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Effectiveness Of Manual Direction Test (MDT) With Kinesio Taping Fascia Correction Technique For The Immediate Improvement Of Shoulder Pain Free Range Of Motion In Patients With Rotator Cuff Disease

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ABSTRACT

Rotator cuff disease, caused by injury or overuse, leads to pain and limited mobility. Common conditions include tears and tendinitis. Kinesio Taping and Manual Direction Test (MDT) can aid healing by improving tissue mobility and reducing pain.

The objective of this study was to evaluate the immediate effect of Manual Direction Test with Kinesio-taping fascia correction technique in improving pain-free shoulder range of motion (ROM) in rotator cuff disease patients.

An interventional pretest-posttest design was conducted with 40 patients diagnosed with rotator cuff disease and painful shoulder ROM, selected via non-probability convenience sampling from Kerala. Shoulder assessments were performed pre- and post-taping using the Visual Analogue Scale (VAS) for pain and a goniometer for ROM.

The result showed that intervention significantly improved the range of motion in both flexion (from M = 103.75 to M = 121.05) and abduction (from M = 97.57 to M = 115.7), with ($t_{(39)}$ = -6.340, $p < 0.01$). VAS scores also significantly decreased from (M = 7.31 to M = 6.00) with ($t_{(39)}$ = 10.952, $p < 0.01$). These findings demonstrate the intervention's effectiveness by noticeable progress in mobility, with increased flexibility and movement post-intervention. Additionally, there was a decrease in pain levels.

The study concluded that the Kinesio-taping fascia correction technique with MDT, significantly improves Range of Motion and reduces shoulder pain in rotator cuff disease patients.

Keywords: *Rotator Cuff Disease, Manual Direction Test, Kinesio Taping, Fascia Correction, Shoulder Pain, Range of Motion.*

1. INTRODUCTION

Rotator cuff (RC) disease, a broad term for any pathological condition of the RC muscles (infraspinatus, supraspinatus, teres minor, subscapularis) surrounding the shoulder joint, is a widespread cause of shoulder problems globally. This syndrome includes issues like subacromial impingement, bursitis, tendonitis, and partial or full RC tears, with prevalence increasing with age and links to metabolic conditions like diabetes, inflammatory arthritis, and thyroid disease [1]. RC disease is a significant source of shoulder pain and disability, accounting for 70% of adult shoulder pain and dysfunction, ranking as the third most common musculoskeletal disorder [2, 3]. It is often indicated by a dull shoulder ache that worsens at night and can result from acute injury or overuse. Common symptoms include impinging discomfort, reduced active shoulder ROM, pain with overhead movements, and referred pain in the deltoid area. Other common RC issues, such as tendonitis and impingement (a primary cause of adult shoulder pain), typically do not require surgery [4]. The causes of RC injuries are multifactorial, involving intrinsic and extrinsic factors [5]. Notably, RC disease is more prevalent in women, potentially due to hormonal and metabolic differences [6].

Patients with RC disease often experience shoulder pain and limited range of motion, impacting daily activities [7]. Given its progressive nature, timely and appropriate treatment is crucial. Current treatments range from surgical to non-surgical, with non-surgical approaches recommended initially. These focus on pain reduction and restoring range of motion, including manual therapy, shock wave therapy, and taping [8]. Taping has a long-established history in the prevention and treatment of sports-related injuries, functioning to provide both protection and support to joints, muscles, or a combination of both during physical movement [9].

Kinesio Taping (KT) has emerged as one of the conservative treatment modalities proposed for addressing rotator cuff diseases. This specific type of tape is characterized by its elasticity, adhesive properties, and latex-free composition, being manufactured from cotton and devoid of any active pharmacological agents [10]. Kinesiological taping is a rehabilitative and protective technique using stretchable tapes to reduce pain, enhance performance, prevent injuries, support joints, and aid in fascial and ligamentous correction. It promotes healing while maintaining a full range of motion and providing joint support. Based on neurophysiological mechanisms, kinesiology taping improves circulation, supports muscles, fosters healing, and prevents further injury. Originally designed to accelerate recovery in athletes, it mimics muscle elasticity to encourage faster healing without restricting movement [11]. Tape direction and technique depend on tissue assessment, guided by the Kinesio Taping Method's Manual Direction Test (MDT). MDT for tissue includes glide, decompression, and compression, while MDT for muscles focuses on glide [12].

The Kinesio Taping fascia correction technique, a specific application within the K-Taping methodology, is designed to enhance fascial mobility, reduce tissue tension, and facilitate the body's natural healing processes. This technique exerts influence on both superficial and deep fascial layers, contributing to recovery across a spectrum of musculoskeletal conditions. The therapeutic application of Kinesio Tape, utilizing the fascial correction technique as described by Kenzo Kase, aims to generate and/or direct fascial movement, guiding it toward a desired direction or alignment [13]. Consequently, the technique seeks to alleviate fascial movement restrictions by inducing skin displacement relative to target muscles, achieved through the mechanical tension generated by the elastic Kinesio Tape [14]. This approach aligns with the principles of manual therapy, acknowledging the crucial role of fascia in musculoskeletal function and pain modulation. The KT Method uses the Manual Direction Test (MDT) for tissue and muscle to enhance joint ROM and muscle contraction, leading to increased strength and flexibility.

Studies indicate that Kinesio Taping (KT) application leads to notable pain reduction, shortened recovery times, enhanced functionality, and accelerated rehabilitation in individuals with musculoskeletal disorders [15]. While KT has demonstrated significant improvements in pain-free range of motion, conclusive evidence regarding its efficacy, or that of Neuro-Elastic Taping (NET), either alone or in conjunction with other therapies, remains insufficient for patients with rotator cuff tendinopathy [16]. Furthermore, KT is effective in reducing pain associated with impingement syndrome when compared to manual therapy [17]. Additionally, KT has exhibited positive effects on activity pain, function, range of motion, and grip strength in rotator cuff tendonitis when contrasted with cold therapy [18].

Hence, Kinesio Taping (KT) is widely used for rotator cuff (RC) disease. Existing studies highlight its potential for pain relief and improved range of motion (ROM), but research on the Manual Direction Test (MDT) combined with the KT fascia correction technique is limited. The specific impact of this approach on immediate pain-free shoulder ROM remains unexplored. This study aims to fill this gap by assessing the immediate effect of the Manual Direction Test (MDT) with Kinesio-taping fascia correction technique in enhancing pain-free shoulder ROM in patients with rotator cuff disease.

2. METHODOLOGY

- **Aim**

Many studies have investigated the effectiveness of various combined K-taping techniques, but the impact of the fascia correction technique alone on rotator cuff diseases, particularly its immediate effect on pain-free shoulder range of motion

(ROM), remains underexplored. Therefore, this study aims to evaluate the immediate effect of the Manual Direction Test (MDT) with Kinesio-taping fascia correction technique in enhancing pain-free shoulder ROM in patients with rotator cuff disease and to determine its potential superiority over other K-taping techniques.

- **Objective**

To evaluate the immediate effect of Manual Direction Test with Kinesio-taping fascia correction technique in improving pain-free shoulder range of motion (ROM) in rotator cuff disease patients.

- **Research Design**

Interventional Study - Pre-test post-test design

This study employed an Interventional Study - Pre-test post-test design, a widely used research approach to assess the effectiveness of an intervention. This design involves measuring the outcomes of a specific intervention both before (pre-test) and after (post-test) its application within the same group of participants. Here the effects of the Manual Direction Test (MDT) with Kinesio Taping (KT) fascia correction technique are evaluated by comparing outcomes before and after the intervention within the same group. The pre-test measures baseline pain and range of motion (ROM), while the post-test assesses immediate changes after the intervention. This design helps determine the effectiveness of MDT with KT in improving pain-free shoulder ROM in patients with rotator cuff disease.

- **Sample and Sampling Method**

This study employs a **non-probability convenience sampling method**, selecting participants based on availability and willingness to participate. The sample consists of 40 patients diagnosed with rotator cuff disease and experiencing painful shoulder range of motion. The study is conducted at Asthi-Wellmaxphysio Centre, Ernakulam, Kerala, ensuring accessibility to individuals seeking physiotherapy treatment for shoulder conditions.

- **Procedure of the Study**

The study follows a structured protocol to evaluate the effectiveness of the Manual Direction Test (MDT) with Kinesio Taping (KT) fascia correction technique in improving pain-free shoulder range of motion (ROM) in patients with rotator cuff disease.

Initially, a pre-assessment is conducted, where pain intensity is measured using the Visual Analogue Scale (VAS), and pain-free shoulder flexion and abduction ROM are assessed using a goniometer.

Following this, the Manual Direction Test (MDT) is performed on the pectoralis, deltoid, and trapezius fascia to determine the optimal tape application direction based on glide, decompression, and compression assessments.

A single application of Kinesio Tape I strip with 20 to 25% tension is then applied to deltoid pectoral and trapezius muscle in the identified direction to enhance fascial mobility, reduce tension, and facilitate pain relief while maintaining full shoulder movement.

After taping, a post-assessment is conducted to reassess pain levels using VAS and pain-free ROM using a goniometer. This systematic approach ensures an objective evaluation of KT's effectiveness in reducing pain and improving shoulder mobility in individuals with rotator cuff disease.

Kinesiology tape application on the rotator cuff

- **Inclusion and Exclusion Criteria**

Inclusion Criteria

- Both males and females aged between 25-65 years
- Rotator cuff diseases with painful ROM
- Up to partial RC tear cases.

Exclusion Criteria

- Shoulder dislocation or subluxation
- Patient with shoulder fractures
- Symptoms of cervical origin
- Rotator cuff full tear
- Frozen shoulder and Osteoarthritis shoulder
- Calcific tendinitis
- Malignancy

- **Method of Data Collection**

This study utilizes a **quantitative method** for data collection, focusing on objective measurements of pain intensity and shoulder range of motion (ROM). Pre-test and post-test assessments are conducted to evaluate the effectiveness of the Manual Direction Test (MDT) with Kinesio Taping (KT) fascia correction technique in patients with rotator cuff disease. Data is collected using standardized assessment tools to ensure accuracy and reliability.

- **Tools**

This study utilized two primary tools for quantitative data collection:

- **Visual Analogue Scale (VAS):** A validated tool for assessing acute and chronic pain intensity, using a 10 cm scale from "no pain" to "worst imaginable pain." Participants mark their pain level, allowing for objective comparison before and after the intervention.
- **Goniometer:** A standard instrument in physiotherapy used to measure shoulder joint range of motion (ROM). It objectively quantifies pain-free movement, enabling assessment of the effectiveness of Kinesio Taping in improving joint mobility.

Data Analysis

- **Paired Sample t-test:** compares the means of two related groups to see if there is a significant difference between them. It is often used when the same group is tested before and after an intervention. Here the pretest and post-test taping assessments were taken in flexion and abduction.

3. RESULTS AND DISCUSSION

1. The difference in flexion range of motion before and after K-taping

To test the difference in flexion range of motion before and after K-taping the researcher used paired sample t-test. The obtained result is given below in Table 1.

Table 1 The difference in flexion range of motion before and after K-taping

Variables	N	Mean	SD	df	T-value	Sig. (2-tailed)
Flexion ROM Before	40	103.75	24.53	39	-6.340	.000
Flexion ROM After	40	121.05	24.37			

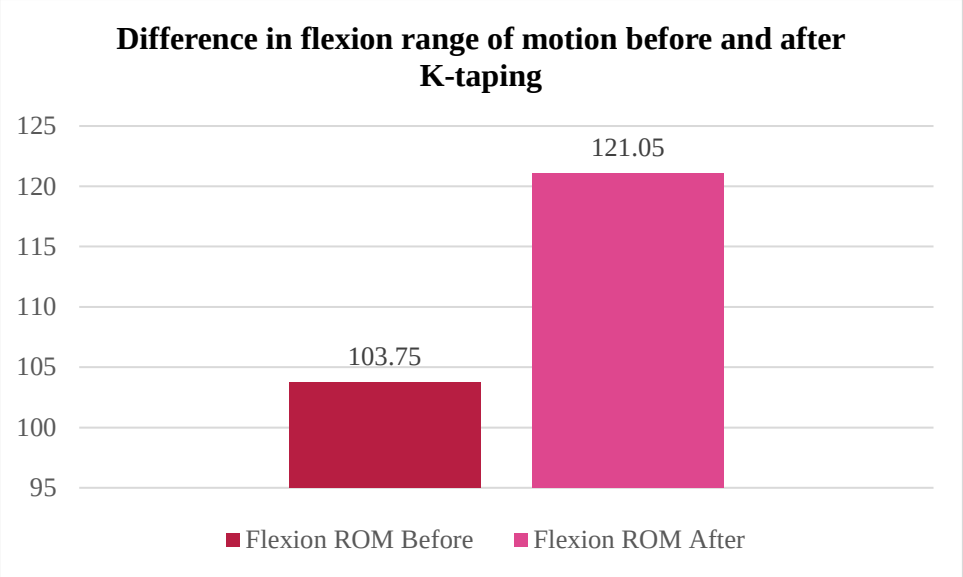

Figure 1 The difference in flexion range of motion before and after K-taping

Table 1 and Figure 1 show the difference in flexion range of motion (ROM) before and after K-taping in 40 patients with rotator cuff disease. Descriptive statistics indicate that flexion ROM before the intervention had a mean of 103.75 (SD = 24.53), while after the intervention, the mean increased to 121.05 (SD = 24.37), demonstrating a significant improvement in ROM. Inferential statistics reveal $t(39)=-6.340$, $p<.001$. This indicates that the intervention significantly enhanced pain-free shoulder flexion ROM in patients with rotator cuff disease.

These findings align with existing literature supporting the beneficial effects of KT in rotator cuff disease management. For instance, previous research has documented the effectiveness of KT in improving pain-free ROM flexion in patients with rotator cuff disease [19]. Furthermore, studies comparing KT with control interventions have consistently shown a significant increase in flexion ROM amplitude following KT physiotherapy programs [20]. Similarly, comparative studies contrasting KT with sham taping have demonstrated superior improvements in shoulder flexion ROM after one week of KT intervention compared to sham taping in individuals with rotator cuff disease [21].

2. Difference in abduction range of motion before and after K-taping

To test the difference in abduction range of motion before and after K-taping the researcher used paired sample t-test. The obtained result is given below in Table 2.

Table 2 The difference in abduction range of motion before and after K-taping

Variables	N	Mean	SD	df	T-value	Sig. (2-tailed)
Abduction ROM Before	40	97.57	23.57	39	-6.585	.000
Abduction ROM After	40	115.77	29.64			

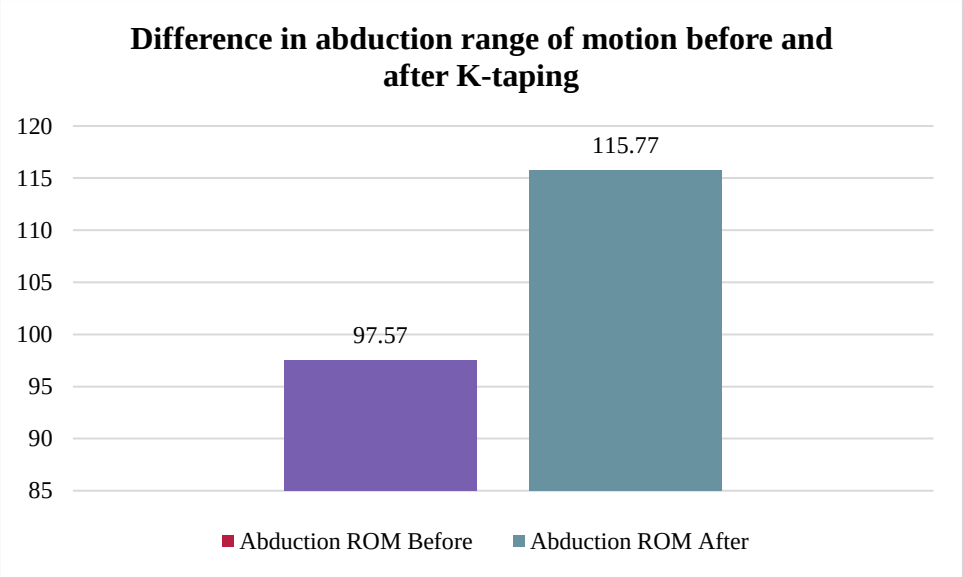

Figure 2 The difference in abduction range of motion before and after K-taping

Table 2 and Figure 2 show the difference in abduction range of motion (ROM) before and after K-taping in 40 patients with rotator cuff disease. Descriptive statistics indicate that abduction ROM before the intervention had a mean of 97.57 (SD = 23.57), while after the intervention, the mean increased to 115.77 (SD = 29.64), demonstrating a significant improvement in ROM. Inferential statistics reveal $t(39)=-6.585$, $p<.001$. This indicates that the intervention significantly enhanced pain-free shoulder abduction ROM in patients with rotator cuff disease.

These findings are consistent with existing literature supporting the positive effects of KT on abduction ROM in rotator cuff disease. Previous research has reported significant improvements in pain-free abduction ROM following KT application, with one study indicating an increase of 6° from baseline [19]. Furthermore, studies comparing control and experimental groups have also demonstrated a significant increase in abduction ROM in patients with rotator cuff disease following KT intervention [20]. However, it is important to note that the longevity of these effects may vary. A study comparing KT with sham taping found that while KT resulted in improved pain-free shoulder abduction on the first day, the effect was transient [22]. This suggests that the immediate effects of KT on abduction ROM may not be sustained over longer periods.

3. Difference in VAS Score before and after K-taping

To test the difference in VAS score before and after K-taping the researcher used a paired sample t-test. The obtained result is given below in Table 3.

Table 3 The difference in VAS Score before and after K-taping

Variables	N	Mean	SD	df	T-value	Sig. (2-tailed)
VAS Score Before	40	7.31	.877	39	10.952	.000
VAS Score After	40	6	1.126			

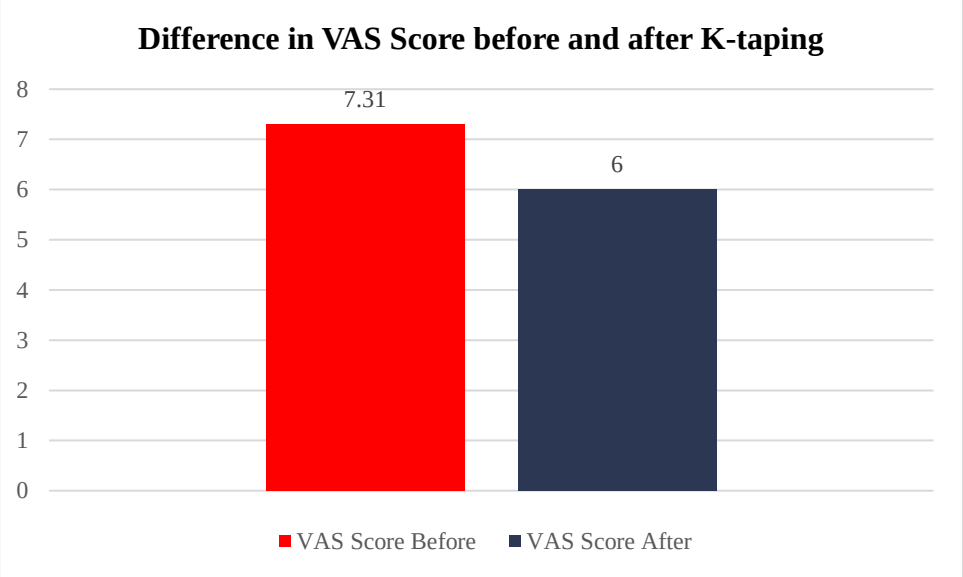

Figure 3 The difference in VAS Score before and after K-taping

Table 3 and Figure 3 shows the difference in Visual Analog Scale (VAS) scores before and after K-taping in 40 patients with rotator cuff disease. Descriptive statistics indicate that the VAS score before the intervention had a mean of 7.31 (SD = 0.877), while after the intervention, the mean decreased to 6 (SD = 1.126), demonstrating a significant reduction in pain. Inferential statistics reveal $t(39)=10.952$, $p<.001$. This indicates that the intervention significantly reduced pain levels in patients with rotator cuff disease.

These findings are partially consistent with existing literature supporting the analgesic effects of KT in rotator cuff disease. Previous research has reported a significant reduction in perceived pain, as measured by the VAS, following KT application [20]. This aligns with the current study's findings, suggesting that KT may effectively modulate pain perception in this patient population.

However, it is important to acknowledge that not all studies have demonstrated consistent pain reduction following KT application. A comparative study of KT with sham taping found no significant differences in pain values between the two groups after the intervention [21]. This discrepancy suggests that the analgesic effects of KT may be influenced by various factors, including the specific application technique, the duration of intervention, and individual patient characteristics. The lack of significant difference between KT and sham taping may also indicate a potential placebo effect in some studies.

4. CONCLUSION

The study concludes that the Kinesio Taping fascia correction technique with Manual Direction Test (MDT) is an effective intervention for enhancing immediate shoulder range of motion (ROM) and reducing pain in patients with rotator cuff disease. The significant improvement in flexion and abduction ROM, along with a notable decrease in Visual Analogue Scale (VAS) scores, highlights its role in improving mobility, flexibility, and functional movement. These findings support the use of Kinesio Taping with MDT as a non-invasive therapeutic approach for immediate pain management and rehabilitation in individuals with rotator cuff pathology.

5. IMPLICATION

This study's findings carry significant implications for the clinical management of rotator cuff disease. The demonstrated efficacy of Kinesio Taping with Manual Direction Test (MDT) in enhancing shoulder Range of Motion (ROM) and reducing pain, as evidenced by improved flexion and abduction ROM and decreased VAS scores, suggests a valuable non-invasive therapeutic approach. Clinicians can integrate this technique into rehabilitation protocols, potentially accelerating patient recovery and improving immediate functional outcomes. For patients, this translates to reduced pain and enhanced mobility, fostering a better quality of life. Furthermore, the study underscores the need for continued research to explore the long-term benefits and optimal application of this intervention. Future investigations should focus on comparative effectiveness studies and elucidating the underlying mechanisms, thereby refining clinical practice and expanding therapeutic options for rotator cuff pathology.

6. ETHICAL CONSIDERATION

Ethical considerations are paramount when evaluating the efficacy of interventions like Kinesio Taping with Manual Direction Test (MDT) for rotator cuff disease. Firstly, ensuring informed consent from participants is crucial, detailing the nature, risks, and benefits of the treatment. Respect for participant autonomy and confidentiality must be maintained throughout the study. Moreover, the study should prioritize participant safety, minimizing any potential discomfort or adverse effects during the intervention and follow-up periods. Ethical guidelines also necessitate transparency in reporting results, avoiding exaggeration or misrepresentation of findings to uphold scientific integrity. Additionally, researchers should disclose any conflicts of interest and adhere to ethical standards set by institutional review boards or regulatory bodies. By upholding these ethical principles, researchers can responsibly contribute valuable insights into therapeutic interventions while safeguarding the welfare and rights of study participants.

REFERENCES

[1] Varacallo MA, El Bitar Y, Sina RE, Mair SD. Rotator Cuff Syndrome. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2025 Jan-. Available from: https://www.ncbi.nlm.nih.gov/books/NBK531506/

[2] Hermans J, Luime JJ, Meuffels DE, Reijman M, Simel DL, Bierma-Zeinstra SM. Does this patient with shoulder pain have rotator cuff disease?: the Rational Clinical Examination systematic review. JAMA. 2013;310:837–47.

[3] Abrams JS. Management of the failed rotator cuff surgery: causation and management. Sports Medicine and Arthroscopy Review. 2010 Sep 1;18(3):188-97.

[4] Oliva, F.; Piccirilli, E.; Bossa, M.; Via, A.G.; Colombo, A.; Chillemi, C.; Gasparre, G.; Pellicciari, L.; Franceschetti, E.; Rugiero, C.; et al. IS Mu. LT-Rotator Cuff Tears Guidelines. *Muscle Ligaments Tendons J.* 2015, *5*, 227–263

[5] Nho, S.J.; Yadav, H.; Shindle, M.K.; MacGillivray, J.D. Rotator Cuff Degeneration: Etiology and pathogenesis. *Am. J. Sports Med.* 2008, *36*, 987–993.

[6] Zong, L.-Z.; Duan, M.-M.; Yuan, W.-W.; Lu, H.-D. Efficacy of shoulder arthroscopic surgery for the treatment of rotator cuff injury: A protocol of systematic review and meta-analysis. *Medicine* 2020, *99*, e20591.

[7] Karimi MT, Khademi S. Investigation of the range of motion of the shoulder joint in subjects with rotator cuff arthropathy while performing daily activities. Clinics in Shoulder and Elbow. 2021 May 31;24(2):88.

[8] Simons SM, Roberts FM. Patient education: Rotator cuff tendinitis and tear (Beyond the Basics).

[9] Williams S, Whatman C, Hume PA, Sheerin K. Kinesio taping in treatment and prevention of sports injuries: a meta-analysis of the evidence for its effectiveness. Sports medicine. 2012 Feb;42:153-64.

[10] Gianola S, Iannicelli V, Fascio E, Andreano A, Li LC, Valsecchi MG, Moja L, Castellini G. Kinesio taping for rotator cuff disease. Cochrane Database of Systematic Reviews. 2021(8).

[11] Mehta A. Kinesio taping Method Instructions. Samarpan Physiotherapy Clinic. 2015.

[12] Physiopedia. Kinesio Taping. https://www.physio-pedia.com/Kinesio_Taping

[13] Kase K. Clinical therapeutic applications of the Kinesio (! R) taping method. Albuquerque. 2003.

[14] Dias EM, Portella G, Lemos TV. Bandagens e imobilizadores. Profisio Esportiva Traumato-Ortopedica. 2012;1:89-155.

[15] Kojić S, Katana B, Remić D, Zlatičanin R, Vranešić AE, Pleho D, Nuspahić S. APPLICATION OF KINESIO TAPE TECHNIQUE IN TREATMENT OF MUSCULOSKELETAL DISORDERS. KNOWLEDGE-International Journal. 2024 Mar 31;63(4):509-16.

[16] Desjardins-Charbonneau A, Roy JS, Dionne CE, Desmeules F. The efficacy of taping for rotator cuff tendinopathy: a systematic review and meta-analysis. International journal of sports physical therapy. 2015 Aug;10(4):420.

[17] Arslan SA, Erbahçeci F, Yorulmaz E, Baltacı G. Clinical effectiveness of rigid or kinesio taping and manual therapy on pain and function in patients with shoulder impingement syndrome. Journal of Exercise Therapy and Rehabilitation. 2021;8(2):133-43.

[18] Durgut E, Gurses HN, Bilsel K, Alpay K, Hosbay Z, Uzer G, Yıldız F, Elmalı N. Short-Term Effects of Cold Therapy and Kinesio Taping on Pain Relief and Upper Extremity Functionality in Individuals with Rotator Cuff Tendonitis: A Randomized Study. Medicina. 2024 Jul 23;60(8):1188.

[19] de Oliveira FC, Pairot de Fontenay B, Bouyer LJ, Desmeules F, Roy JS. Kinesiotaping for the rehabilitation of rotator cuff–related shoulder pain: a randomized clinical trial. Sports health. 2021 Mar;13(2):161-72.

[20] Bubelis J, Masiulytė I. EFFECT OF KINESIOLOGY TAPING AFTER ROTATOR CUFF TEAR. PROFESSIONAL STUDIES: Theory And Practice. 2020;22(7):20-6.

[21] Reynard F, Vuistiner P, Léger B, Konzelmann M. Immediate and short-term effects of kinesiotaping on muscular activity, mobility, strength and pain after rotator cuff surgery: a crossover clinical trial. BMC musculoskeletal disorders. 2018 Dec;19:1-1.

[22] Thelen MD, Dauber JA, Stoneman PD. The clinical efficacy of kinesio tape for shoulder pain: a randomized, double-blinded, clinical trial. journal of orthopaedic & sports physical therapy. 2008 Jul;38(7):389-95.