Review Article

Effects of Kinesio-Taping in Lateral Epicondylitis: A Narrative Review

ABSTRACT

Lateral epicondylitis is a familiar musculoskeletal disorder that primarily affects the extensors of the wrist. Kinesio-taping (KT) is a newer generation taping technique that aid's the body's healing process whilst supporting and giving stability to the muscles and joints without hindering the range of motion of the body. The objective of this narrative review is to assess the effects of Kinesio-Taping in lateral epicondylitis in pain reduction and enhancing functional ability of the wrist. Three databases were utilised for this narrative review. All studies that encompassed Kinesio-Taping in the treatment of lateral epicondylitis only were included. 6 articles were utilized for this review in which it showed a reduction in pain and, thereby, improving pain pressure threshold. The current review recognises the need for Kinesio-Taping in individuals with lateral epicondylitis. In spite of the encouraging results, more vigorous randomized control trials are to be conducted to pinpoint the mechanism behind Kinesio-Taping.

Keywords: Lateral epicondylitis; pain reduction; Kinesio-Taping; proprioceptive stimulation; hand grip strength.

Comment [AP1]: writing needs to be organized into:
Aim of study:
Method:
Results:
Implications (theoretical, practical, forward study) limitation

1. INTRODUCTION

Comment [AP2]: The introduction consists of several paragraphs containing:
a. Issue or topic of study: (why it is interesting to discuss).
b. Bring up real phenomena (negative symptoms) that lead to a particular problem, so this topic needs to be discussed or done.
c. mention some of the previous studies that have been carried out on this topic.
d. put forward the concept you offer in this study (this can show the originality of your study).
e. Study objective: tell me the concept you are offering

Lateral Epicondylitis commonly known as Tennis Elbow or Lateral Elbow Tendinopathy is an agonising elbow condition that is caused by excessive use of wrist extensors. [1] This can be a work-related repetitive strain/ sports specific injury. [2, 3] With an incidence rate of 15.1 per 10000 patients (in the United States of America alone), lateral epicondylitis affects men and women equitably anywhere between 30 to 60 years of age, peaking in the early 5th decade. [4, 5]

A renowned chiropractor named Dr. Kenzo Kase, invented Kinesio-taping (KT) in 1976 that mimics the elastic properties of the human skin. The KT mechanism sprung from the speculation that an external unit can assist in the functions of muscles and other tissues. By design, the tape is elastic and thin, stretching up to 40% - 60% of the actual length, making it extremely pliable compared to its ancestors. The tension created in the skin improves the transmission with mechanoreceptors when stretched and increases the motor unit recruitment amid a muscle contraction. Muscle function is improved by this process and facilitates the contraction of inactive muscles. The employment of KT over the wrist extensors could well and truly be another curative approach. [6]

1.1 PATHOGENESIS

An established pathology has not yet been identified but is repeatedly linked with any work-related activities involving repeated movements/ straining of the wrist. Movements such as excessive gripping, wrist extension, and forearm supination lead to microtrauma of extensor tendons (particularly the Extensor carpi radialis brevis). Over time it leads to hyperplasia of wrist extensor tendons, ultimately leading to tendon degeneration and resulting in Lateral Epicondylitis. [5, 7, 8, 9]

1.2 CLINICAL PRESENTATION

The patient will usually present with pain and tenderness at the lateral epicondyle, decreased grip strength, and inability to extend the wrist. It can aggravate along the upper forearm and cascading through the outer part of the forearm. The pain can also be aggravated with resisted dorsiflexion and radial deviation of the wrist and also wrist extension and fingers extension with elbow extension. [10, 11]

1.3 DIAGNOSIS

During physical examination, special tests like Cozen's (sensitivity = 91%, specificity = 80%) and Mill's (sensitivity = 76%, specificity = 85%) tests are used to determine if the patient has lateral epicondylitis. [12, 13, 14, 15] Other imaging diagnosis like X-Ray shows calcification around the lateral epicondyle with MRI and Ultrasound presenting with fluid (hypoechoic) in the extensor carpi radialis brevis tendon origin plus degenerative changes. [16, 17]

1.4. KINESIO-TAPING

KT is generally placed over and around the region to block off further contraction of the muscles. It is hypothesised to decrease pain and inflammation through the improvement of lymphatic and hematological systems without the restriction of the affected part's range of motion. This method lessens pressure and pain that is caused by irritation of the neurosensory receptors by lifting the skin minutely. [18]

The function is refined by allowing muscle support without hindering any movement. This is attained by stimulating a sudden rise in muscle strength through a concentric pull on the

fascia which may then trigger a muscle contraction or improves the muscle alignment that is instrumental in muscle strength increment. The pain is reduced within the first 24 hours and hopefully for up to a week. [18]

This endorses the context that kinesio-taping can be as a therapeutic approach for patients having lateral epicondylitis. The review is aimed at supporting the need for KT in lateral epicondylitis.

2. SEARCH METHODOLOGY

To examine the effects of Kinesio-Taping in Lateral epicondylitis, PubMed, Google Scholar, and ScienceDirect were used as databases from the year 2016 – 2019 using the following keywords: “Lateral epicondylitis”, “Kinesiotaping”, “Kinesiotaping in lateral epicondylitis” and “effects of kinesio taping in lateral epicondylitis”. 6 articles were later finalised based on the selection criteria.

2.1 Inclusion criteria:

- Studies conducted on human population.
- Studies that included Kinesio-Taping as the main intervention.
- Studies that included participants with lateral epicondylitis only.

2.2 Exclusion criteria:

- Non-English articles in full-text format.

3. DISCUSSION

3.1 Kinesio-Taping in pain reduction:

KT exhibited a notable recovery in pain whilst wrist extension with resistance and also improved pain free grip strength which was conducted by Cho YT et al., in individuals with chronic lateral epicondylitis. The results obtained endorsed it for a short-term pain management strategy with its mechanism still unclear. The first hypotheses points to the gate control theory as the non-neuronal cells that act as the signaling pathway is blocked via the stretch of the tape through keratinocytes by stimulating an inhibitory pain mechanism. [19]

The second hypotheses is aimed at reduction of pain through improved blood circulation that was analyzed by Giray et al., where they noted the that this theory was important in choosing a placebo taping and also found that KT plus exercises were superior in reducing pain and disability. They also proposed that eccentric training increased tendon strength by stimulation of mechanoreceptors to produce collagen. [13]

3.2 Kinesio-Taping in enhancing grip strength:

Gracias A et al., performed a study to differentiate the effects of pain pressure threshold and grip strength where KT was effectual in increasing grip strength and decreasing pain in people with lateral epicondylitis. This lead to another hypotheses the muscle technique assisted in reducing muscle tension bettering the grip strength and diminishing pain only after subsequent application of KT. [14]

Comment [AP3]: Therefore, this paper is a literature review, it is better not to mention a search methodology, but the subtitles presented are discussions.
2. Discussion
at the beginning of the discussion, tell the method used to obtain valid information (6 articles) state the reasons why you chose the 6 articles, from which journals (why?). Make sure that the information you get is valid (judging by the reputation of the journal that is referred to), and its adequacy. (Note: Usually for literature review involves many articles from many reputable journals)

Comment [AP4]: The discussion will be better, if the author discusses the differences, similarities, diversity, debates about the concepts contained in the articles reviewed. each discussion topic reveals the differences and debates that occur, which ends with the take position of this study towards the debated concept, which ends in a proposition. This will be proven empirically through subsequent studies.

Comment [AP5]: What is meant by the hypothesis here is that it may be a proposition, because this statement is derived from the full theory (deductive hypothetico) and is not derived from a particular setting which will be tested later. So the final result from the discussion here is a proposition

Comment [AP6]: same comment as above

This is also backed by Shaheen H et al., study that compared the effects between ultrasound and KT in which KT was superiorly better in improving the hand grip strength only for a short term effect. [20]

These two studies exemplified the usage of KT for a shorter duration.

3.3 Kinesio-Taping in improving the functionality/ disability of the wrist:

Eraslan L et al., conducted a study to prove if KT improves functionality and pain in lateral epicondylitis patients where KT was utilized from insertion to origin of the extensor carpi radialis brevis and the base of fascia correction was put at the point of pain. This provided sensorimotor and proprioceptive feedback mechanisms which are presumed to boost the lymphatic drainage. The rise in number of muscle fibers were seen to improve the functionality of the wrist through proprioceptive stimulus formulated another theory for KT. [21]

Bhambani S et al., study upheld this theory of improved functionality of the wrist as here KT supported the muscles around the elbow during movement that decreased tension around the area, pain and gave a proprioceptive feedback to the patient. [22]

The selected articles were then subjected to the PEDro (Physiotherapy Evidence Database) scale for quality assertion of articles with total scores ranging from 0 – 11 [23]. A mean score of 7 for the 6 articles utilized further indicate that KT can be implemented for patients with lateral epicondylitis [Table 1.].

Table 1. Summary of utilised articles

Study	Subjects	Groups	Results	PEDro Scale
Esra Giray et al. (2019) [13]	31 patients were selected and randomized into 3 groups	Group 1 – KT plus exercises, Group 2 – sham taping plus exercises, Group 3- only exercises	KT showed better pain reduction and functionality than sham taping.	10 ~ Excellent
Alicia Gracias and S Shobhalakshmi (2019) [14]	30 individuals were selected and randomized into 2 groups	Control group and experimental group	Improved grip strength and pain reduction.	7~ Good
Sonam Bhambhani et al. (2019) [22]	24 participants were randomly assigned to 2 groups	Group A – KT with conventional physiotherapy, Group B – conventional physiotherapy only	Group A yielded better results in terms of improved functionality and pain reduction.	6 ~ Good

Hamza Shaheen et al. (2019) [20]	20 patients aged between 20 – 50 years were randomly selected and divided into 2 groups	Group A – ultrasound and exercises, Group B – KT and exercises for 12 sessions over a 4 week period; 3 sessions/ week.	Group B showed significant improvement in hand grip strength and is better than ultrasound.	7 ~ Good
Yeng-Tin Cho et al. (2018) [19]	15 participants	Control group and Sham group	Reduction in pain and improved pain-free grip strength.	7~ Good
Leyla Eraslan et al. (2017) [21]	45 patients randomized into 3 groups	Group 1 – icing, TENS & home exercise program, Group 2 – KT with physiotherapy 3 – Extracorpeal shockwave therapy with physiotherapy	Improved pain-free grip strength and wrist functionality.	7~ Good

4. CONCLUSION

Comment [AP7]: Conclusion vs summary. at the end of the discussion, conclusions need to be stated (not a summary) including the implications of the study on theoretical aspects, practical aspects, and possibilities for future studies.

Based on this narrative review and mostly with a PEDro score of 7, KT has been proved to reduce the pain intensity by blocking the afferent pathway of the pain gate neurons, improve the pain pressure threshold, hand-grip strength by increasing the tone of the tendons through peripheral feedback regulation and improve the overall functionality of the wrist extensors by acting at the mechanoreceptors and improving the proprioception of the joint. It is hypothesized that the tape when applied from muscle insertion to origin causing pain inhibition through feeble muscle contractions. All these are hypotheses and more in-depth research should be done to find out the exact physiological mechanism. KT could be implemented in the effective management of Lateral Epicondylitis as a short-term intervention.

CONSENT

NIL

ETHICAL APPROVAL

NIL

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