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Tennis Elbow Treatment: Efficaciousness of Kinesio tape and Therapeutic Ultrasonography

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Abstract: A common musculoskeletal ailment known as tennis elbow, or lateral epicondylitis, ischaracterized by discomfort and soreness on the outside of the elbow. Numerous therapeuticapproaches have been investigated in an effort to reduce symptoms and encourage healing. The purposeof this research is to assess the effectiveness of two widely used therapies for tennis elbow therapeuticultrasound and kinesio tape. Tennis elbow was identified in the participants of a randomized controlledexperiment. Over a six-week period, assessments were made of patient satisfaction, pain levels, andfunctional progress. To evaluate the efficacy of each treatment technique, the data were statisticallyexamined.

Keywords: tennis elbow, Kinesio tape, therapeutic ultrasonography, musculoskeletal ailment, lateral epicondylitis, therapeutic approaches, reduce symptoms, encourage healing, effectiveness, randomized controlled experiment

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INTRODUCTION

Tennis elbow, sometimes called lateral epicondylitis, is often brought on by overstress or repeated motions, such as those involved in manual labor or sports like tennis. Tennis elbow is present in around 2% of people [1]. People between the ages of 40 and 60 are more likely to experience the symptoms, most likely due to the fact that middle-aged and older muscles are more prone to overuse. Men and women both experience tennis elbow [2].

Where the tendons connect to the muscles on the outside of the elbow is where tennis elbow discomfort originates. The tendons in question are engaged in wrist extension motions. Those who typically don't utilize their forearm muscles much and then abruptly overdo them are often affected. However, there is more to the symptoms than just temporary abuse. Tennis elbow may develop as a consequence of frequent repetitive strain. Although it may potentially affect the whole arm, discomfort in the outer elbow is the primary symptom [3, 4]. Usually only felt when the elbow is moved or touched, the pain in the outer elbow may also radiate to the upper arm, forearm, or hand. Even seemingly basic actions, such as turning the bottle's lid off to get a firm grasp, might cause discomfort. Also, it becomes more flexible than it was before. If the arm is not resting as much, the soreness may subside. The inability to fall asleep brought on by these symptoms is another possibility [5].

Possible causes include:

- Heavy lifting Ÿ Playing musical instruments, such as the piano
- Manual labour like painting, carpentry or turning screws
- Sports like tennis, rowing or strength training
- Working at a computer or a supermarket cash register

Tennis elbow most often results from overusing or misusing muscles, which wears down and irritates the base of the tendons that connect to the muscles and causes minor injuries. To determine if a patient has tennis elbow, a physical examination is performed [6, 7]. Doctors often only investigate X-rays, ultrasound scans, or magnetic resonance imaging (MRI) when they suspect a patient may have a more serious condition. Reducing or eliminating activities that aggravate the symptoms may be helpful in avoiding or lessening the symptoms. Pain relief may be achieved with "eccentric exercises," which are specialized movements designed to strengthen the wrist and forearm [8]. A physiotherapist's manual treatment may also be beneficial.

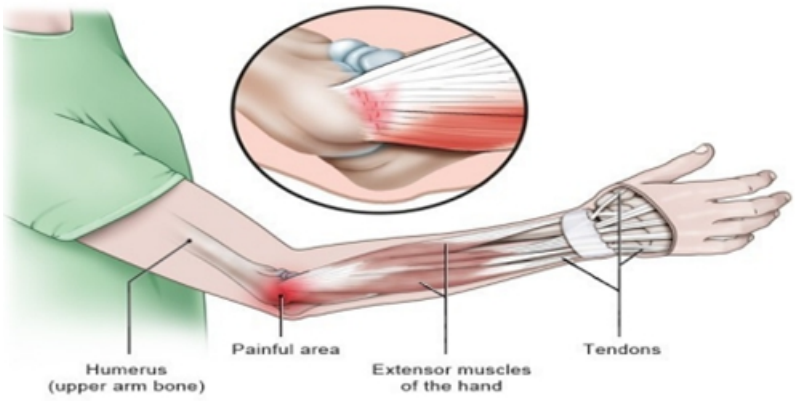

Figure 1: Tennis Elbow Painful Area

Lateral epicondylitis, the clinical term for tennis elbow, is a common ailment that affects a large number of people, particularly those who play sports or participate in repetitive arm motions. Tennis elbow is characterized by discomfort and soreness on the outside of the elbow, which may significantly lower quality of life and make it difficult to carry out daily activities. This article explores the effectiveness of two widely used modalities—kinesio tape and therapeutic ultrasound—in the search for efficient treatment choices. By delving into their mechanics, application techniques, and study results, we want to provide a thorough grasp of how these therapies might ease the pain related to tennis elbow [9].

Kinesio Tape:

Elastic therapeutic tape known as kinesio tape has become more well-known in recent years due to its use in the treatment of a variety of musculoskeletal disorders, including tennis elbow. The main purpose of the tape is to support muscles and joints structurally without limiting their range of motion. Kinesio tape is thought to work in a number of ways to lessen tennis elbow discomfort and enhance function. [10]:

- **Pain Modulation:** Kinesio tape has the potential to reduce pain by enhancing proprioception and reducing

the feeling of pain by activating the skin's sensory receptors. Additionally, it may gently raise the skin, freeing up space to lessen the pressure on pain receptors.

- **Support for Muscles:** The elastic qualities of the tape provide support for strained or injured muscles, lessening the tension on the forearm's extensor tendons and the lateral epicondyle.
- **Enhanced Circulation:** According to some hypotheses, using kinesio tape may improve lymphatic and blood circulation, which would aid in the elimination of waste products from metabolism and aid in tissue regeneration.

The outcomes of research using kinesio tape for tennis elbow are encouraging. According to studies, using tape right after might result in improved grip strength and temporary pain alleviation. Its long-term effectiveness, however, is still up for discussion, with conflicting results in the literature [11-16].

REVIEW OF LITERATURE

Tennis elbow, also known as lateral epicondylitis (LE), is the most prevalent cause of elbow discomfort. According to reports, the general population has a 3% incidence of LE; it is anticipated that this percentage will rise among manufacturing employees and paddle sportsmen. LE often affects people in their middle age (40–54), with equal effects on males and women. More often, the dominant upper limb is impacted. Firm hand grips at a forearm pronation of > 45° and challenging or repeated wrist or forearm actions have been identified as risk factors for LE. Clinically, the discomfort is located around the lateral epicondyle and causes a considerable wrist extension. The etiopathogenesis of LE is thought to be caused by degenerative angiofibroblastic hyperplasia of the wrist extensor tendons as a result of repeated microtraumas. Neuromuscular insufficiency and changes in the sensory system have also been seen in LE patients [17]. Several therapies for LE have been shown to have inadequate evidence, despite the fact that these treatments are often conservative (e.g., oral medications, steroid injections, physiotherapy, and orthoses) [17, 18].

Use of Kinesio Taping (KT) to treat a range of musculoskeletal issues is common. The tape was created in the 1970s by Japanese chiropractor Kenzo Kase and consists of an elastic cotton weave with a maximum useable tension of around 40–60% of its whole length, combined with a heat-sensitive acrylic glue. Numerous physiological benefits are expected by KT, including as reduced pain, restored muscle function, enhanced proprioceptive input, repaired joint incompatibility, and increased circulation of lymph and blood under the skin [19]. Regarding the best sort of tape to use and how to apply it, there is no agreement [20]. Furthermore, there is conflicting data on the immediate and short-term follow-up effects of KT, and not many research have looked at the efficacy of KT as a short-term therapy [5]. According to [21], after using KT, patients with LE reported much improved grip strength and reduced discomfort. A placebo-controlled research found that although genuine pain alleviation and painless grip strength had similar benefits to a placebo, KT seemed to have extra effects in reducing the pain associated with elbow wrist extensions [7].

An orthosis that is often used to treat LE is forearm bandaging (FB). Under the elbow, they are worn. By lowering strain on the common origin of the wrist extensors, FB primarily aims to address the source of a lesion [22, 23]. Studies have shown that compared to other treatments including steroids, ultrasound, laser,

massage, and exercise therapy, the usage of orthoses offers patients faster relief and is more beneficial for their everyday activities [24]. While FB's impact on handgrip strength and discomfort was not noted in some research involving individuals with LE, other studies' findings indicated that FB enhances handgrip strength and decreases pain [25, 26].

Numerous controversies have been raised by the literature about the relative merits of these two therapy modalities (KT and FB), offering both good and negative results. Nevertheless, we were unable to locate enough information contrasting the efficacy of various strategies.

OBJECTIVE OF THE STUDY

To find out how kinesio tape and therapeutic ultrasound affect tennis elbow discomfort and hand grip strength.

MATERIALS AND METHODS

Over the course of four weeks, 25 patients in the 40–50 age range who met the inclusion and exclusion criteria were part of an experimental research design at the Physiotherapy Center in Saudi.

Table 1: Inclusion and Exclusion Criteria

Inclusion Criteria:	▯ 25 Subjects ▯ Subject wrist. ▯ Voluntary participants
Exclusion Criteria:	▯ Those that suffer from clinical disorders ▯ Injectable corticosteroids or use oral NSAIDs earlier were not among the subjects. ▯ The individuals without any elbow deformity and those with deformities in the afflicted lateral elbow and wrist. ▯ Individuals who declined to take part

Kinesio Tape

- Apply the tape directly over the painful area, using multiple strips if necessary, generally along the muscle fibers.
- Use approximately 4 cm anchors at each end of the tape, and apply anchors without any tension.
- Never touch the adhesive and avoid creases in the tape.
- Use scissors to round the edges of the tape to avoid early lifting off skin.

- The tape can be worn for up to three days, though exposure to water may shorten that time.
- Use about 25% tension but no more than 50% to avoid skin irritation. After application, gently rub the tape to activate the adhesive.
- If skin becomes red and irritated, remove it immediately (it may be an allergic reaction).

DATA ANALYSIS

To evaluate the impact of the counterforce forearm brace, mean scores were compared before and after the intervention, and a paired-sample t-test was used to see whether any significant changes existed. SPSS (version 15.0) was used for the statistical analysis, and P-values of less than 0.05 were regarded as statistically significant.

RESULTS

The individuals' pre- and post-test information has been gathered. The paired t test and the basic t test must be used to analyze the data in statistics.

Table 2: T-Test: Means VAS for a Paired Two Sample

	Mean	Variance	Standard Deviation	P-value	T-value
Pre-test	150	843.0333	0.87939508	0.477899	2.2122
VAS Post test	114	843.0333	0.689333		

The medication has resulted in a noteworthy improvement in pain reduction (t value = 2.21, $p < 0.05$). The SD has dropped from 0.879 to 0.689, and the mean value of the VAS has dropped from 150 to 111.

Table 3: T-test: Means for a Paired Two Sample

	Mean	Variance	Standard Deviation	P-value	T-value
UEFI Pre-test	615	15740.34814	10.89916011	0.93924998	9.89304
UEFI Post test	795	15740.37	10.31783		

Due to the therapy, there has been a noticeable improvement in the reduction of handicap (t value=9.89, p=0.9). The UEFI mean value improved from 615 to 795, indicating a significant improvement in the reduction of handicap. The impairment lessens as the scores rise.

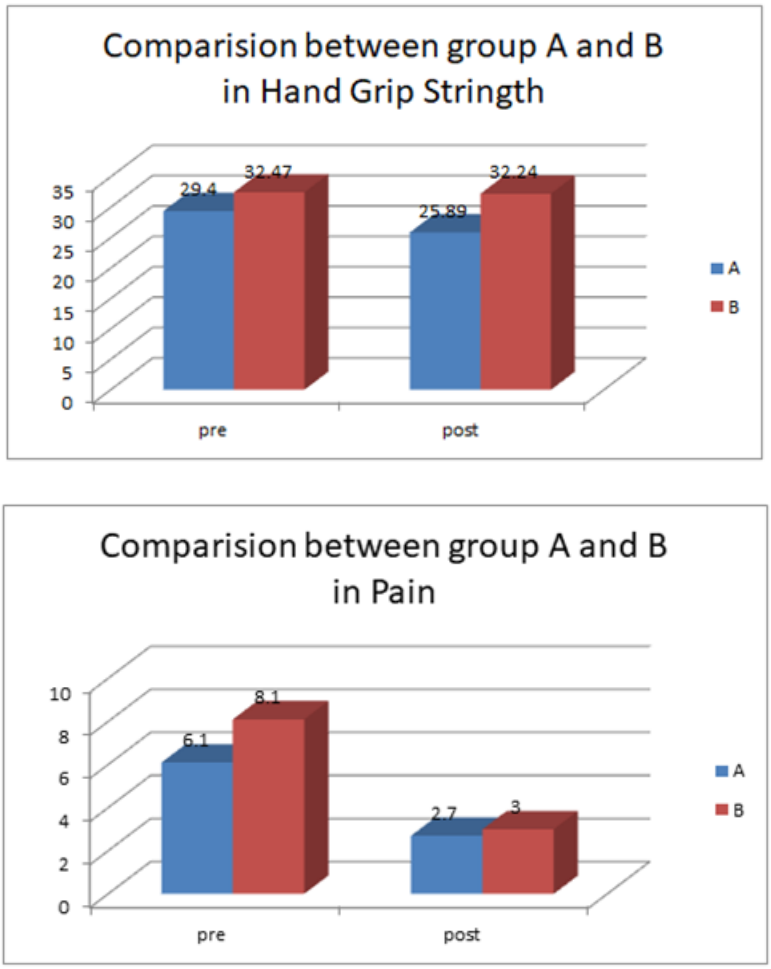

Figure 2: Group A and group B differences; (a) hand grip straight; and (b) the pain difference.

The pain strength findings for are shown in Figure 2, which demonstrates that there are substantial variations between the pre and post tests. Specifically, the post test reveals reduced pine by a mean of 3, compared to the pre-test (8.1).

The statistical analysis has shown the critical effect that therapeutic ultrasonography and kinesio taping have had in lowering pain and impairment. The VAS mean ratings showed a drop from the pre-test to the post-test, suggesting a more significant reduction in pain. In a similar vein, the UEFI scores rose between the pre- and post-test, indicating a decrease in the degree of impairment. The disability decreases as the mean scores rise.

CONCLUSION

The results of this research indicate that, although their modes of action and results may vary, kinesio tape and therapeutic ultrasound may both be effective in the treatment of tennis elbow. It was discovered that kinesio tape immediately relieved pain and, in the short term, improved functional results. The use of the tape seems to relieve tension on the lateral epicondyle and support the injured muscles. Conversely, during an extended course of therapy, therapeutic ultrasonography shown encouraging outcomes in lowering inflammation and accelerating tissue recovery. It's crucial to remember that each participant's reaction to these therapies differed, and not everyone saw appreciable progress. Furthermore, even greater outcomes

might be obtained by combining these modalities or by using them in conjunction with other conservative strategies. To fully comprehend the long-term consequences and ideal treatment plans for tennis elbow, further study is required. In clinical practice, while deciding between kinesio tape and therapeutic ultrasound as part of an all-encompassing treatment strategy for tennis elbow, medical professionals should take the patient's preferences, the severity of the problem, and the availability of resources into account.

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