

The Effect of Move Kinetic Taping with Conventional Physiotherapy Management on Pain and Grip Strength Associated with Elbow Performance in Patient with Lateral Epicondylitis

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Abstract

Lateral Epicondylitis, also known as “Tennis Elbow” is a common soft-tissue condition frequently associated with over-use injury of the elbow. It is the most frequently diagnosed musculoskeletal disorder in the neck and upper extremity. As the study is a Case Study, so that there is only two subject who participated for the study. The patient was a 32-year-old, right-handed man with a height of 1.75 meters, a body mass of 76 kilogram and BMI of 24.8 Kg/m². He is working in the company as the position of Data operator and has the history of using the personal computer or typing work for more than 5 hours per day and the second patient was a 36-year-old, right-handed man with a height of 1.4 meters, a body mass of 60 kilogram and BMI of 30.6 Kg/m². He is working in the company as the position of Data operator and has the history of using the personal computer or typing work for more than 6.5 hours per day. The significant improvement in pain free grip strength with the Move Kinetic Taping with respect to baseline can be attributed to the band which was applied circumferentially over the wrist extensor muscle belly giving overall proprioceptive feedback. Move Kinetic Taping produced a considerably greater improvement in grip strength and function as compared to the conventional exercises and implies its potential use in the future in addition to the conservative physiotherapeutic treatment with Move Kinetic Taping in the management of patients with lateral epicondylitis.

Keywords: Lateral Epicondylitis, Move Kinetic Taping, Strength.

Introduction

Lateral Epicondylitis, also known as “Tennis Elbow” is a common soft-tissue condition frequently associated with over-use injury of the elbow. It is the most frequently diagnosed musculoskeletal disorder in the neck and upper extremity. It is a degenerative or failed healing tendon response characterized by the increased presence of fibroblasts, vascular hyperplasia and disorganized collagen in the origin of the extensor carpi radialis brevis (ECRB), the most commonly affected structure [1]. At-risk populations also include those with professions that require repetitive and/or forceful/heavy manual tasks, nonneutral wrist postures, and repetitive gripping. There is no consensus on the optimal treatment approach for lateral epicondylalgia, which is in large part due to its unclear underlying etiology [2].

Low-Dye taping is an orthopedic/sports adhesive strapping technique first described by Dye (1939) and later modified by a number of authors [3]. Kinesio taping (KT) is widely used to manage various musculoskeletal problems. Invented by the Japanese chiropractor Kenzo Kase in the 1970s, the tape is an elastic woven-cotton strip with heat-sensitive acrylic adhesive and the maximum available tension of about 40–60% its overall length. Numerous effects of KT are hypothesized, including pain reduction, normalizing muscle function, improving proprioceptive feedback, and correcting articular malalignment [4]. KT has physiological effects such as reducing pain or abnormal sensations, promoting drainage of the blood and lymphatic fluid under the skin and correcting joint arrangement [5].

The deep radial nerve continues into the radial tunnel and in most cases passes through a fascial extension from the origin of the ECRB muscle, innervates it, and gives off a small recurrent branch that travels laterally to the lateral epicondyle. The nerve then courses under the arcade of Frohse, which is a semicircular arch at the proximal edge of the supinator muscle about 2.3 cm distal to the radio humeral joint [6].

The paucity of evidence on treatments for lateral epicondylitis may stem from several sources, including the self-limiting nature of the condition, the lack of pathophysiological data, the methodological shortcomings of the current studies, and the existence of multiple factors which may influence the outcome [8]. These treatments can provide a transient remission for few months in up to 90% of patients, and 3–8% of patients, who are refractory to conservative treatment, may be surgical candidates [9].

Massage is a nonspecific means of physiotherapy and consists in the “methodical, mechanical processing” of soft anatomical structures with a relaxing, decongestive and vasodilation effects for the case we analyze. Kinesio taping, a passive intervention method, used in the mechanically triggered pain, proves efficient in diminishing pain by stimulation of blood circulation and induction of muscular relaxation [10]. decrease in pain was observed on the first, third, and sixth months after treatment in all groups. Improvement in grip strength was present on the first month of injection treatment, on the third month of physical therapy [11]. A wide variety of conservative applications with different mechanisms of action have been investigated for years in Lateral Epicondylitis. Taping has been used to restrict or facilitate movement in the rehabilitation of the elbows with Lateral Epicondylitis by therapists, it has been suggested that Kinesio taping (KT) supports weak muscles, corrects joint arrangement, increases blood and lymph circulation, provides proprioceptive input, and reduces pain and muscle spasm [12].

Methods

As the study is a Case Study, so that there is only two subject who participated for the study. The inclusion criteria are as Any gender is included, Age should be not below 30 years and not more than 45 years, Having the history of lateral epicondylitis, Having the history of using laptops for more than 8 to 9 hours per day, Having the background of using computer from last one year and having the tenderness at lateral epicondyle of the humerus. The exclusion criteria are as Age below 30years and more than 45 years, Not Having the history of lateral epicondylitis, Not Having the history of using laptops for more than 8 to 9 hours per day Maximum, Not Having the background of using computer from last one year, Not Having the tenderness at lateral epicondyle of the humerus and any surgical history of elbow with implants or without implants.

Case Description

Case No. 1

The patient was a 32-year-old, right-handed man with a height of 1.75 meters, a body mass of 76 kilogram and BMI of 24.8 Kg/m². He is working in the company as the position of Data operator, and has the history of using the personal computer or typing work for more than 5 hours per day. The patient having the history of the lateral epicondylitis with tenderness present at the lateral epicondyle of the humerus of the right hand of the patient. Informed consent was taken and patient right were protected according to the established policies of the research ethics. The patient described a 4-month history of the right elbow pain that he first noticed after performing volunteer work that including carrying traps and mulch. The patient had seen his primary care physician, who prescribed pain medication, and after a follow up visit to his physician, his physician was referred to the physiotherapist for the evaluation and treatment. The patient’s symptoms had not improved in the 4-months period prior to his physical therapy evaluation and did not change with the pain medication. The patient stated that he had right lateral elbow pain that occurred with movements requiring wrist extension and activities of daily living, such as lifting his child and typing during his work counter. The pain also consistently interrupted his sleep once a night. To manage his symptoms, he applied ice on her elbow, which helped temporarily. He had not received any prior therapeutic intervention. The patient’s goal was to return to her prior level of pain-free elbow function for her everyday activities.

Case No. 2

The patient was a 36-year-old, right-handed man with a height of 1.4 meters, a body mass of 60 kilogram and BMI of 30.6 Kg/m². He is working in the company as the position of Data operator, and has the history of using the personal computer or typing work for more than 6.5 hours per day. The patient having the history of the lateral epicondylitis with tenderness present at the lateral epicondyle of the humerus of the right hand of the patient. Informed consent was taken and patient right were protected according to the established policies of the research ethics. The patient described a 7-month history of the right elbow pain that he first noticed after performing volunteer work that including carrying traps and mulch. The patient had seen his primary care physician, who prescribed pain medication, and after a follow up visit to his physician, his physician was referred to the physiotherapist for the evaluation and treatment. The patient’s symptoms had not improved in the 7-months period prior to his physical therapy evaluation and did not change with the pain medication. The patient stated that he had right lateral elbow pain that occurred with movements requiring wrist extension and activities of daily living, such as lifting his child and typing during his work counter. The pain also consistently interrupted his sleep once a night. To manage his symptoms, he applied ice on her elbow, which helped temporarily. He had not received any prior therapeutic intervention. The patient’s goal was to return to her prior level of pain-free elbow function for her everyday activities.

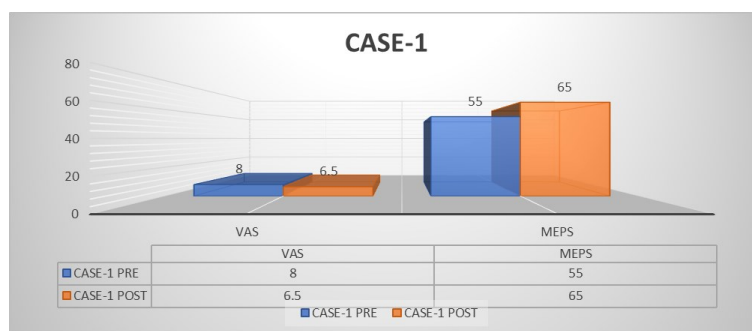
Result

Table 1: Showing the score of VAS (Visual Analog Scale) and Mayo Elbow Performance Scale (MEPS) with Pre and Post treatment in Case No 1.

	CASE-1 (Without Move Tapping)	
	PRE	POST
VAS	8	6.5
MEPS	55	65

According to the table no. 1: -

- The VAS Score is manifested as 8 during before treatment and 6.5 after the treatment with out the Move kinetic Tapping.
- The MEPS Score is Coined as 55 during before treatment and 65 functional score after the treatment without Move Kinetic Tapping.



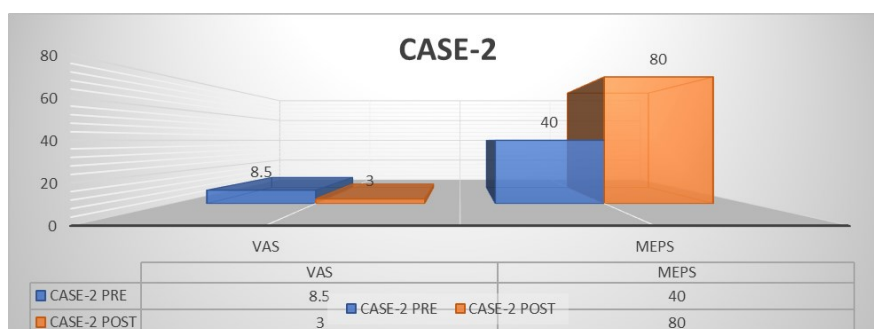
Graph 1: Showing the graphical representation score of VAS (Visual Analog Scale) and Mayo Elbow Performance Scale (MEPS) with Pre and Post treatment in Case No 1.

Table 2: Showing the score of VAS (Visual Analog Scale) and Mayo Elbow Performance Scale (MEPS) with Pre and Post treatment in Case No 2.

According to the table no. 1: -

	CASE-2 (With Move Kinetic Tapping)	
	PRE	POST
VAS	8.5	3
MEPS	40	80

- The VAS Score is manifested as 8.5 during before treatment and 3 after the treatment with the Move Kinetic Tapping.
- The MEPS Score is Coined as 40 during before treatment and 80 functional score after the treatment with Move Kinetic Tapping.



Graph 2: Showing the graphical representation score of VAS (Visual Analog Scale) and Mayo Elbow Performance Scale (MEPS) with Pre and Post treatment in Case No 2.

Discussion

This study investigated whether the regular conventional physiotherapy treatment protocol versus Move Kinetic Taping when used in conjunction had a significant effect on the grip strength and function in patients with lateral epicondylitis. The findings of this study indicated that application of Move Kinetic Taping induces significant improvement in grip strength and functional level, better than elbow conventional therapy. While, there were comparable finding between the elbow Move Kinetic Taping and control groups which were substantially less effective than the Move Kinetic Taping.

The significant improvement in pain free grip strength with the Move Kinetic Taping with respect to baseline can be attributed to the band which was applied circumferentially over the wrist extensor muscle belly giving overall proprioceptive feedback. The muscles are held secured beneath the brace and allowing limited excursion of the muscle. The pressure applied to the wrist extensor muscle by the band enhances its effect to counteract wrist flexion moment and thereby allows the finger flexors to contract effectively. One more reason for substantially greater effects with the use of a Move Kinetic Taping could be because of the additional support and reducing the mechanical load of the muscles at the elbow.

Lateral epicondylitis is commonly seen in racquet sports. Substantial eccentric contractions of the extensor carpi during the backhand stroke are likely the cause of repetitive microtrauma leading to the lateral epicondylitis. Lateral epicondylitis also has a high prevalence among the general population, affecting about 1~ 3% of people of working age. Traditionally, the management usually relies on conservative treatments, such as oral non-steroidal anti-inflammatory drugs, physical agents (e.g., ultrasound, electrical stimulation), therapeutic exercise, or steroid injection. Even with these treatments, patients usually have to endure symptoms for several months. Therefore, an effective temporary management, such as taping, can potentially improve the quality of life and sport performance. The initial concept of applying KT when introduced is to reduce the build-up of fluid between and within the layers of the soft tissue [4].

Also, no side effects were observed after application. KT technique seemed to be effective in increasing the hand grip strength of healthy individuals and the best region for tape application was the extensor region of the forearm. The positive result in the strength observed in this study suggests that tactile input generated by move kinesio tape was strong enough to modulate extensor muscle strength. The mechanical changes that occur in the peripheral nerves and their surrounding tissues and how the passive ROM of the peripheral joints is reduced when nerve tension tests are applied have been described [6].

The adhesion of soft tissues in the lateral epicondyle may be due to fibrosis in chronic inflammation. This chronic inflammation may be caused by direct tendon trauma (either acute pull or chronic repetitive minor trauma). The Kinesio tape expands the distance between the muscle and the interstitial area and lifts the skin upwards by creating micro curves on the skin. Thus, lymphatic circulation is accelerated, and the stimulation of the subcutaneous pain receptors is prevented. KT may increase the range of motion without pain and allow the muscle to produce more force. The evidence of systematic review suggests that melting iced water applied through a wet towel for repeated periods of 10 minutes is most effective.

Direct current creates an electrical field over the treated area that, theoretically, changes blood flow. The positive pad behaves like ice, causing reduced circulation to the area under the pad and reduction in swelling. Other aspects of the multimodal protocol were bracing and ice. The brace was used as a supportive therapy. Biomechanical studies indicate that counterforce bracing, especially with some form of padding directly over the extensor carpi radialis brevis, reduces the stress and forces at the extensor carpi radialis brevis.

Conclusions

Pain inhibition might have also played a role in our patient. Study suggests that gripping activation in the forearm/ hand muscles may facilitate activation of the serratus anterior and trapezius muscles, which may occur to provide and maintain scapular control when moving the arm during a lifting task. The conclusion of the study is that the application of a Move Kinetic Taping produced a considerably greater improvement in grip strength and function as compared to the conventional exercises and implies its potential use in the future in addition to the conservative physiotherapeutic treatment with Move Kinetic Taping in the management of patients with lateral epicondylitis. KT may improve pain, grip strength, patient satisfaction and functional status and may be useful alternative treatment method in patients with Lateral Epicondylitis.

Limitation

A limitation of the present study was that the length of the follow-up was short compared to previous studies in the literature. We did not include a non-taping or placebo taping group. Another limitation of study was the small sample size; therefore, the study can be underpowered. Future studies involving a larger sample size and a sham group are warranted to confirm our findings.

Conflict of Interest

There is no conflict of interest in the completion of the study.

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References

1. Ā SJK, Miglani S, Grover D, Ā ARZ. FOREARM BAND VERSUS ELBOW TAPING: AS A MANAGEMENT OF LATERAL EPI-CONDYLITIS. 2013;16(1):1-9.
2. Bhatt JB. Middle and Lower Trapezius Strengthening for the Management of Lateral Epicondylalgia: A Case Report. 2013;43(11):841-7.
3. Burns J, Buchbinder R, Hons M, Landorf KB, Cook C. The Effect of Low-Dye Taping on Kinematic, Kinetic, and Electromyographic Variables: A Systematic Review.
4. Cho Y, Hsu W, Lin L, Lin Y. Kinesio taping reduces elbow pain during resisted wrist extension in patients with chronic lateral epicondylitis: a randomized, double-blinded, cross-over study. 2018;1-8.
5. Dilek B, Batmaz I, Akif M, Sahin E, Ilter L. Kinesio taping in patients with lateral epicondylitis. 2016; 1:1-6.
6. Ekstrom RA, Holden K. Examination of and Intervention for a Patient with Chronic Lateral Elbow Pain with Signs of Nerve Entrapment. 2002;82(11):1077-86.
7. Hong KLW. Analysis of Kinetic Differences According to Ankle Taping Types in Drop Landing. 2014;24(1):51-7.
8. Howitt SD, Fccs C, Fccrs C. Lateral epicondylosis : a case study of conservative care utilizing ART ® and rehabilitation. 2006;50(C).
9. Lin M, Chou L, Chen H, Kao M. Percutaneous Soft Tissue Release for Treating Chronic Recurrent Myofascial Pain Associated with Lateral Epicondylitis: 6 Case Studies. 2012;2012.
10. Mariana C, Carmen-oana T. Massage versus Kinesio Taping. Possibilities to Enhance the Kinetic Program in Mechanically Triggered Neck Pain. *Procedia - Soc Behav Sci* [Internet]. 2014; 117:639-45. Available from: <http://dx.doi.org/10.1016/j.sbspro.2014.02.275>
11. Özçakar RG& FÜM& PB& SK& L. Physical therapy, corticosteroid injection, and extracorporeal shock wave treatment in lateral epicondylitis. 2012;
12. Özmen T, Koparal SS, Karataş Ö, Eser F, Özkurt B, Gafuroğlu Ü. Comparison of the clinical and sonographic effects of ultrasound therapy, extracorporeal shock wave therapy, and Kinesio taping in lateral epicondylitis. 2021;76-83.

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