Original Article

Effectiveness of Active Release Technique and Myofascial Release Technique on Pain and Functional Performance in Lateral Epicondylitis

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Abstract

Background: Pain with resisted wrist, middle finger, or both dorsiflexion, along with discomfort and tenderness across the lateral epicondyle the humerus, are all symptoms of tennis elbow. It affects 1-3% of adults annually, mainly in the dominant hand.This study was designed to inspect the effectiveness of active release technique and myofascial release technique in lateral epicondylitis.

Purpose: To find the effectiveness of active release technique and myofascial release technique in lateral epicondylitis.

Materials and Methods: Total of 40 participants were selected from karthik hospital for 4 weeks according to inclusion and exclusion criteria and the participants were explained about treatment safely and about the procedure and written consent was obtained. All the subjects underwent pretest measurement with NPRS and PRTEE at the beginning of treatment

Results: Statistical analysis of data showed significant differences not only in myofascial group but also in the active release group. The myofascial release group were significantly higher than the active release group, with a p value of <0.0001

Conclusion: Myofascial release Technique is more effective than Active release technique in the lateral epicondylitis

Key Word: Tennis elbow, lateral epicondylitis, numerical pain rating scale, patient rated tennis elbow evaluation, myofascial release technique, active release technique, ultrasound therapy

Introduction

Tennis elbow is described by pain, discomfort and tenderness across the lateral epicondyle of the humerus and by pain with resisted dorsiflexion of wrist, middle finger or both. These are various words that can be used to describe tennis elbow[1]. It affects 1-3% of adults annually, mainly in the dominant hand. It can occur as an acute injury or overuse injury involving repetitive wrist extension against resistance[3]. The extensor carpi radialis brevis, one of the extensor tendons that originate in the lateral epicondyle, has frequently been identified as the essential component in tennis elbow Its unusual anatomy exposes it to shearing force in almost all movements of the arm according to biomechanical research, tennis elbow is essentially a mechanically

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induced condition varied population groups have been shown to have varied incidences of lateral epicondylitis[4].

The etiology of the tennis elbow is multifactorial anatomical reasons like inadequate blood circulation, aging and flexibility issues may contribute to wrist extensor overuse tennis players can profit from additional device personalized to their sport technical mistakes that are considered to be a risk factor for the etiology of tennis elbow include 1. An improper backhand with the elbow leading 2. Too much forearm pronation when performing a forehand topspin 3. Excessive wrist flexion during a service, regardless of the racquet's size, grip, or string tension. The weight is a possible risk factor; these elements influence how the elbow is loaded biomechanically during a tennis overuse, with an emphasis on the elbow, which is the underlying cause of all tendinosis, including that of the patellar and rotator cuff tendons. The following characteristics are most likely to lead to elbow tendon overuse: 1. More than 35 years 2. High degree of activity (in work or sports) 3. Engaging in challenging activities at least three times each week for at least 30 minutes at a time[4]. The list of frequent conditions that might cause elbow pain that may resemble elbow tendinosis is provided below in a succinct manner; it is by no means exhaustive[4]. The differential diagnosis for lateral tennis elbow most frequently stated is posterior interosseous nerve entrapment [example; motor portion of radial nerve in the forearm] clinical symptoms of radial nerve neuropraxia include discomfort during provocative supinator stress tests, as well as widespread pain and tenderness along the radial nerve course in the proximal forearm extensor mass[5].The parasympathetic response of the autonomic nerve system, interpersonal attention, and the Gate Control Theory, and serotonin release are some of the hypotheses mentioned above, and serotonin release are some of the hypotheses mentioned above. According to the Gate Control theory, pain stimuli move via slower nervous system channels than sensory stimuli like pressure. The quicker moving pressure stimuli block the brain's ability to receive painful stimuli, effectively "closing the gate" on the brain's ability to perceive pain. The term "interpersonal attention" describes the hands-on, specialized attention that a massage client receives. This individualized care and human contact frequently have a relaxing impact that lessens the sense of pain[6].

Myofascial release is a commonly used direct manual medicine procedure that manipulates and reduces myofascial limitations associated with a variety of somatic dysfunctions. When combined with other conventional treatments, myofascial release works well to minimize tissue discomfort and provide instant pain relief[9]. Musculoskeletal discomfort can be reduced with the aid of myofascial release treatments. There are explanations for why myofascial release can reduce musculoskeletal discomfort[5].

Active release technique was utilized to treat the muscles that showed scar tissue, including the muscles involved in hand movement[2]. Soft tissue mobilization was used to lengthen the tissue that had been shortened following shortening based on fiber texture in the longitudinal direction. Active release technique is a technique used to treat soft tissues like tendons, nerves, and myofascial. It is used to treat acute injuries, functional fixation damage from prolonged aberrant posture, and repetitive strain injuries[7].

Aim

The aim of the study is to find the effectiveness of active release technique and myofascial release technique on pain and functional performance in lateral epicondylitis.

Material and Method

A total of 40 participants were chosen based on inclusion and exclusion criteria. Participants were informed about the treatment's safety and simplicity before providing written consent. Randomly, subjects who agreed to take part were divided into two groups. Myofascial release and the active release technique were used on the ultrasound group. Prior to starting therapy, NPRS and PRTEE pretest measurements were performed on all participants. At the Karthik Hospital, the study technique was conducted. An experimental investigation on tennis elbow included 40 participants in total. Subjects were informed of the purpose of the study and given assurances. The Karthik hospital patients who were referred with lateral elbow Pain were screened.

Inclusion criteria:

- Both male and females
- Patient who experienced pain while gripping
- Patients who experienced pain with resisted wrist extension
- Patients who experienced tenderness on palpation over the lateral epicondyle of the humerous

Exclusion criteria:

They were excluded if any history of trauma, surgery, acute infections, any systemic disorders, cervical spine and upper limb dysfunction, neurological impairments, cardiovascular diseases, osteoporosis, recent steroid infiltration, ossification and calcification of soft tissue, malignancies, recently underwent physiotherapy interventions in least 3 months.

Outcome measures:

Assessments were done at the beginning of the trial (at baseline) and two weeks later

- Numeric Pain Rating Scale [NPRS]
- Patient rated tennis elbow evaluation [PRTEE]

Procedure

Using inclusion and exclusion criteria, a total of 40 individuals were chosen. After explaining treatment safety and procedure simplicity to the participants, a signed agreement was obtained. Active release with ultrasound and myofascial release with ultrasound were the two groups to which subjects who were willing to participate were randomly assigned. Prior to starting treatment, all individuals had pretest measurement using a patient-rated numerical pain scale and tennis elbow evaluation.

Group A: Active release technique group:

This Group receives active release techniques. The extensor carpi radialis longus and brevis muscles were worked on by the therapist by applying pressure to the muscles distal to their attachment at the elbow while the patient was seated, elbow flexed and resting on the treatment table, forearm in mid-prone, and wrist in neutral position. The patient began with a bent elbow and a straight wrist. The patient extended the elbow and pronated and flexed the wrist as the therapist held the muscles. The therapist then adjusted the pressure proximally in an effort to loosen adhesions within and between muscle planes. The treatment is carried out 6 times per week for 2 weeks, a total of 15 times for 10 min.

GROUP B: Myofascial release technique group:

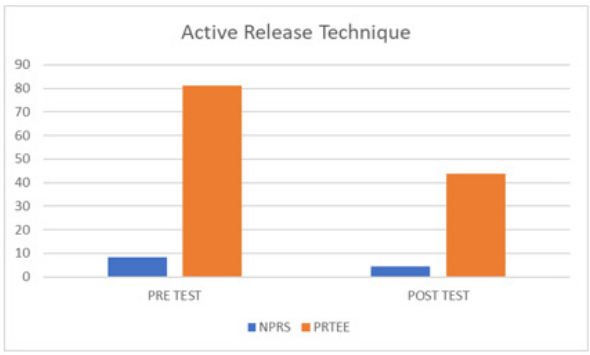
This group receives myofascial release technique. Myofascial release technique was performed with the patient sitting, facing the ipsilateral hand, elbow pronated and flexed to about 15 degrees, and palm flat on the table. The therapist positioned to the side of the table at the level of the patient's shoulder. The therapist started on the humerus immediately proximal to the lateral epicondyle and treated from the common extensor tendon to the extensor retinaculum of the wrist. The therapist applied pressure on the periosteum by using fingertips and carried this contact down to the wrist's extensor retinaculum after passing inferiorly through the common extensor tendon. During this process, patients were instructed to gradually flex and extend their elbows in the easy range of 5° to 10. (2 reps, 5 minutes

Ultrasound:

Pulsed ultrasound therapy with a 1:4 pulse ratio of 1MHz at 1.5 W/cm for 5 minutes was used at the ten periosteal junction of the extensor carpi radialis brevis. Using an ultrasound device, in a seated position. Ultrasound gel was used to actively engage the instrument head with the skin. To maximize energy absorption by the tissue, the applicator head was positioned at a right angle to the LE of the humerus. The length of each therapy session was 10 minutes maximum. The patients received no medication during the course of the treatment. Therapeutic ultrasound has no known harmful effects. The therapy will help alleviate body pain in the affected areas. The treatment will assist in reducing body pain in the affected regions. Because ultrasound physical therapy is non-invasive, it is less dangerous than other techniques.

Data analysis

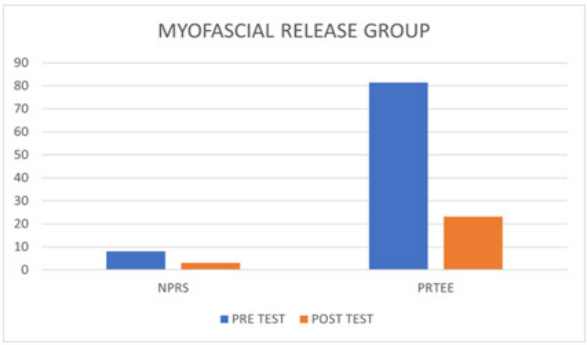
Active release technique group



Graph No: 1

Interpretation:: Graph no.1 shows that the values are extremely statistically significant.

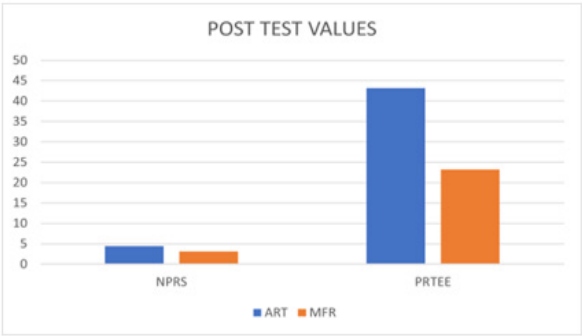
Myofascial release technique



Graph No: 2

Interpretation: Graph no.2 shows that the values are extremely statistically significant

Post test values of both group



Graph No: 3

Interpretation: Graph no.3 shows that the values are extremely statistically significant.

Result

Informed consent was obtained from each participant before the subjects were chosen based on inclusion and exclusion criteria. Two groupings of subjects were created. Twenty subjects received myofascial release with ultrasound in the myofascial release group, while twenty received active release with ultrasound in the active release group.The mean value of the NPRS post test in the myofascial group was 3.15, while it was 4.40, in the active release group. This indicates the myofascial release group were significantly higher than the active release group, with a p value of <0.0001.The myofascial group PRTEE post test mean value was 23.25, whereas the active release group was 43.20. This indicates that the myofascial group PRTEE score were significantly higher than the active release group with a p value of <0.0001.

Discussion

The goal of this study was to determine the efficacy of Active Release Technique and Myofascial Release Technique in treating lateral epicondylitis.

The myofascial release group consisted of 20 subjects who received myofascial release technique with ultrasound and active release consisted of 20 subjects who received active release technique with ultrasound.

The outcome measures were Numerical pain rating scale and Patient rated tennis elbow evaluation.

Beneficial effects were significantly greater in myofascial release technique than the active release technique. When responses were compared between both groups, the result showed a significant difference in myofascial release technique than the active release technique. statistical analysis of active release technique by using numerical pain rating scale has a p value of 0.0001 were considered statistically significant. The statistical analysis of the myofascial release technique by using the modified numerical pain rating scale the P value of less than 0.0001 was considered statistically significant. the differences between the two techniques by using the numerical pain rating scale the P value is less than 0.0001.

The statistical analysis of the active release technique by using the patient rated tennis elbow evaluation.

Dr shinde et al., 2019 According to the study's findings, myofascial release treatment and mulligan mobilization with movement are both equally efficient at decreasing pain and enhancing grip strength in lateral epicondylitis patients[6].

Dr. Basu et al., 2017 This study came to the conclusion that individuals with lateral elbow discomfort respond well to conservative treatment and active release technique. When used to treat lateral elbow pain, active release technique performed better than the control group[7].

K. Kotteeswaran et al., 2019 Through the course of research, MFR therapy and active stretching were shown to be effective in reducing pain and improving function when compared to active stretching alone. Despite both groups demonstrating similar improvements, the MFR group also demonstrated an added benefit in the treatment of lateral epicondylitis[8].

Ajimsha et al., 2012 Comparing the MFR approach to the control group, it was discovered that there had been a significant improvement in pain (NPRS), functional performance (PRTEE). The greater effect of the MFR group in comparison to the control group is consistent with earlier authors' findings. This may be related to the fact that collagen reorganization causes the fascial tissue to revert to its normal length secondary to the pain alleviation brought on by MFR. The stimulation of afferent pathways and the excitation of afferent A fibers, which can result in segmental pain modulation and modulation through the activation of descending pain inhibiting systems, are also likely to contribute to the analgesics effect of MFR, as is the case with all massage therapy techniques [9].

Nadia Richer et al., 2017 The study showed that a clinical trial examining the effectiveness of combining manual therapy with cryostimulation in individuals with chronic lateral epicondylitis may be successfully completed. According to these preliminary findings, neither the short-term nor the long- term additional benefits of cryostimulation and manual therapy care were realized. Positive results were obtained in the treatment of chronic lateral epicondylitis using manual myofascial point therapy and mobilization approaches. The single therapeutic benefit of cryostimulation in patients with both acute and chronic illnesses should be the focus of future research[10].

Md. Shahadat Hossain et al.,2019 The purpose of the study is to investigate the efficacy of myofascial release in conjunction with traditional physiotherapy in reducing the symptoms of tennis elbow patients. This will aid in their rehabilitation and improve their functional activities[11].

Binder et al., 1985 Tennis elbow has historically been treated with ultrasound therapy. According to research by Binder ultrasound therapy improved recovery in 63% of instances versus 29% of patients who got a placebo[12].

Rashid et al., 2022 For the purpose of reducing pain and increasing range of motion, many exercise forms are addressed. From the most recent studies, the exercises are methodically explained. Mill's Manipulation, a deep transverse friction massage, has finally been discussed in this article[13].

Chait ots m et al., 2003; Hou et al., 2002; Khuman et al., 2013; Kumar & Jetly, 2016; Rodriguez Fuentes et al., 2016; Trivedi et al., 2014 studied MFR combined with another treatment approach in comparison to a different treatment method or methods. All six publications utilizing MFR approaches reported statistically significant improvements in pain, disability, strength, quality of life (QoL), and AROM14.

Conclusion

According to the study, myofascial release technique with ultrasound and active release technique with ultrasound both reduce pain and increase functional performance. The findings suggest that the myofascial release technique with ultrasound is more beneficial than the active release group with ultrasound in reducing pain and enhancing functional activities in lateral epicondylitis participants.

Ethical Clearance: The ISRB committee of a private hospital and institution in Chennai has provided its clearance for the conduct of human research that complies with all applicable national

laws, institutional regulations. (Application Number 03/019/2022/ISRB/SR/SCPT)

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Conflict of Interest: Nil

References

1. Nirschl RP. Tennis elbow. Orthopedic Clinics of North America. 1973 Jul 1;4(3):787-800.
2. Gliedt JA, Daniels CJ. Chiropractic treatment of lateral epicondylitis: a case report utilizing active release techniques. Journal of Chiropractic Medicine. 2014 Jun 1;13(2):104-9.
3. Cutts S, Gangoo S, Modi N, Pasapula C. Tennis elbow: A clinical review article. Journal of orthopedics. 2020 Jan 1;17:203-7.
4. Buchanan BK, Varacallo M. Tennis elbow (lateral epicondylitis). StatPearls. Treasure Island (FL). 2019.
5. Werenski J. The effectiveness of Myofascial release technique in the treatment of Myofascial pain. Lit. Rev. 2011 Jun 17;32:440-50.
6. Shinde SG, Purswani SJ. Movement versus myofascial release therapy on pain and grip strength in patients with lateral epicondylitis. Int J Sci Health Res. 2019;4(1):372-7.
7. Basu S, Bhatia D, Palekar T, Khandare S, Shaikh F. Effectiveness of active release technique in the treatment of chronic lateral elbow pain. International Research Journal of Human Resources and Social Sciences. 2017;4(5):24-32.
8. Kotteeswaran K, Manikumar M, Muthukumaran J, Taj MS. EFFECT OF MYOFASCIAL TRIGGER POINT RELEASE THERAPY AND ACTIVE STRETCHING ON PAIN AMONG LATERAL EPICONDYLITIS PARTICIPANTS.20191;13(2):104-9.
9. Ajimsha MS, Chithra S, Thulasyammal RP. Effectiveness of myofascial release in the management of lateral epicondylitis in computer professionals. Archives of physical medicine and rehabilitation. 2012 Apr 1;93(4):604-9.
10. Richer N, Marchand AA, Descarreaux M. Management of chronic lateral epicondylitis with manual therapy and local cryostimulation: a pilot study. Journal of chiropractic medicine. 2017 Dec 1;16(4):279-88.
11. Lizis P. Analgesic effect of extracorporeal shock wave therapy versus ultrasound therapy in chronic tennis elbow. Journal of physical therapy science. 2015;27(8):2563-7.
12. Trivedi P, Sathiyavani D, Nambi G, Khuman R, Shah K, Bhatt P. Comparison of active release technique and myofascial release technique on pain, grip strength & functional performance in patients with chronic lateral epicondylitis. Res. 2014;2(3):488-94.
13. Rashid HK, Samanta D, George SS, Cardoza44 VJ, Ali Z. Current Physical Therapies Available for the Rehabilitation of Tennis Elbow1;4(3):787-800
14. Chait OTS M, Eaton OTS E, Farley OTS T. Efficacy of Myofascial Release2017;4(5):24-32