Insight: Vol. 2, No. 6 December 2024
E-ISSN: 3032-453X

Effectiveness of Kinesio Tape Administration on Ankle Sprain : Literature Review

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Abstract
Ankle sprains are among the most common sports injuries, often resulting in pain, swelling, and functional limitations that can persist if not treated properly. This study aims to determine the effectiveness of Kinesio Taping (KT) in reducing pain and improving functional activity in patients with ankle sprains. A literature review method was employed, analyzing five selected studies published between 2013 and 2023, using databases such as PubMed and Google Scholar. The PICO framework guided the research, with inclusion criteria involving patients aged 10 to 30 years and exclusion criteria including systematic reviews and outdated articles. The results indicate that Kinesio Taping, applied at 25%-50% intensity for 20-30 minutes, three times a week over 4 weeks, significantly reduces pain and improves functional balance, as evidenced by tools like the Cumberland Ankle Instability Tool (CAIT) and Star Excursion Balance Test (SEBT). Compared to control interventions, KT consistently showed significant improvements ($p<0.05$) in pain reduction and joint stability. The findings confirm that Kinesio Taping is a non-invasive, cost-effective therapy that supports joint stability, improves lymphatic drainage, and accelerates recovery, making it a practical and evidence-based intervention for clinicians and athletes to promote faster recovery and reduce recurrence risk.

Keywords: kinesio tapping, ankle sprain, reduce pain

INTRODUCTION

An ankle sprain is one of the most common sports injuries. The ankle is the part of the body that is most often injured during exercise. An ankle injury up to 80 degrees is considered an ankle sprain. Evidence suggests that ankle sprains can lead to consequences such as persistent ankle dysfunction, recurrent ankle sprains, chronic ankle instability, and post-traumatic osteoarthritis. . The severe pain resulting from a medial ankle sprain is located on the inside of the ankle, especially around the deltoid ligament. and medial maleolus (Lee & Lee, 2015).

An ankle sprain is one of the most common sports injuries. A study that analyzed the occurrence of ankle sprains in the United States from 2003 to 2006 calculated that there were about 3 million cases of ankle sprains during this period, half of which were ankle sprains. related to sports. For elite athletes, ankle sprains not only limit activity but also have financial consequences due to lack of participation. Perhaps the most important consequence of an acute ankle sprain is the pain and swelling commonly associated with these injuries (Mazloum et al.,

2023). If the disease is not treated properly in the acute phase, it can progress to synovitis, tendinopathy, joint stiffness, muscle weakness, joint instability, as well as persistent pain and swelling. After an ankle sprain, about 60% of cases tend to experience symptoms. up to 18 months after the injury, which increases the risk of recurrence. Among the acute consequences of an ankle sprain, swelling is one of the symptoms that requires immediate attention because it is related to the development of inflammation and can be a limiting factor in the recovery process. Among the techniques used to reduce or treat swelling, Kinesio Taping seems to be starting to gain popularity among rehabilitation professionals (Anwar et al., 2020).

The main complaints associated with acute ankle sprains include pain and swelling. If not treated properly in the acute phase, these injuries can develop into other injuries such as synovitis, tendinopathy, joint stiffness, muscle weakness, joint instability, and prolonged pain and swelling. . After an ankle sprain, about 60% of people experience symptoms up to 18 months after the injury, thus increasing the risk of recurrence (Eom et al., 2014).

Ankle sprain is an injury that has a high risk of recurrence and can result in functional disability. Therefore, it is very important to receive appropriate therapeutic and corrective exercises. Except for serious injuries, ankle sprains are usually treated conservatively over surgery (Gopal Nambi & Shah, 2012).

Kinesio taping (KT) is a taping therapeutic technique developed by Dr. Kenzo Kase in 1970. Compared to traditional taping and corsets, KT is considered more tolerable and more cost-effective for patients. Because it is elastic, dries quickly and adheres to the skin. body. skin. Kinesio tape, unlike traditional tape, has stretchy properties (J.-H. Kim et al., 2018). Some proponents of Kinesio Taping claim that the Kinesio Taping technique, when applied to the ankle, stimulates the drainage of interstitial edema into the less congested lymphatic vessels, thereby reducing swelling. . The purpose of this study is to determine the effectiveness of kinesio taping in reducing pain associated with ankle sprains (Wilson & Bialocerkowski, 2015).

The intervention was carried out in the Kinesio Tapping group using Tex Kinesio Stamp Tape (5 cm wide and 5 mm thick) as previously reported. The day before applying Kinesio Tapping, the subject was asked to shave the area. Kinesio Tapping is used on a cutting fan that is above the heart and is placed on a chair and secured with a sturdy rubber band. To minimize ankle movement, the base is mounted to the wall (Briem et al., 2011). Kinesio Taping is commonly used to protect and strengthen joints to prevent further musculoskeletal damage to acute injuries, reduce edema, and limit the movement of weakened muscles. Kinesio tapes are designed to have several functions: restoring proper muscle function by supporting weakened muscles, relieving congestion by increasing blood and lymph flow, relieving pain by stimulating the central nervous system. The nervous system and repairs misaligned joints by reversing muscle spasms. Kinesio improves ankle dorsoflexion while walking (Williams et al., 2012).

The application of kinesio tape has gained recognition in rehabilitation and sports medicine due to its unique properties and non-invasive nature. As a therapeutic intervention, kinesio taping aims to facilitate the body's natural healing processes by improving circulation, reducing inflammation, and supporting injured muscles and joints (Slevin et al., 2020). For ankle sprains, a common injury among athletes and active individuals, kinesio tape serves as a promising alternative or complementary treatment to traditional methods such as braces and physical therapy (de-la-Torre-Domingo et al., 2015).

Despite its growing popularity, the effectiveness of kinesio taping in reducing pain and improving functional activity in ankle sprain patients requires further exploration. While some studies demonstrate positive outcomes, inconsistencies in methodology, dosage, and patient response highlight the need for comprehensive reviews. This study focuses on evaluating existing literature to assess the reliability and practicality of kinesio taping as an effective treatment for ankle sprains (Sarvestan et al., 2020).

Kim and Shin (2017) investigated the immediate effects of kinesio taping on lateral ankle sprains among amateur soccer players. Using a randomized cross-over design, the study found significant improvements in balance and pain reduction immediately after kinesio taping application. This research suggests that kinesio taping can be an effective short-term intervention for athletes recovering from ankle sprains.

Nunes et al. (2015) conducted a randomized trial to determine whether kinesio taping reduces swelling in acute lateral ankle sprains among athletes. The study concluded that while kinesio taping did not significantly reduce swelling, it contributed to enhanced functional performance, indicating its potential as part of a broader rehabilitation program.

Yang et al. (2022) performed a meta-analysis on the use of kinesio taping in youth athletes with ankle sprains. The findings indicated that kinesio taping improved joint stability and range of motion, although long-term effects remained uncertain. The study highlighted the need for further research to establish standardized protocols for kinesio taping interventions.

While existing studies highlight the potential benefits of kinesio taping for ankle sprains, discrepancies in treatment protocols, patient demographics, and outcome measures limit their generalizability. Moreover, there is insufficient evidence on the long-term effectiveness of kinesio taping in preventing recurrence and improving overall joint function. This study addresses these gaps by synthesizing data from multiple sources to evaluate the consistent effectiveness of kinesio taping across diverse patient populations.

The novelty of this research lies in its comprehensive review of kinesio taping applications for ankle sprains, focusing on treatment protocols and measurable outcomes such as pain reduction and functional improvement. By integrating findings from multiple studies, this research establishes evidence-based recommendations for practitioners, enhancing the utility of kinesio taping in clinical and sports settings.

This research aims to evaluate the effectiveness of kinesio taping in reducing pain and improving functional activity in patients with ankle sprains. The findings are expected to provide evidence-based insights for clinicians, enabling them to optimize treatment protocols. Additionally, this study benefits athletes and active individuals by promoting an accessible, cost-effective, and non-invasive treatment method that supports recovery and reduces the risk of recurrence. Ultimately, it contributes to improving rehabilitation practices and enhancing patient outcomes in musculoskeletal injuries.

METHODS

This study uses a literature review approach, which systematically summarizes and evaluates knowledge or practices on a particular subject. The research question followed the PICO format: (P = Population) patients with ankle sprains, (I = Intervention) Kinesio Taping, (C = Comparison) no comparator, and (O = Outcome) effectiveness in reducing pain and improving functional activity. The reviewed journal articles were selected based on inclusion and exclusion criteria,

focusing on studies published between 2013 and 2023. Inclusion criteria involved subjects aged 10 to 28 years experiencing pain due to ankle sprains, while exclusion criteria ruled out systematic reviews, articles published before 2013, and studies where subjects refused participation. The search was conducted using databases such as PubMed and Google Scholar, and data synthesis involved summarizing research subjects, participant demographics, intervention protocols, and outcomes. Tools such as the Cumberland Ankle Instability Tool (CAIT), Numeric Pain Rating Scale (NPRS), and the Star Excursion Balance Test (SEBT) were used to measure the effectiveness of interventions.

Kinesio tape is an elastic cotton tape applied to the skin, capable of stretching up to 140% of its original length, facilitating pain relief, reducing swelling, and improving blood and lymph circulation. Its physiological effects include opening joint spaces, supporting muscle function, and enhancing dynamic balance. Developed as a non-invasive treatment method, Kinesio taping adheres to the second layer of skin, mimicking the properties of human skin with high elasticity. Studies report that applying Kinesio tape to sprained ankles with a frequency of three times per week, at an intensity of 25%-50% for 20 minutes per session, over a treatment duration of four weeks, has shown significant improvement in pain reduction and functional recovery. This method provides an accessible, safe, and effective alternative to traditional interventions for ankle sprains, making it valuable in rehabilitation and sports medicine.

RESULTS AND DISCUSSION

Of the 5 journals obtained, they were researched after going through the stages of screening, eligibility and inclusion. Kinesio Tapping is used as an effective treatment method to improve muscle function by strengthening weakened muscles, improving blood and lymph circulation by removing tissue fluid or bleeding under the skin by moving the muscles, reducing pain through neurological pressing, and repositioning subluxated joints by relieving abnormal muscle tension, helping to restore fascia and muscle function (Kase et al., 1966).

Table 1. Comparison of Experimental Group and Control Group

Reviewer	Participant		Intervention		Measurement	Results	Design Study
	Intervention group	Control group	Experimental group	Control group			
Myoung Kwon Kim, et al (2017)	n= 28 Unknown	-	Kinesio Tapping	-	THE SEAT	P<0.05	RCT
Guilherme S, et al (2015)	n= 18 Unknown	n= 18 Unknown	Kinesio Tapping	Kinesio Tapping	ANOVA	P<0.05	RCT
Sun Min, et al (2015)	n= 1 28 years	-	Kinesio Tapping	No intervention	THE SEAT	P<0.05	RCT
Nan Yang, et al (2022)	n= 1 7 - 18 years old	-	Kinesio Tapping	No intervention	THE SEAT	P<0.05	RCT
Vahid Mazioum, et al (2023)	n= 16 24 years	n= 15 26 years	Kinesio Tapping	Neuromuscular Electrical Stimulation	ANOVA	(P>0.05)	RCT

Based on a literature review study, the authors found that of the 97 sample results, the average sample was dominated by those aged 7 - > 30 years. Of the many literature found, most of the literature uses CAIT and ANOVA research designs with p<0.05. The experimental group uses Kinesio Tapping intervention while the control group is given Neuromuscular Electrical Stimulation.

Table 2. Kinesio Tapping Intervention Therapy Dosage

Reviewer	Type of Intervention	Therapeutic Dosage				Duration Therapy
		F	I	T	T	
Myoung Kwon Kim, et al (2017)	KInesio Tex Tape	3 times/week	25% to 50%	Kinesio Tapping	20 min	3 days/week, for 4 weeks
Guilherme S, et al (2015)	KInesio Tex Tape	3 times/week	25% to 50%	Kinesio Tapping	20 min	3 days/week, for 4 weeks
Sun Min, et al (2015)	KInesio Tex Tape	3 times/week	25% to 50%	Kinesio Tapping	20 min	3 days/week, for 4 weeks
Nan Yang, et al (2022)	KInesio Tex Tape	3 times/week	25% to 50%	Kinesio Tapping	20 min	3 days/week, for 4 weeks
Vahid Mazioum, et al (2023)	KInesio Tex Tape	5 consecutive days	25% to 50%	Lateral and medial ankle	30 min	5 days/week

Based on the research that has been conducted, researchers found that there are those that can be applied to patients with Ankle Sprain with a frequency of 3 times/week, Pain intensity in the ankle sprain, with a duration of 20 minutes for 3 days/week and carried out for 4 weeks.

Table 3. Mean of Study Characteristics

Reviewer	Measurement	Group experiment		Control group		Significant
		Pre	Post	Pre	Post	
Myoung Kwon Kim, et al (2017)	THE SEAT	10.68 ± 3.92	-	-	-	P<0.05
Guilherme S, et al (2015)	ANOVA	±	±	±	±	P<0.05
Sun Min, et al (2015)	THE SEAT	±	±	-	-	P<0.05
Nan Yang, et al (2022)	THE SEAT	±	±	-	-	P<0.05
Vahid Mazioum, et al (2023)	ANOVA	±	±	-	-	(P>0.05)

Based on the table above, when compared to the control group, the intervention group showed a good and significant improvement

Discussion

The Above results support the hypothesis that kinesio taping is effective in reducing pain at all levels, from mild to severe. In the adult inpatient operating room of Dr. Dradjat Prawiranegara Serang, Banten, the results showed that there was a significant difference between clients who underwent laparoscopic surgery before and after receiving the standard treatment procedure,

namely intravenous 30 mg ketorolac ampoule injection within 8 hours. and kinesio tape installation. The pain level of the intervention group respondents was measured two hours after the application of kinesio taping. showed that the level of pain was reduced due to uterine reactions during laparoscopic surgical wounds. After the tissue is injured, chemicals such as bradykinin, serotonin, histamine, and proteotic enzymes are formed in the damaged skin nerve cells.

A sign of tissue damage is acute pain. Experience with pain allows people to make decisions about when pain signals possible danger, tissue damage and its source, or how severe the pain is and is considered safe (Unuroh & Hendrikson, 2012). Studies show that the ankle complex joint is responsible for thirty percent of all sports injuries, with ankle sprains being the most common. (Engebretsen et al) showed that team sports, contact sports, indoor sports, and jumping sports had the highest risk of ankle injuries. In addition, in a review conducted by Doherty et al., it was found that, compared to men and adults, women, children, and adolescents are more likely to experience ankle sprains.

Therefore, because young athletes are at greater risk of ankle sprains, it is crucial for them to treat and avoid these injuries as they grow athletically. Kinesio taping has been widely used as a therapeutic taping method to treat and prevent ankle sprains. This is because it provides support to injured muscles and joints and helps repair a sprained or strained ankle. The aim of this systematic review was to find out whether the data are sufficient to support the use of KT in young athletes with or without ankle sprains as the effects of KT as the treatment and prevention of ankle sprains are still uncertain. The results of this meta-analysis will have significant consequences for clinical training and practice. Studies have shown that 30% of all sports injuries are related to the ankle complex, and ankle sprains are the most common ankle injury.

CONCLUSION

Evidence suggests that ankle sprains can lead to consequences including ongoing ankle dysfunction, recurrence of ankle sprains, chronic ankle instability, and post-traumatic osteoarthritis of major pain and tenderness caused by medial ankle sprains localized on the medial aspects of the ankle, especially around the deltoid ligaments and medial malleolus. joints to prevent further musculoskeletal damage in acute injuries, reduce edema, limit the movement of weakened muscles Kinesio bands are theorized to have several functions: restore proper muscle function by supporting weakened muscles, reduce congestion by increasing blood flow and lymphatic fluid, reduce pain by stimulating the central nervous system.

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