Kinesio taping group, tonus-inhibiting taping techniques were applied to the supraspinatus, deltoid, and teres minor muscles, along with fascia and lymphatic taping methods. In contrast, the physical therapy group received treatment including ultrasound therapy, transcutaneous electrical nerve stimulation (TENS), therapeutic exercises, and hot pack application. The results showed that the Kinesio taping

group experienced significantly greater pain reduction during rest, movement, and sleep in the first week of treatment. However, by the second week, there was no significant difference between the two groups.

A recent systematic review following similar Kinesio taping application principles reported that taping can be effective in reducing pain intensity associated with shoulder impingement. In addition, it may help improve scapular rhythm during shoulder movement in the sagittal plane among individuals diagnosed with shoulder impingement syndrome. Despite these findings, there are currently no clear guidelines or consensus regarding the most appropriate treatment protocol. This is particularly important because the supraspinatus tendon frequently becomes compressed beneath the acromion during shoulder movements, contributing to the development of impingement symptoms.

Primary care physicians, sports medicine specialists, and orthopedic surgeons frequently manage patients presenting with shoulder pain and injuries. Literature reports indicate that nearly half of shoulder-related complaints can be managed during a single visit to a primary care provider. Rotator cuff disorders are one of the most common causes of shoulder complaints. The rotator cuff is composed of four muscles and their corresponding tendons: supraspinatus, infraspinatus, teres minor, and subscapularis. Dysfunction of the rotator cuff is a significant cause of pain and functional limitation across different patient populations.

Traditionally, rotator cuff injuries were believed to progress along a continuum that eventually leads to rotator cuff failure, ranging from partial-thickness tears to full-thickness tears. According to the classical theory proposed by Neer, the rotator cuff tendons repeatedly come into contact with a pathological undersurface of the acromion during certain shoulder movements. This repetitive contact was thought to initiate the impingement process, which subsequently leads to progressive rotator cuff damage. Neer described this degenerative process occurring in three stages. The first stage involves oedema and hemorrhage within the tendon. The second stage progresses to fibrosis and tendinitis. In the final stage, the tendon undergoes rupture. For many years, Neer's impingement theory served as the primary explanation for rotator cuff pathology.

Recent studies suggest that dynamic taping may help reduce shoulder muscle fatigue, support joint movement, and improve functional performance by absorbing load and assisting movement patterns. In patients with rotator cuff tendinopathy, dynamic taping has been show to increase the acromiohumeral distance, which may help reduce subacromial compression and alleviate pain during shoulder movement. Despite the growing use of dynamic taping in sports physiotherapy and rehabilitation, there is still limited clinical evidence regarding its effectiveness specifically in patients with Supraspinatus tendinopathy. Therefore, it is important to investigate whether dynamic taping can effectively reduce pain, improve shoulder range of motion, and enhance functional outcomes in individuals with this condition.

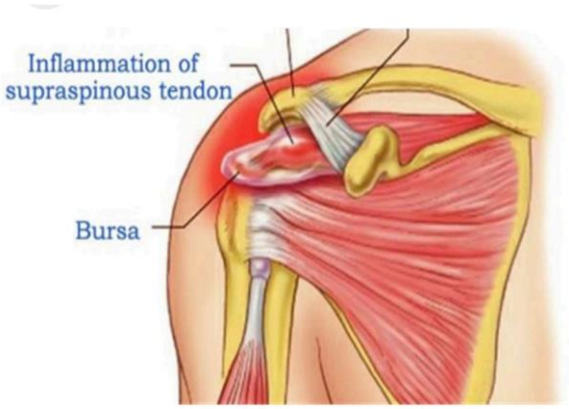


Fig. 1: Supraspinatus Tendinopathy.

METHODOLOGY

STUDY DESIGN: Experimental study **STUDY TYPE:** Comparative study
STUDY DURATION: 2 weeks
STUDY SETTING: VISTAS, SCHOOL OF PHYSIOTHERAPHY
SAMPLE SIZE: 30
STUDY SAMPLING: Convenient sampling

SAMPLE SELECTION

INCLUSION CRITERIA

- Patients above 18 years of age
- Patients diagnosed with Supraspinatus tendinopathy.
- Shoulder pain during abduction or overhead activities
- Positive Neer's or Hawkins-Kennedy impingement test
- Both male and female participants

EXCLUSION CRITERIA

- Shoulder fractures or dislocations
- Complete rotator cuff tear
- Recent shoulder surgery
- Skin allergy to adhesive tape
- Neurological disorders affecting the shoulder

PROCEDURE

In this study, 30 samples were selected based on the inclusion and exclusion criteria. They were referred from a new life physiotherapy clinic; complete assessment was done. Subjects who have been found suitable to participate were explained the nature of the study and were requested to sign the consent form. They were divided into two groups by a convenient sampling method (Group A= 15, Group B= 15). The subject was evaluated with Disabilities of Arm, Shoulder and Hand (DASH) and NPRS at the beginning and end of the test.

GROUP A: KINESIOTAPING & STRENGTHENING EXERCISE

Before application: Skin was cleaned properly to remove oil and sweat, ensuring better adhesion of the tape**.**

Application

The patient is positioned in sitting with the shoulder slightly adducted. The base of the Y-strip is applied over the greater tubercle without stretch.

The two tails are then applied along the supraspinatus muscle above and below the scapular spine with 15–25% stretch.

The ends are applied without stretch and the tape is gently rubbed to activate adhesion.

Position

The patient was asked to sit or stand with the shoulder in slight abduction and external rotation to place the supraspinatus muscle in a stretched position.

Dosage: twice a week for 2 weeks



Fig. 5: Application of Kinesio Tape.



Fig. 6: Application of K tape.

GROUP B: DYNAMIC TAPING & STRENGTHENING EXERCISE

BEFORE APPLICATION: skin was cleaned to ensure that the surface was clean to improve tape adherence.

Application

The patient is positioned in standing with the shoulder in slight abduction and external rotation. The anchor of the dynamic tape is applied over the anterior shoulder without stretch. The tape is then applied over the deltoid and supraspinatus region with moderate stretch, following the line of muscle support. The tail is extended down along the upper arm to assist shoulder movement. The ends are applied without stretch and the tape is gently pressed to secure adhesion. Purpose: to provide load absorption, reduce strain on supraspinatus, and improve shoulder function.

POSITION

The patient was positioned in sitting or standing with the shoulder slightly abducted and externally rotated.

Dosage: twice a week for 2week

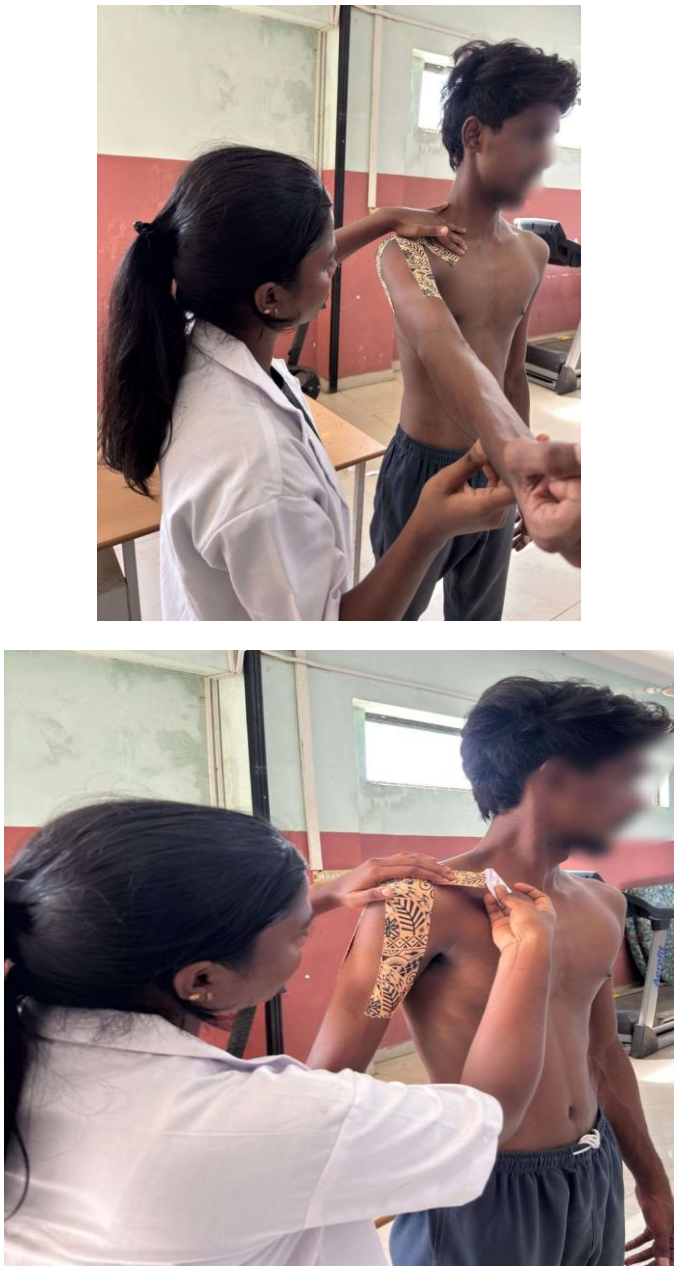


Fig. 8: Dynamic Tape Application.



Fig. 9: Dynamic Tape Application.

ECCENTRIC SHOULDER ABDUCTION

Patient Position: Patient is in sitting or standing position with the arm by the side.

Procedure: The patient is asked to hold a light weight (dumbbell). The therapist or opposite hand helps to lift the arm into abduction (up to 60–90 degrees). Then the patient is instructed to slowly lower the arm down without support, performing eccentric contraction of supraspinatus. This helps in strengthening the tendon and reducing pain.

Repetition

15 repetitions × 2 sets



Fig.10: Eccentric Shoulder Abduction Exercise.

STRENGTHENING EXERCISE: ISOMETRIC SHOULDER ABDUCTION

Patient Position: Patients standing with arm by the side near a wall.

Exercise 1: Isometric Shoulder Abduction Patient Position

Patient in standing with arm by the side near a wall**.**

Procedure: Patient presses the arm gently against the wall shoulder. Hold for 5–10 seconds and relax.
This helps in pain reduction and initial muscle activation.

Repetition: 10 repetitions × 2 sets



Fig. 11: Isometric Shoulder Abduction.

Exercise 4: TheraBand Shoulder Abduction

Patient Position: Patient stands holding a resistance band under the foot.

Procedure: Patient lifts the arm sideways against resistance up to shoulder level, then slowly returns. This improves strength and control.

Repetition: 10–15 repetitions × 2 sets

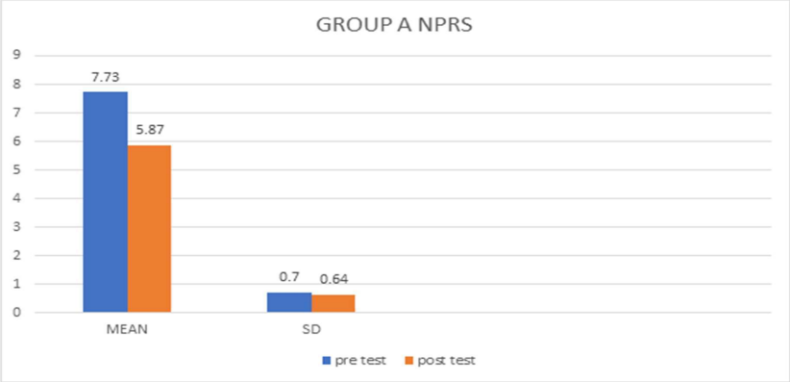


Fig. 12: Shoulder Abduction exercise using Theraband.

DATA ANALYSIS

TABLE 1: REPRESENTS THE PRE AND POST MEAN VALUES OF GROUP A (NPRS)

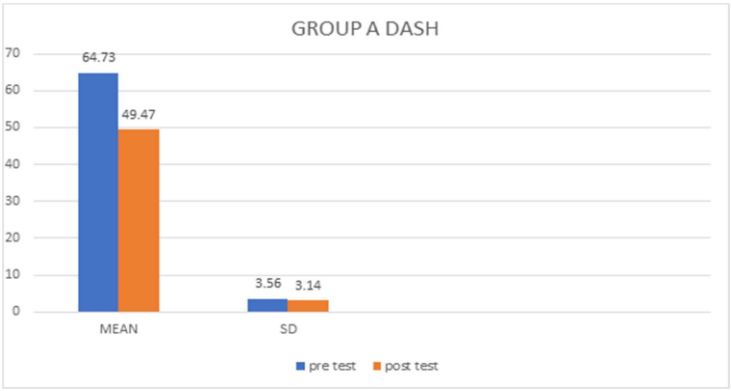
S. NO.	MEAN		STANDARD DEVIATION		t-VALUE	p-VALUE
	PRETEST	POST TEST	PRETEST	POST TEST		
GROUP A	7.73	5.87	0.70	0.64	20.5464	**0.0001**



GRAPH 1: SHOWS THE DATA REPRESENTATION OF PRE AND POST TEST MEAN VALUES OF GROUP A NPRS.

TABLE 2: REPRESENTS THE PRE AND POST MEAN VALUES OF GROUP A (DASH)

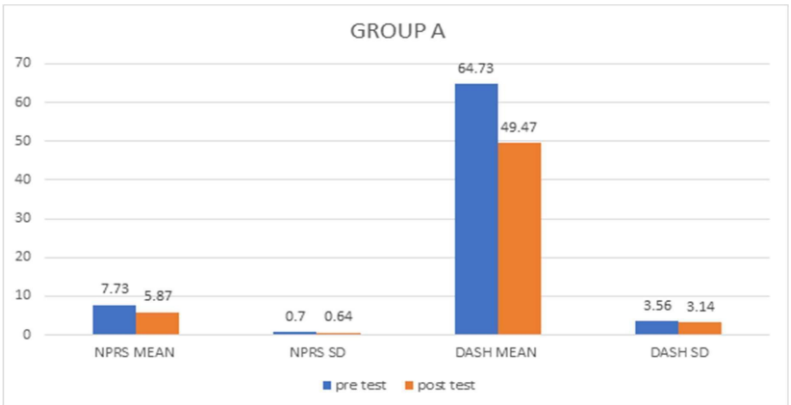
S. NO.	MEAN		STANDARD DEVIATION		t-VALUE	p-VALUE
	PRETEST	POST TEST	PRETEST	POST TEST		
GROUP A	64.73	49.47	3.56	3.14	53.7629	**0.0001**



GRAPH 2: SHOWS THE DATA REPRESENTATION OF PRE AND POST TEST MEAN VALUES OF GROUP B (DASH)

TABLE 3: COMPARISION OF PRE- TEST AND POST-TEST OF NPRS AND DASH - SCORES IN GROUP –A.

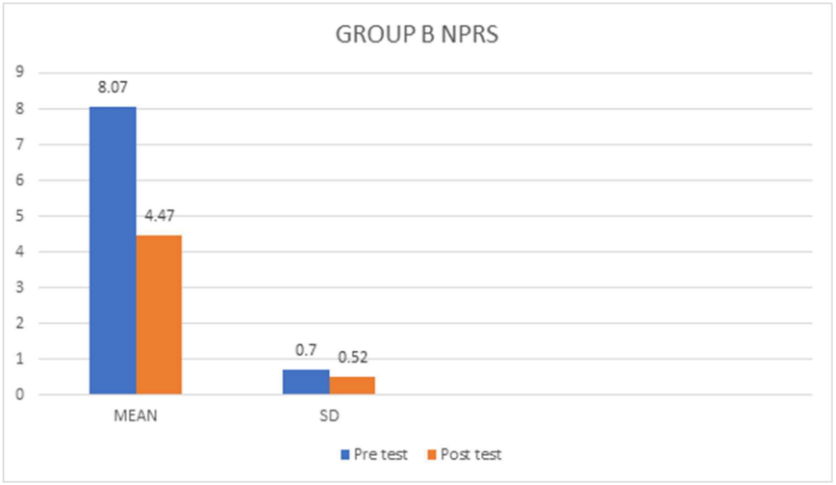
S. NO.	MEAN		STANDARD DEVIATION		t-Value	P-value
	PRE TEST	POST TEST	PRE TEST	POST TEST		
GROUP A	7.73	5.87	0.70	0.64	20.5464	**0.0001**
GROUP B	64.73	49.47	3.56	3.14	53.7629	**0.0001**



GRAPH 3: COMPARISION OF PRE- TEST AND POST-TEST OF NPRS AND DASH -SCORES IN GROUP-A.

TABLE4: SHOWS THE DATA REPRESENTATION OF PRE AND POST TEST MEAN VALUES OF GROUP B NPRS.

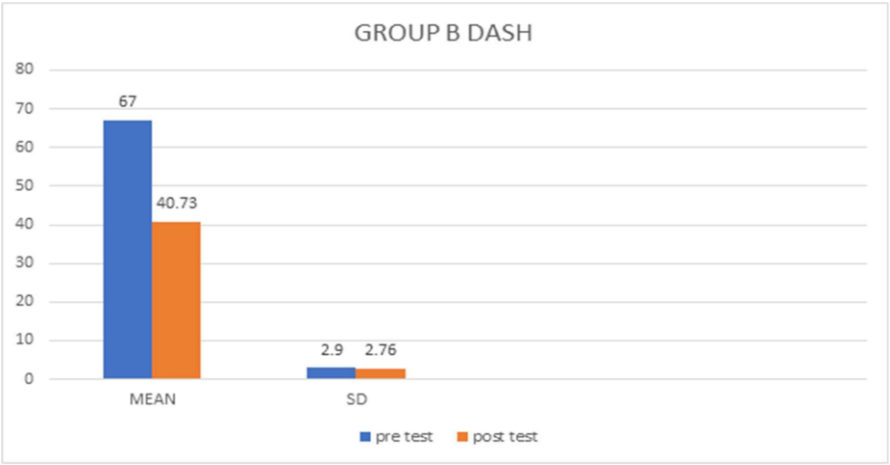
S. NO.	MEAN		STANDARD DEVIATION		t-VALUE	p-VALUE
	PRETEST	POST TEST	PRETEST	POST TEST		
GROUP B	8.07	4.47	0.70	0.56	27.4955	**0.0001**



GRAPH 4: SHOWS THE DATA REPRESENTATION OF PRE AND POST TEST MEAN VALUES OF GROUP B NPRS.

TABLE 5: REPRESENTS THE PRE AND POST MEAN VALUES OF GROUP A (DASH)

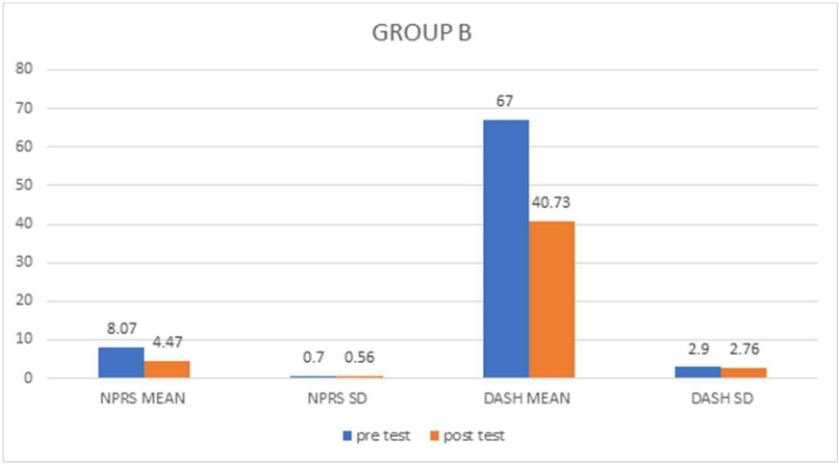
S. NO.	MEAN		STANDARD DEVIATION		t-VALUE	p-VALUE
	PRETEST	POST TEST	PRETEST	POST TEST		
GROUP B	67.00	40.73	2.90	2.76	68.4386	**0.0001**



GRAPH 5: SHOWS THE DATA REPRESENTATION OF PRE AND POST TEST MEAN VALUES OF GROUP B (DASH).

TABLE6: COMPARISION OF PRE- TEST AND POST-TEST OF NPRS AND DASH SCORES IN GROUP B

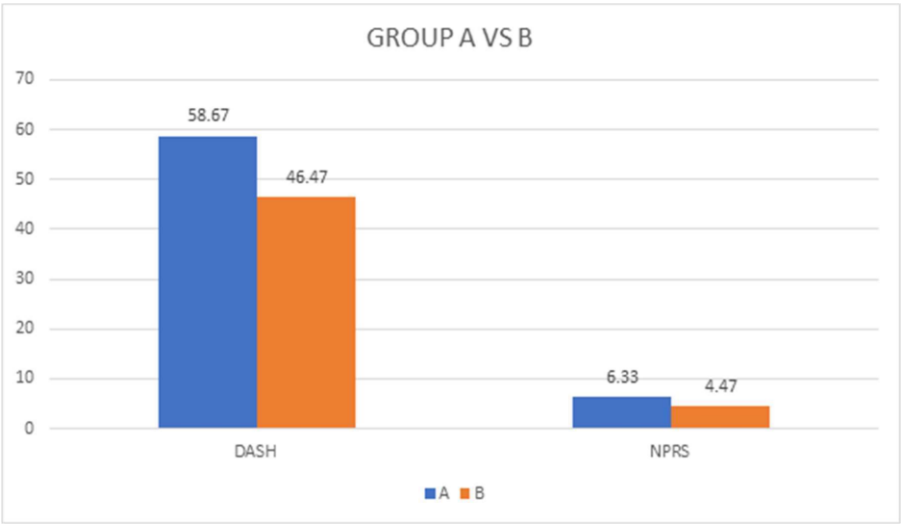
S. NO.	MEAN		STANDARD DEVIATION		t-Value	P-value
	PRE TEST	POST TEST	PRE TEST	POST TEST		
GROUP A	8.07	4.47	0.70	0.56	27.4955	**0.0001**
GROUP B	67.00	40.73	2.90	2.76	68.4386	**0.0001**



GRAPH 6: COMPARISION OF PRE- TEST AND POST-TEST OF NPRS AND DASH SCORES IN GROUP B

TABLE7: COMPRASION OF POST TEST OF NPRS AND DASH SCORES IN GROUP A AND GROUP B

Parameter	GROUP-A (Improvement Mean ± SD)	GROUP-B (Improvement Mean ± SD)	t-value	Significance
DASH (SCORE)	58.67± 2.58	46.47 ± 2.07	14.2899	0.854
NPRS (SCORE)	6.33 ± 0.49	4.47 ± 0.52	10.1758	0.183



GRAPH 7: COMPRASION OF POST TEST OF NPRS AND DASH SCORES IN GROUP A AND GROUP B

RESULT

The present study evaluated the effectiveness of Kinesio taping and dynamic taping on pain and functional ability in patients with Supraspinatus tendinopathy. Pain was assessed using the Numerical Pain Rating Scale (NPRS), and functional ability was measured using the DASH score.

Both Group A (Kinesio taping with strengthening exercises) and Group B (Dynamic taping with strengthening exercises) showed statistically significant improvement in pain reduction and functional ability following the intervention period ($p < 0.001$).

However, when comparing post-test values between the two groups, Group B demonstrated greater improvement than Group A. The mean reduction in NPRS scores was higher in the dynamic taping group, indicating superior pain relief. Similarly, the improvement in DASH scores was more pronounced in Group B, reflecting better enhancement of functional ability.

These findings indicate that although both taping techniques are effective, dynamic taping produced significantly better outcomes in reducing pain and improving shoulder function compared to Kinesio taping.

DISCUSSION

The present study aimed to compare the effectiveness of Kinesio taping and Dynamic taping on pain and functional disability in individuals with Supraspinatus tendinopathy. Outcome measures such as NPRS and

DASH scores were used to evaluate improvements pre- and post- intervention.

Both Group A (Kinesio taping) and Group B (Dynamic taping) showed significant improvement in pain reduction and functional ability following the intervention period. However, the results demonstrated that Dynamic taping was more effective than Kinesio taping in reducing pain and improving upper limb function.

The findings of this study are consistent with Anwar J et al. (2021), who reported that Kinesio taping significantly reduces pain and improves functional ability in patients with Supraspinatus tendinopathy. The mechanism behind this may be attributed to improved proprioception, enhanced circulation, and reduction of mechanical stress on the affected tendon.

Similarly, Durgut E et al. (2024) found that Kinesio taping, when combined with adjunct therapies like cold therapy, produced notable improvements in pain and upper extremity function. This supports the idea that Kinesio taping is beneficial, but its effectiveness may be enhanced when used alongside other interventions.

On the other hand, the greater improvement observed in the Dynamic taping group aligns with the study by Koç M et al. (2024), which showed that Dynamic taping significantly improved acromiohumeral distance in individuals with rotator cuff tendinopathy. This suggests that Dynamic taping may provide better biomechanical support, reduce load on the supraspinatus tendon, and facilitate improved shoulder mechanics compared to Kinesio taping.

Dynamic taping differs from Kinesio taping in its elastic properties and ability to absorb load, which may explain its superior effect in this study. It helps in deceleration of movement and provides resistance, thereby reducing strain on the injured tendon during functional activities.

According to Tapscott DC and Varacallo M (2023), Supraspinatus tendinopathy is primarily caused by repetitive overhead activities and impingement, leading to pain and functional limitation. Interventions that reduce mechanical stress and improve shoulder biomechanics are therefore essential in management. In this context, Dynamic taping appears to offer a more effective mechanical correction compared to Kinesio taping.Overall, the results of this study suggest that while both taping techniques are effective, Dynamic taping provides superior outcomes in terms of pain relief and functional improvement in patients with Supraspinatus tendinopathy.

CONCLUSION

This study was conducted to compare the effectiveness of Kinesio taping and dynamic taping in patients with Supraspinatus tendinopathy. Based on the analysis of outcome measures such as the Numeric Pain Rating Scale (NPRS) and the Disabilities of Arm, Shoulder and Hand (DASH) score, both treatment approaches showed improvement in reducing pain and enhancing functional ability.

However, the results indicated that dynamic taping was more effective than Kinesio taping in reducing pain intensity and improving shoulder function over the 2-week intervention period. Subjects in the dynamic taping group demonstrated greater improvement in post-test scores compared to the Kinesio taping group.

Thus, it can be concluded that while both taping techniques are beneficial as adjuncts to physiotherapy management, dynamic taping may provide superior outcomes in patients with Supraspinatus tendinopathy.

Further studies with larger sample sizes and longer follow-up periods are recommended to validate these findings.

According to the statistical analysis, both groups (group A & group B) show improvement. As compared to both group in this study, group B is more effective than group A.

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