



ISSN: 2230-9926

Available online at <http://www.journalijdr.com>

IJDR

International Journal of Development Research

Vol. 12, Issue, 12, pp. 60736-60739, December, 2022

<https://doi.org/10.37118/ijdr.25927.12.2022>



RESEARCH ARTICLE

OPEN ACCESS

EFFICACY OF IASTM VERSUS KINESIO TAPING IN IMPROVING PAIN AND FUNCTION IN LATERAL EPICONDYLITIS SUBJECTS

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ARTICLE INFO

Article History:

Received 11th September, 2022
Received in revised form
27th October, 2022
Accepted 29th November, 2022
Published online 25th December, 2022

Key Words:

Lateral epicondylitis, Tennis Elbow, Ultrasound, IASTM, Taping, Dynamometer.

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ABSTRACT

Introduction: Lateral epicondylitis is a condition in which the outer part of the elbow becomes sore and tender. It is an acute or chronic inflammation of the tendons that join the forearm muscles on the lateral epicondyle of the elbow. Symptom associated with tennis elbow include pain on the lateral part of the elbow, point tenderness over the lateral epicondyle and pain from the gripping and movement of the wrist, especially wrist extension and lifting movements. The popular choice of treatment include Therapeutic Ultrasound, Instrument assisted soft tissue manipulation (IASTM) and Taping. **Objective:** To find out the effectiveness of Instrument assisted soft tissue manipulation and taping to improve function and grip strength in lateral epicondylitis subjects. **Method:** An experimental research was conducted where twenty subjects of age group between 25 to 35 years and diagnosed with tennis elbow were recruited randomly into two groups by convenient sampling. The subjects in the group A were given ultrasound along with IASTM, where the Group B subjects were treated with ultrasound with taping. The grip strength and disability evaluated by grip dynamometer and mayo elbow performance index were recorded and analyzed as outcome measures at the beginning and completion of 3 weeks intervention. **Result:** Both the groups showed statistically significant improvement in reducing pain and improving function after the treatment, however on comparison between the groups, Group A showed better results. **Conclusion:** It can be concluded that even though there is increase in grip strength and reduction of disability in both the groups, IASTM was found to be more effective than taping technique.

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Citation: Martina, Jimshad T. U. and Bahareh Rasouly. 2022. "Efficacy of iastm versus kinesio taping in improving pain and function in lateral epicondylitis subjects", International Journal of Development Research, 12, (12), 60736-60739.

INTRODUCTION

Lateral epicondylitis is a condition in which the outer part of the elbow becomes sore and tender. It is an acute or chronic inflammation of the tendons that join the forearm muscles on the lateral epicondyle of the elbow. It was described in the literature than 100 years ago as tennis elbow. Tennis elbow is considered misnomer in that probably only 10-15% of regular tennis player experience the symptom of lateral epicondylitis. However that doesn't mean that racquet sports are the only aetiological factor. Activities related to occupation such as carpentry, bricklaying, gardening, and painting have been commonly associated with the development of lateral epicondylitis and have resulted in the condition being considered a primarily work related syndrome (Binder, 1985).

The incidence of the lateral epicondylitis is 1-3% of the general adult population with its peak incidence occurring between the ages of 30-55. The syndrome is rarely seen in individuals under the age of 30. Lateral epicondylitis is a common overuse syndrome resulting in degenerative changes occurring in the common extensor tendon and more specifically the extensor carpi radialis brevis tendon. Symptom associated with tennis elbow include pain on the lateral part of the elbow, point tenderness over the lateral epicondyle and pain from the gripping and movement of the wrist, especially wrist extension and lifting movements (Bisset, 2014; Christopher Kevin Wong, 2010). Lateral epicondylitis is an overuse syndrome that results in degenerative changes occurring in the common extensor tendon. The initial injury concerns a tear at the tendo-musculo junction in the tendon or at the tendoperisteal junction.

The resulting inflammation produces exudate in which fibrin forms to heal the torn tissues. If excessive fibrin is formed, fibrous tissue will result in adhesion between the tendon and surrounding tissue resulting in pain on use. This initial inflammatory response is the earliest clinically recognizable manifestation of overuse tendon injury (Cyriax, 1936; Davidson, 2009). The most common muscle associated with tennis elbow is the extensor carpi radialis brevis. The extensor carpi radialis brevis is a muscle with a small origin distal to the other wrist extensor muscles. This arises from a narrow area of fascia on the lateral epicondyle. The muscle around the elbow functions as a dynamic stabilizer of the elbow. The actual pathophysiology of lateral epicondylitis is believed to be related to repeated wrist and finger extension. This causes micro trauma at the common wrist extensor origin at the tendoperiosteal junction (De Smedt, 2007; Diana, 1998). If a subject where lateral epicondyle is resistant to conservative treatment, a differential diagnosis of radial tunnel syndrome must be considered. Resisted forearm supination, with the elbow flexed at ninety degrees and forearm fully pronated, is acutely painful in this condition which allows one to differentiate it from epicondylitis. Other differential include contusion of the proximal radioulnar joint, compression neuropathy of the posterior interosseous nerve, referred pain from cervical spine to the lateral epicondyle, osteoarthritis of the elbow joint, loose bodies in the elbow joint, supinator muscle sprain, synovitis of the elbow, triceps tendonitis and myofascial trigger points of the brachio radialis brevis, extensor carpi radialis longus, extensor digitorum or extensor carpi ulnaris muscle (Garder, 1961; Goel, 2015). Ultrasound therapy is helpful for lateral epicondylitis. Ultrasound therapy is thought to have thermal and mechanical effect on the target tissue leading to increased metabolism, circulation, extensibility of connective tissue and tissue regeneration (Gruchow and Palletieri, 1979; Hamilton, 1986). Instrument assisted soft tissue manipulation (IASTM) instrument effectively breaks down fascial restriction and scar tissue. It is a non-invasive, physical intervention used to improve the functional status of myofascial structure. IASTM increases active range of motion to the same extent as active self-stretch. It facilitates a cascade of healing activities resulting in remodeling of affected soft tissue structure. Repeated strain or other mechanisms are broken down allowing full functional restoration to occur. Taping is an effective method and is widely used in a variety of musculoskeletal condition. Elbow taping is a common way to relieve the symptom of lateral epicondylitis and is widely used to add support, reduce stress and relieve pain in the lateral epicondyle (Jean, 2011; Kraushaar and Nirschi, 1998). Therefore, the aim of the present study is to find out the effectiveness of Instrument assisted soft tissue manipulation and taping to improve function and grip strength in lateral epicondylitis subjects.

MATERIALS AND METHODS

An experimental study was conducted with data collected from RVS college of physiotherapy outpatient department, Sulur, Coimbatore. Twenty subjects of age group between 25 to 35 years and diagnosed with tennis elbow were recruited randomly into two groups of ten subjects each by convenient sampling. Consent was obtained from them prior to the study. Inclusion criteria comprised: clinically diagnosed lateral epicondylitis subjects who showed positive Mills test and Cozen test. Subjects of both gender were included in the study. The non co-operative patients; presence of systemic or local infection; history or presence of bleeding disorder; subjects on anticoagulant drugs such as warfarin; corticosteroids injection within past 6 months; previous surgery to the elbow region; subjects with neuromuscular conditions; and with history of recent fracture in the upper limb were excluded from the study (La Freniere, 1979). The included subjects were then divided into two groups:

Group A- Ten subjects who were treated with ultrasound and IASTM;

Group B- Ten subjects who were treated with ultrasound and taping technique.

However, prior to commencement of the intervention, the pre-test of dependent variables were measured in all participants. Both the experimental groups were given the treatment for 3 weeks continuously. Before and after the completion of 3 weeks treatment intervention, the outcome measures, i.e. grip strength and disability evaluated by grip dynamometer and mayo elbow performance index were measured and recorded at the beginning and completion of 3 weeks. SPSS software was used to analyze the data (version 17). The value of Alpha was set to 0.05. Wilcoxon test was used to find homogeneity for base line and outcome variable within the group, and Mann-Whitney test was used to find homogeneity for base line and outcome variable between the groups. Descriptive statistics were used to find mean and standard deviation (SD) for demographic and outcome variables.

Procedure

Group 1- Ten subjects treated with ultrasound and IASTM.

Procedure for ultrasound: The treatment head was moved continuously over the surface while even pressure was maintained in order to iron out the irregularities in the sonic field. The emitting surface was kept parallel to the skin surface to reduce reflection and pressed sufficiently firmly to exclude any air. The pattern of movement was either a series of overlapping parallel strokes, or circles or figure-of-eight. Frequency: 3MHz; Mode: continuous mode; Intensity: 1.7W/cm²; Duration: 7-8minutes; Sets: 1 time daily for a week (Lan Le Ngoc, 2000).

Procedure for IASTM: In the lateral forearm, the areas around the radial bony contours and the radial head were assessed for any restrictions. #3 edge was used for soft tissue release.

Group 2- Ten subjects treated with ultrasound and taping technique.

Procedure for ultrasound: Ultrasound treatment procedure and parameters were same as group 1.

Procedure for Taping: The elbow was slight bent and the tape was applied around the elbow approximately 2cm below the lateral epicondyle.

Step 1: The X tape was placed on the lateral side of the elbow while bending the elbow slightly.

Step 2: The base of I tape was placed over the X tape and the tail was adhered to the palm side of the wrist.

Step 3: No stretch was applied during application. The tape around the elbow over the point of pain towards the forearm was applied with 25% stretch. The last two inches of tape was again applied without stretch. The elbow was bent at 90 degree in front of the body.¹⁷

RESULT

Twenty lateral epicondylitis subjects were selected for the study and divided into two groups. Group A was treated with IASTM and Group B was treated with kinesiotape.

Analysis of Dependent Variable Functional disability in Group A: The calculated paired 't' value was 25.12 with p value < 0.005. Hence, there is significant difference in functional disability following IASTM techniques among lateral epicondylitis patients.

Analysis of Dependent Variable Functional disability in Group B: The calculated paired' value was 11.4 with p value < 0.005. Hence, there is significant difference in Functional disability following kinesiology tape among lateral epicondylitis patients.

Dependent Variable Functional disability between Group A and Group B: The calculated unpaired 't' value was 5.44 and the table 't' value was 2.278 at 0.005 level of significance. Since, the calculated 't' value is greater than table 't' value, there was a significant difference between IASTM and kinesiology tape in reducing Functional disability among lateral epicondylitis patients. When comparing the mean values of Functional disability in Group A and B, Group A subjects treated with IASTM showed more difference than Group B subjects treated with kinesiotaping technique. Hence it can be concluded that IASTM technique is more effective than kinesio taping in reducing functional disability among lateral epicondylitis patients.

Analysis of Dependent Variable Grip strength in Group A: The calculated paired 't' value was 11.18 and p value < 0.005. Hence, there was significant difference in grip strength following IASTM among lateral epicondylitis.

Analysis of Dependent Variable Grip strength Group B: The calculated paired' value was 8.53 p value < 0.005. Hence, there was significant difference in Grip strength following kinesiology tape among lateral epicondylitis.

Dependent Variable Grip strength between Group A and Group B: The calculated unpaired 't' value was 11.48 and the table 't' value was 2.278 at 0.005 level of significance. Since the calculated 't' value was greater than table 't' value, there was significant difference between IASTM technique and kinesiology tape in reducing Grip strength among lateral epicondylitis. When comparing the mean values of Grip strength angle in Group A and B, Group A subjects treated with IASTM showed more difference than Group B subjects treated with kinesio taping technique. Hence it can be concluded that IASTM is more effective than kinesio taping techniques in the improvement of Grip strength among lateral epicondylitis.

DISCUSSION

The aim of this study was to assess and compare the effectiveness of instrumented assisted soft tissue mobilization technique and kinesiology tape along with ultrasound in lateral epicondylitis patients. Twenty clinically diagnosed tennis elbow patients were randomly selected and divided into two groups: group A and group B, where Group A subjects were treated with IASTM techniques and group B subjects were treated with kinesiology tape. The results of the present study showed that there was a significant improvement in functional disability and grip strength following IASTM technique among Group A tennis elbow patients. The result of the present study is supported by Matthew Lambert *et al.*, (2017) who conducted a study to evaluate the effectiveness of IASTM compared to other intervention on patients with lateral epicondylitis. These outcome support the idea of IASTM may have an impact on physiological changes by providing an increase in blood flow, reduction in tissue viscosity, myofascial release, interruption of pain receptors, and improvement of flexibility of underlying tissues. It is suggested that IASTM is an effective treatment intervention for reducing pain and improving function. The results of the present study demonstrated that there was significant improvement in pain or range of motion for lateral epicondylitis when compared to other conservative treatments. This is earlier supported by Ajimsha MS *et al.*, (2012) who conducted a study to investigate if myofascial release reduces pain and functional disability in subjects with lateral epicondylitis. This simple main effect analysis showed that the myofascial release performed better and reported 78.7% reduction in their pain and functional disability. The study provided evidence that IASTM is more effective than a control intervention for lateral epicondylitis (Stasinopoulos, 2013; Stratford, 1989; Takakura, 2022). The results of the present study showed that the soft tissue release group performed better than control intervention group in terms of reduction in their pain and functional disability in week 4 compared with that in week 1.

The present study, however, has some limitations. The short period of the study is one of the study's shortcomings. Study was conducted with limited number of subjects. Study did not include follow up programme and the psychological factors not considered. Future studies should be done over a longer period of time with a bigger sample size to determine the efficacy of therapy, according to this study. A regular follow-up program may be incorporated to determine the treatment's long-term effects, and the age group could be expanded.

CONCLUSION

From the statistical results, it can be concluded that there is increase in grip strength and reduction of disability in both the groups. But when comparing the groups, it was found that IASTM is more effective than taping technique.

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