



# Does the Application of Kinesiotape Give an Impact Toward the Lateral Aspect of the Ankle? Evidence from Ankle Sprains – A Systematic Review

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**Abstract.** *Background:* Injury is a structural malfunction or accident to the body brought on by too much physical strain, especially when it affects the muscles and joints and prevents them from working properly. Pain, swelling, muscular weakness, and a restricted range of motion in the damaged area are all indications of joint injury. One of the most common injury is *ankle sprains*. Meanwhile, kinesiotape is an elastic band in the form of a plaster which is commonly used to treat injuries and other disorders, one of which is *ankle sprains*. Therefore, the purpose of this study is to evaluate the effectiveness of kinesiotape in treating *ankle sprains*. *Method:* Article search using seven databases (CINAHL, MEDLINE, SCOPUS, PUBMED, University of Cambridge, and PEDro and SPORTDiscus and Web Science) with publication dates from 1970 to 2022. Search quality of the studies using PEDro scale. *Result:* According to the findings of the systematic review, 1 out of 5 studies that made it past the screening stage and were included in the analysis provided clinical evidence that Kinesiotape can affect how quickly *ankle sprains* heal. While 4 from 5 articles, proved otherwise. *Conclusion:* This also leads to the conclusion that the majority of studies offer clinical proof that kinesiotape has no appreciable impact on *ankle sprains*.

**Keywords:** Sprains Ankle · Kinesiotape · Lateral Ankle · Systematic Review

## 1 Introduction

Injury is a structural damage or accident to the body brought on by too much physical pressure, which can lead to tissue damage from overuse and impair the proper functioning of the muscles and joints [1]. Injury symptoms include pain, swelling, cramping, bruising, stiffness, limitations on joint motion, and decreased strength in the injured area, according to Festiawan's research from 2021 [2]. This is one of the reasons for the emergence of physiotherapy methods for sports, which aim to treat and even prevent more serious sports injuries [3].

*Ankle sprains* are the most prevalent injury among athletes, according to one of the many pieces of evidence about injuries that occur to athletes. This is a result of the

significant challenge that participating in sports activities presents to the ankle, which is used frequently [4]. *Ankle sprains* are the most common lower extremity injury in athletes and account for 16%-40% of all sports-related injuries [5].

One of the most widely used methods for dealing with *ankle sprains*, is the Kinesiotape method. According to Mohamed et al. (2016) [6] Kinesiotape is a tape in the form of elastic tape that can be used in the treatment of injuries and other disorders. According to previous studies, kinesiotape helps to reduce pain or pain in the muscles and joints to increase blood flow in that area. [7] stated that the use of kinesiotape can be used in cases of *ankle sprains* and has proven effective after its application.

By focusing on data related to *ankle sprains*, this study aims to ascertain the impact of kinesiotape application on the *lateral ankle*. Academic research on sports-related injuries is expanding favorably, becoming a dynamic finding that can respond to serious inquiries from coaches, medical professionals, and athletes themselves. The development of a variety of analytical advances in sports injury research allows deeper analysis while also advancing the field of sports injury research to improve clinical care, injury treatment, and injury prevention [8].

## 2 Method

The method used in this study is a systematic review based on selected report item statements from the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA).

### 2.1 Search Strategy

This research was conducted through a systematic search of seven databases, including Cumulative Index of Nursing and Allied Health Literature (CINAHL), MEDLINE, Physiotherapy Evidence Database (PEDro), Scopus, SPORTDiscus and Web of Science, and University of Cambridge, Pubmed. The database search is set for the period 1970-2022. The reason for choosing this period is the fact that in 1970 the study of kinesiotape was first started [9]. Until 2022, research on the use of kinesiotape is still at a developmental and innovative level. Search for a strategy with “Kinesi Taping” and “Lateral Ankle Sprains”.

### 2.2 Eligibility Criteria

Following criteria for an article to include in this study: According to Dr. Kenzo the following methods were employed: (1) RCT; (2) quantitative methods with intervention studies; and (3) kinesiology taping techniques. Although this study used the following exclusion criteria: studies investigating musculoskeletal, lymphatic or other neurological problems, individuals with documented ankle instability, comparison with healthy participants, and studies college through conference presentations and conference posters. (4) International Classification of Disability in the Operating Model. is.

## 2.3 Study Selection

The search results are entered into the Mendeley software. Then delete duplicates, titles, abstracts and articles that are not feasible to filter the feasibility of the study. Articles with the remaining full text were then selected using the inclusion criteria. The screening process was reviewed again by 2 reviewers (S.S.P and A.N.A).

## 2.4 Data Extraction

In this study, researchers performed data extraction using descriptive statistics which included study authors, research design, level of evidence, research objectives, respondent characteristics, kinesiotape and its comparison, and outcome measures. The degree of agreement between reviewers (M.A.R S.S.P and A.N.A) when assessing methodological rigor was analyzed.

## 2.5 Assessment of Study Quality

*The National Health and Medical Research Council (NHMRC) Hierarchy of Evidence* [10] is used to categorize the quality level of evidence. The results of this assessment indicate a potential level of bias in the included studies due to their methodological design (Table 1).

The PEDro scale as a tool for critical evaluation of quantitative research [11] because it is applicable to all type of quantitative research [12]. Each of the 11 points is assigned

**Table 1.** National Health and Medical Research Council Hierarchy of Evidence [10]

Level of evidence	Type of study design
I	A systematic review of level II studies
II	A randomized controlled trial
III-1	A pseudorandomized controlled trial (i.e. Alternate location or some other method)
III-2	A comparative study with concurrent controls: <ul style="list-style-type: none"> <li>• Non-randomized, experimental trial</li> <li>• Cohort study</li> <li>• Case-control study</li> <li>• Interrupted time series with a control group</li> </ul>
III-3	A comparative study without concurrent controls: <ul style="list-style-type: none"> <li>• Historical control study</li> <li>• Two or more single arm study</li> <li>• Interrupted time series without a parallel control group</li> </ul>
IV	Case series with either post-test or pre-test/post- test outcome

a numerical score. With a score of 1 if the scoring criterion is met. Alternatively, a grade of “0” is given if the requirements are not met or partially met. The item scores are then summed to a maximum of 11 items, indicating excellent methodological rigor [13]. The researcher then independently divides the total score into five categories to reflect the overall research methodology. The PEDro scale has eleven items, of which one item is external validity, eight items internal validity and two items statistical comparison. Interpretation of the overall score: 0 (weak); 1–5 (fair); 6–8 (good); 9–11 (excellent) [14]. Used to further explore potential source of bias in studies using RCT designs.

### 3 Result

#### 3.1 Search Result

After duplicates were removed based on abstracts and article titles, 449 articles were found after 19,200 results from article searches in the electronic database. There are 30 articles that can be chosen to move on to the next stage in the following step, which is the selection of articles based on inclusion criteria. 25 papers were excluded because they failed to meet the requirements for inclusion, including the following: (1) 7 articles did not make use of the kinesiotape intervention; (2) 5 articles did not employ quantitative methods; and (3) 13 articles focused on a non-athlete group. After the final screening, it is obtained 5 articles with results fitting the inclusion criteria.

#### 3.2 Study Characteristics

There are 5 articles in included paper, with the time ranging from 2014 to 2020. All articles with the same method which is randomized control trials with a total sample of 394. The population is athlete and healthy individuals. Intervention applied is kinesiotape on *ankle sprains* (Fig. 1) (Table 2 and 3).

“yes”; “0” = “no”; Criteria: **1** Eligibility criteria were specified (not used for score); **2** Subjects were randomly allocated to groups; **3** Allocation was concealed; **4** Groups were similar at baseline regarding the most important prognostic indicators; **5** There was blinding of all subjects; **6** There was blinding of all therapists who administered the therapy; **7** There was blinding of all assessors who measured at least one key outcome; **8** Measures of at least one key outcome were obtained from more than 85% of the subjects initially allocated to groups; **9** All subjects for whom outcome measures were available received the treatment or control condition as allocated or, where this was not the case, data for at least one key outcome was analyzed by „intention-to-treat“; **10** The results of between-group statistical comparisons are reported for at least one key outcome; **11** The study provides both point measures and measures of variability for at least one key outcome.

#### 3.3 Assessment of Study Quality

On PEDro scale, every article is rated “yes” or “no” (1 or 0) on the criteria listed in PEDro scale. The total score on the PEDro scale is calculated as “yes” from criteria 2–11, criterion no. 1 is not included because it is more related to external validity, and the

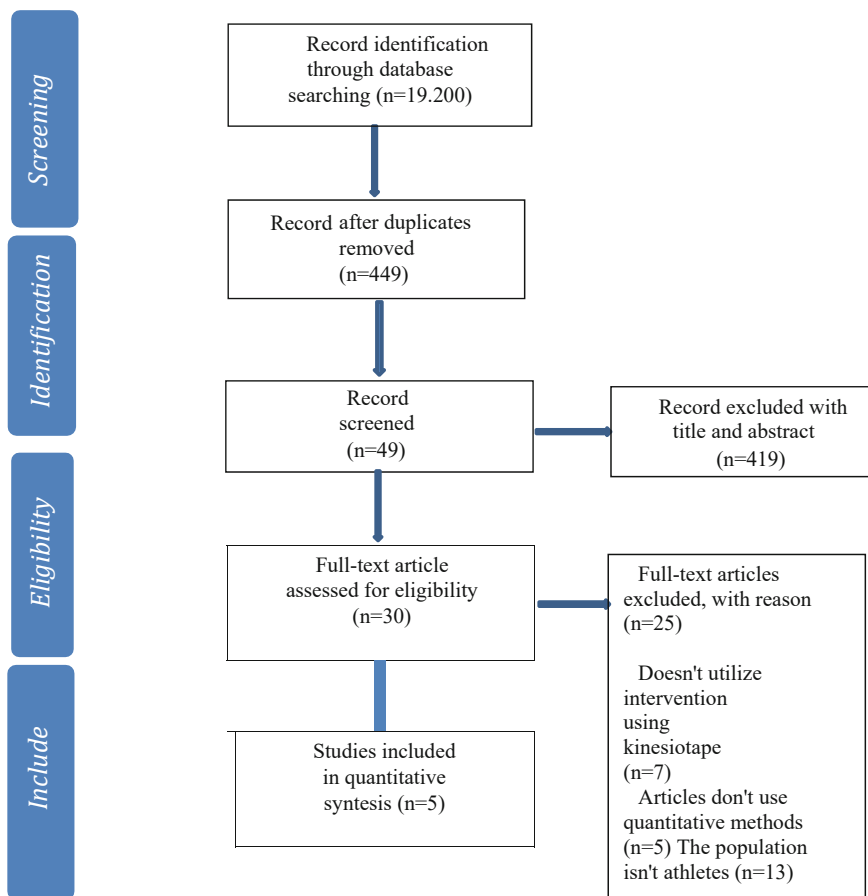


Fig. 1. PRISMA Flowchart

total score is 0–10. There were two articles with “fair” interpretation and three articles with “good” interpretation.

### 3.4 Systematic Review

#### 3.4.1 Perimetry

Research conducted by Guilherme et al. years (2015) said that there were no substantial distinction of giving kinesiotape for *acute swelling* of the *lateral ankle* with (MD-2 ml, 95% CI – 28 to 32) [15].

#### 3.4.2 Pain

According to research conducted by Kimennade et al. (2016) with (P value 0.07), while Shin et al (2020) with (P value 0.774). According to the findings of the two trials, applying kinesiotape to treat *ankle sprains* did not significantly differ from control groups [16, 17].

**Table 2.** Characteristic of included Study

N0	Authors	Study design	Sample	Population	Intervention	Comparison	Outcome	Result	Interpretation
1.	Kimmenade et al (2016)	RCT	N=163	patient	Kinesiotape Semi rigid brace	Group Control	Function : Karlsson score Pain, ADL : FAOS	Function (P Value 0.47) Pain (P Value 0.07) ADL (P Value 0.07)	No significant difference in kinesiotape and semi-rigid brace against ankle sprains
2.	Guilherme et al (2014)	RCT	N=36	Athlete	Kinesiotape	Group Control	Volumetary : Acrilix Box	(MD-2 ml, 95% CI -28 to 32)	No substantial difference found between swelling cute and kinesiotape on lateral ankle
3.	Mohamed et al (2020)	RCT	N=100	Athlete	Bandage, kinesiotape.	Group Control	Balance : Y-Balance test Vertical jump : Vertical jump test	Balance: Anterior (control vs tape P 0.05); (control vs bandage P 0.01) Posteromedial (control vs tape P 0.01) (control vs bandage P 0.01) Posterolateral (control vs tape P 0.01); (Control vs bandage P 0.01) Vertical jump: (control vs tape P 0.01);(Control vs bandage P 0.01)	There is a significant difference in yield between bandage, kinesiotape against balanc and vertical jump
4.	De la torre domingo e al (2015)	RCT	N=36	Female Male	Placebo Tape	Group Control	Postural Control : CDP	Kinesiotape (P 0.497) Placebo (P 0.442)	No substantial distinction spotted between placebo and kinesiotape on ankle instability
5.	Shin et al (2020)	RCT	N=60	Acupunture	Kinesiotape	Group Control	Pain : VAS Symptom dan functional	Vas score of pain (P 0.774) Total FAOS (P 0.389)	No substantial l difference
							limitation : FAOS Edema : Midline	Degree of edema (P 0.662)	between kinesiotape on lateral ankle sprains

RCT = Randomized Control Trial, CDP = Cisco Discovery Protocol, VAS = Visual Analogue Scale, FAOS = Foot and Ankle Outcome Score

**Table 3.** Assessment of Study Quality EDro scale

<b>Criteria</b>													
<b>Study</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>Total</b>	
Kimennade et al. (2016)	1	1	0	1	0	0	0	1	0	1	0	5	
Guilherme et al. (2014)	1	1	1	0	1	0	0	1	1	1	1	7	
Mohamed et al. (2020)	1	0	0	1	1	0	1	0	0	1	0	5	
De la Torre Domingo et al. (2015)	1	1	0	1	1	0	0	1	1	1	1	8	
Jeong-Cheol Shin et al. (2020)	1	0	0	1	1	1	1	0	1	0	0	6	

### 3.4.3 Vertical Jump

According to research by Mohammed et al. (2020), there was a notable change between using bandages or kinesiotape to stabilize vertical leaps (P value 0.01) [6].

## 4 Discussion

The purpose of this systematic review study is to evaluate the usefulness of using kinesiotape to treat lateral ankle sprains when it comes to daily activities or athletic endeavors [16]. Giving kinesiotape aims to provide a placebo effect so that it can increase the effects of enhancement such as balance, proprioception on the lateral ankle [17].

Kinesiotaping the lateral ankle may have a different effect on how stable the *lateral ankle* structure is. The extensibility and stability of the ankle joint can be increased by using kinesiotape or stiff tape, and improving these properties in the ankle region can directly affect the stability of the ankle [18].

The application of kinesiotape or stiff tape for *lateral ankle sprains* was shown to have meaningful results in a comprehensive review that included five articles using a *randomized control trial* study design [16]. Despite some medical literature, research by [17] shows that kinesiotape can be utilized to treat a variety of conditions, including hamstring strains, ankle sprains, rotator cuff tendonitis, carpal tunnel syndrome, and tendinopathy.

The study by Nunes et al. (2014) [15] also demonstrated that the use of kinesiotape had no discernible effect on the test after 3 days of intervention, that there was no difference in improvement between groups, and that there was no discernible difference after

15 days of follow-up. The application of kinesiotape, however, has additional advantages, such as the stimulation of the lymphatic system, but it is not very successful in reducing swelling brought on by *ankle sprains*.

Application of kinesiotape has been advocated based on research by Shin et al. (2020) [19] because it can increase muscle contractility by supporting weak muscles, reduce pain and inflammation by increasing blood flow, and increase the range of motion of joints by adjusting muscle fibers.

The research is currently relatively limited, thus it is still difficult to objectively assess how applying kinesiotape will affect *ankle sprains*. This is one of the study's limitation.

As more athletes and healthy men participated in the study, this was inversely related to the risk of *ankle sprains* which are common in women, and the use of kinesiotape was reconsidered for maximum results.

## 5 Conclusion

Based on the systematic review that has been done to determine the impact of the application of kinesiotape to *ankle sprains*, it was discovered that there were increased proprioception, balance, and the placebo effect. However, because there is little information available on the application of kinesiotape to the lateral aspect of ankle sprains, it is challenging to conclude that this technique is very effective. Future study is hoped to provide proof that is more accurate and solid by taking into account additional research-related factors and being able to work together with other healthcare professionals to promote the most accurate outcomes. Based on 5 research that made it beyond the screening stage, it was determined that 1 of 5 articles provided clinical proof that kinesiotape could have an effect on the healing process of *ankle sprains*. Whilst 4 of 5 articles proved otherwise. This also leads to the conclusion that the vast majority of studies offer clinical proof that there is no appreciable impact on kinesiotape application on *ankle sprains*.

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**Authors' Contributions.** M.A.R understands the presented ideas, developed the existing theories, and performed calculation S.S.P and A.N.A, validated analysis methods, observed and gave the overall information. All the writers discussed the results and contributed to the final paper.

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