

A Comparative Study of Effectiveness of Kinesiotaping along with Exercise Programme Program on Patients with Lateral Epicondylitis

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Abstract: *Background:* Lateral epicondylitis is most common over use syndrome which is a classic repetitive strain injury seen all over the world. This comparative study is investigated the effects of taping along with static stretching and eccentric exercise programme in subjects with lateral epicondylitis. *Methodology:* The study was design in comparative nature. 20 subjects were selected and divided it two groups: control group (n=10) received only exercise programme, and study group (n=10) received taping with exercise programme. Before starting the treatment both groups were assessed using the numerical pain rating scale. After the treatment sessions both groups were assessed again by using the numerical pain rating scale to check the significance of taping with exercise programme. *Results:* The results of this study taping with exercise programme (study group) shows decrease in the pain as compare to exercise programme alone (control group). The result shows that there is no significant difference between using the lateral taping with exercise programme or exercise programme alone for the management of lateral epicondylitis. *Conclusion:* The effectiveness of taping with exercise programme leads to better outcomes in treatment of lateral epicondylitis then exercise programme alone in reduce pain.

Keywords: Lateral epicondylitis, kinesio - tape, Static stretching, eccentric exercise programme, Numerical Pain Scale

1. Introduction

Lateral epicondylitis is most common over use syndrome which is a classic repetitive strain injury seen all over the world. Though it is not a complicated problem it had exposed to light due to problems associated with it. It got importance because of its frequent incidence in all age groups precising people in manual works.

It is a pathological condition of common extensor muscles at its origin on lateral humeral condyle. Lateral epicondylitis is a painful condition affecting the tendinous origin of common wrist extensor from lateral epicondyle.

It is also called as LATERAL EPICONDYLAGIA, (OR) LATERAL EPICONDYLOSIS (OR) TENNIS ELBOW. Lateral epicondylitis is a combination of chronic exhaustion and irritation in muscles and tendons on back of forearm and outside of elbow today this condition is better called as "COMPUTER ELBOW".

The major causes of tennis elbow are divided into extrinsic and intrinsic factors. The extrinsic factors are Repetitive stress, Forceful activity, Manual labour. The intrinsic factors are Anatomical factors, Age - related factors, Systemic factors. the other factors Epicondylitis, Calcific deposits, Painful annular ligament. The persons in more prone to risk are Athletes, Plumbers, Painters, Cooks, Butchers, Carpenters, Persons works on computer, House wife. The most common presenting features are Diffuse pain, Morning stiffness, Occasional night pain, Dropping objects, Pain at resisted extension, Popping or clicking sound heard on movement. The most common Clinical features are Diffuse pain, Morning stiffness, Occasional night pain, Dropping objects, Pain at resisted extension, Popping or clicking sound heard on movement

The most risk person who may get lateral epicondylitis are Athletes, Plumbers, Painters, Cooks, Butchers, Carpenters, Persons works It on computer, House wife, Obesity, Manual labour, Repetitive movements, Forceful activities

Tape is commonly used by the physiotherapist to relieve your pain, improve joint stability, enhance athletic confidence, reduce injury recurrence, prevent injury. The Aims Of Taping Is to Stabilize or support an injury, Relieve pain by de - loading vulnerable on painful structures. And Facilitate normal movement, muscle action or postural patterns. There are several Types Of Taping are Kinesiology taping, Mulligan taping, McConnell taping. In this study used kinesiology tape along with static stretching and eccentric exercise.

An eccentric contraction is the movement of an active muscle while it is lengthening under load. There are three principles of eccentric exercises. These are load (resistance), speed (velocity) and frequency of contractions. 1. Load (resistance): Increasing the load ensures the tendon is greater stress and the fundamental basis of the progression of the exercise program. 2. Speed (velocity): In each treatment session the speed of the eccentric training should be increased. 3. Frequency of contractions: According to the therapists 3. Sets of 10 repetitions can normally be performed, as determined by the tolerance of the patient.

The aim of stretching exercises is to release the wrist extensor muscles in the forearm or the manual. These exercises are recommended in order to improve the mobility and range of movement of the arm and wrist. subject can do either be actively or passively

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2. Materials and Methodology

A study design was comparative study design with pre and post test evaluation. The study was conducted in outpatient department of Cherran's Institute of Health Science, Coimbatore. A total number of 20 subjects were selected and it divided into two groups, who fulfilled the inclusion and exclusion criteria were randomly selected. The subjects were selected by using purpose sampling technique. The Control group received only exercise programme and the experimental group has received tapping along with exercise programme. The Inclusion Criteria are Acute and Sub acute lateral epicondylitis, Patient with difficulty in hand function, Aged 30 - 40 (Gender both male and female), Positive cozen test, Positive mills test. And the Exclusion Criteria are Chronic lateral epicondylitis, Concomitant, any Bony neurological problem, Impairment neurological diseases, Previous trauma, surgery to the elbow region, Systemic diseases allergic to tape. The study duration was conducted for 4 weeks. Pain was measured by using Numerical pain rating scale (NPRS)

3. Procedure

1) Static Stretch

The stretching for the ECRB tendon was with the elbow in extension, forearm in pronation, and wrist in flexion and with ulnar deviation, according to the patient's tolerance. Recommendations for the optimal time for holding this stretching position vary, ranging from as little as 3 seconds to as much as 60 seconds. A stretch 30–45 seconds hold was achieved for increasing tendon flexibility. 15–45 seconds rest interval given between each repetitions. A static stretch was repeated several times per treatment session, the first stretch repetition results in the greatest increase in muscle - tendon unit length.

2) Eccentric Exercises

Eccentric exercises for LET are performed on a bed with the elbow supported on the bed in full extension, forearm in pronation, wrist in extended position (as high as possible), and the hand hanging over the edge of the bed. In this position, patients are asked to flex their wrist slowly until they reach full flexion, and then return to the starting position. Patients are instructed to continue with the exercise even if they have a mild pain. However, they were instructed to stop the exercise if the pain becomes disabling. They performed 3 sets of 10 repetitions at each treatment session, with at least 1 min rest interval between each set. When a patient was able to perform the eccentric exercises without experiencing any minor pain or discomfort, the load is increased using free weights or therabands.

3) Kinesio Taping

The patient's position was sitting on the chair bending the elbow at 90 degrees in front of the body. The tape used in the study was non - elastic, 3.8 - cm wide kinesio - tape with adhesive backing and high tensile strength. The subjects were asked to rest the elbow in an supported position where the elbow was slightly in flexion and pronated and wrist in applying position to contract the ECRB. Before apply the tap the hand was clean dirt and oils, lotion. The tape was applied on the proximal forearm 3 cms distal to the lateral epicondyle, starting medially and ending laterally parallel to the wrist line. The tape is tightened until the subject agrees that it is snug's during a contraction of the wrist extensors, but not impeding blood flow. Application of tape will be comfortable when the wrist extensors are relaxed.

4. Data Analysis

The data was analysed by using a numerical pain rating scale. The data obtained is analysed using a paired "t" test and an unpaired "t" test. The pre - test and post - test are taken before and after treatment.

Table 1: Comparison of Pre and post values of pain (NPRS) in only exercise programme in subjects with lateral epicondylitis (control group)

Group	Measurement	Mean	Mean difference	Standard deviation	Paired "t" test	Table P – value at 0.05
Control	Pre	7.4	3.34	0.97	14.9	0.00001
	Post	4.06				

The above table shows that out of 10 samples Pre and post mean values of pain (NPRS) shows reduction of pain from 7.4 to 4.06 in control group.

Table 2: Comparison of Pre and post values of pain (NPRS) in taping with exercise programme in subjects with lateral epicondylitis (study group)

Group	Measurement	Mean	Mean difference	Standard deviation	Paired "t" test	Table P – value at 0.05
Study	Pre	7.4	4.27	0.9	13.1	0.00001
	Post	3.13				

The above table shows that out of 10 samples Pre and post mean values of pain (NPRS) shows reduction of pain from 7.4 to 3.13 in Study group.

Table 3: Comparison of values of NPRS on pain between control Group and study Group

Group	Mean	Mean difference	Standard deviation	Unpaired "t" test	Table P – value at 0.05
Control	3.3	- 1	0.87	3.2	0.003405
Study	4.3				

Pre and post mean values of pain (NPRS) shows 3.3 in control group and 4.3 in study group. As $p < 0.05$ there is significant difference between two groups basing on within difference.

The t value and p value were 3.2 and 0.003405. The obtained t value is greater than the table value at the significant level of 0.05. Hence the statistical report states that there were significant reduction in pain after the application of intervention for a period of 4 weeks.

5. Results

A total number of subjects of age group between 30 to 50 years with lateral epicondylitis were randomly selected for this study. They were divided into two groups such as control group treated with exercise programme and study group treated with taping along with exercise programme.

The subjects of both control group and study group are given the treatment for a period of 4 weeks. Before the treatment the pre test of NUMERICAL PAIN RATING SCALE measured. After 4 weeks of treatment the post test values of NPRS are measured.

The paired test "t" test and unpaired 't' test was used to compare the pre - test and post - test values of NPRS for both groups based on the statistical analysis, the result of the present study shows that there is significant improvement in both control Group and study Group following the effect of taping with exercise programme.

The paired "t" test of study Group (13.1) is greater than the control Group (14.9) paired "t" test. Reduce the pain in NPRS ($p < 0.005$) was significantly greater in the study Group than the control Group.

When comparing the mean difference of control group and study group. the study group shows more difference then control group so it is concluded that with exercise programme is more effective than exercise programme alone, is reduce pain among lateral epicondylitis.

6. Discussion

The aim of the study was to find out the effectiveness of taping along with exercise programme among subjects with lateralepicondylitis. Lateral epicondylitis is the most common lesion in the elbow that commonly affected with prevalence of 1 - 3% in general population and its generally work related and sports related pain and tenderness disorder with microscopically and microscopic tears in the extensor carpi radialis caused by excessive quick, monotonous, repetitive eccentric contraction and gripping activities of the wrist. the clinical features are localised pain and tenderness specifically at the origin of extensor carpi radialis brevis, there is an limited range of motion and stiffness. so the study is to find out the effectiveness of taping with exercise programme of along with on pain among subjects with lateral epicondylitis.

A variety of physiotherapy treatment techniques were used in the treatment of lateral epicondylitis pain. They did the

study on kinesio taping in chronic lateral epicondylitis. A total 20 subject with the CLE were include in the study. they were divided into two different groups. Group A kinesio taping and conventional physiotherapy $n=10$ and group B conventional physiotherapy $n=10$. The pre defined treatment protocol was provided for four weeks. The pain, functional mobility and grip strength were assessed at baseline and post treatment (4th week) using NPRS, PRTEF, HAND HELD DYNAMOMETER. there was a significant decrease pain, improvement in functional performance and grip strength ($p < 0.05$) in both groups. However, kinesio taping group was found to have a greater effect on all group outcome measure in CLE subject. He did the study on kinesio taping reduces elbow pain during resisted wrist extension patients with chronic lateral epicondylitis a significant reduction of $2.1 + or - 1.6$ ($z = - 3.081$, $p=0.015$) was found on a NPRS with KT and ST, respectively, indicating that both taping sessions produces immediate pain relief for resisted wrist extension both taping 20 sessions significantly improved the pain free grip strength with increasing of $3.331 + or - 5.05$ ($z = - 2.615$, $p=0.009$) and $2.43 + or - 3.331$ ($z=2.783$, $p=0.0005$) kg found with KT and ST, respectively. compared with ST, KT exhibited superiority in controlling pain experienced during resisted wrist extension ($z=2.168$, $p=0.030$). conclusion taping produced unnegetable placebo effects on pain relief and pain free grip strength for patients with lateral epicondylitis, and KT seemed to have additional effects on controlling pain that was elicited by resisted wrist extension.

This study suggested that taping with exercise programme is improving the patient with lateral epicondylitis. In the current study with exercise programme and exercise programme alone are simultaneously given to a single group and results shows that there is improvement in pain of 4 weeks of treatment. It suggested that applying these techniques simultaneously reduces the period of recovery in patient with lateral epicondylitis.

7. Conclusion

In an effort to find out the effect of taping with exercise programme among subjects with lateral epicondylitis.20 subjects were selected under the selective criteria, subjects were divided into two groups each group have 10 subject control group - exercise and study group - taping with exercise programme. To compare the pre and post test were measure by using NPRS. Finally the study concluded that the taping with exercise programme have been showed better results to reduce pain among subjects with lateral epicondylitis.

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