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Current Perspectives on Active Release Technique and Myofascial Release Technique in Housewives with Lateral Epicondylitis

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Abstract

Lateral epicondylitis is a frequently occurring overuse musculoskeletal condition caused by repetitive use of the wrist, lifting and gripping actions at home, which are commonly performed by housewives. Persistent pain, weaker grip strength and loss of upper-limb function considerably limit daily living abilities and quality of life. Conservative physiotherapy is still the primary approach to treatment and manual therapy techniques like Active Release Technique (ART) and Myofascial Release Technique (MFR) are becoming more and more important. The present review was an attempt to present the available evidence on the efficacy of ART and MFR on pain relief and functional performance in housewives having lateral epicondylitis. Pathophysiology of pain and functional impairment, principles and mechanisms of ART and MFR, clinical applications and recent clinical studies are discussed. There is some evidence that both methods are effective in reducing pain, improving grip strength and improving functional outcomes, especially combined with therapeutic exercises. But more high-quality, randomized controlled trials, specifically directed at housewives are required to develop standard treatment protocols.

Keywords; Lateral Epicondylitis; Active Release Technique; Myofascial Release Technique; Pain; Functional Performance.

INTRODUCTION

Lateral epicondylitis (LE), also known as Tennis Elbow, is a very common musculoskeletal condition defined by the development of pain and tenderness on the outside of the elbow at the lateral epicondyle of the humerus, from which the common extensor tendon originates, and, in particular, the extensor carpi radialis brevis. While it has been recognized as an inflammatory disease in the past, recent evidence suggests LE is a primary tendinopathy caused by repeated mechanical loading and microtrauma, causing collagen disorganization, angiofibroblastic hyperplasia, and defective tendon healing. It is estimated that about 1-3% of general population are affected, the highest incidence of which is seen in the age group of 35-54 years and in occupations/activities that require repetitive wrist extension, forearm supination and forceful gripping [1].

Although commonly associated with a racquet sport, lateral epicondylitis is a very common occurrence in non-athletic individuals, such as housewives, due to the repetitive nature of housework, including washing clothes, wringing fabrics, lifting utensils, chopping vegetables, carrying water containers, and extended periods of cleaning. These repetitive motions of the upper limbs cause mechanical stress to the wrist extensor tendons, which can cause overuse and degeneration. One of the recent cross-sectional studies included among housewives, showed a high prevalence of lateral epicondylitis, and pointed out the risk of persistent elbow pain

and functional disability, thus underlining the importance of early recognition and treatment of this condition in this population [2].Patients with lateral epicondylitis typically have focal pain at the lateral epicondyle of the humerus, exacerbated with gripping, lifting, and resisted extension of the wrist and fingers. As the disorder advances, the pain may extend down the forearm and become a problem with everyday activities. Loss of grip strength, decreased upper-limb endurance and compromised functional performance can restrict occupational and domestic activities, potentially compromising quality of life [3]. These include, but are not limited to, the Visual Analogue Scale (VAS) or the Numeric Pain Rating Scale (NPRS), the Patient-Rated Tennis Elbow Evaluation (PRTEE) questionnaire, the Disabilities of the Arm, Shoulder and Hand (DASH) questionnaire and grip-strength dynamometry.

Conservative physiotherapy is the first line treatment for lateral epicondylitis and is designed to decrease pain, restore the function of the affected tendon, increase grip strength, and safely return the patient to normal function without the need for surgery. Patients receive patient education, activity modification, therapeutic exercise, manual therapy, and soft tissue techniques during contemporary rehabilitation programs with the goal of tissue healing and functional recovery [4]. Two of these interventions, Active Release Technique (ART) and Myofascial Release Technique (MFR), have become increasingly popular in recent years because they show promise of decreasing pain, increasing soft tissue mobility, and improving upper-limb function. Familiarity with the current evidence for these manual therapy techniques is very relevant for housewives, as it is the key to their recovery which in turn will affect their ability to perform the normal activities of daily living independently [5].

Figure 1: Lateral Epicondylitis (Tennis Elbow) among Household Women[1]

Pain and Functional Impairment in Housewives with Lateral Epicondylitis

The most common clinical symptoms of lateral epicondylitis are pain and functional impairment, leading to the most common indications for medical and physiotherapy intervention. Common Extensor tendon is constantly loaded by repetitive activities within the housewives including gripping, extension of the wrist, forearm rotation and lifting, thereby increasing susceptibility of the tendon to repetitive use injuries. With the repetition of stress on the tendons while going about daily activities with little time to rest or recover, the lateral epicondylitis may develop and progress to interfere with daily activities [6].

There is currently no evidence to recommend that lateral epicondylitis is an inflammatory disease, and it is probably a degenerative tendinopathy. Repeated microtrauma results in disorganization of the collagen fibres, angiofibroblastic hyperplasia, neovascularisation and impaired healing of tendon, especially at the extensor carpi radialis brevis insertion [7]. Secondary muscle tightness in the wrist extensor muscles and the occurrence of myofascial trigger points can also contribute to increased pain sensitivity, decreased tissue mobility and decreased muscle efficiency, worsening symptoms during the upper limb movements. As a result, the patient will have lateral elbow pain, tenderness, weakness of grip and pain with resisted extension of the wrist and gripping activities. These impairments often make it difficult to lift cooking utensils, carry grocery bags or water containers, dry clothes, sweep, mop, chop vegetables, and longer cleaning which can result in lower efficiency at work, and lower quality of life [8].

Severity of symptoms and functional disability is frequently measured by validated outcome measures such as the Visual Analogue Scale (VAS) or Numeric Pain Rating Scale (NPRS) to assess pain intensity, the Patient-Rated Tennis Elbow Evaluation (PRTEE) and the Disabilities of the Arm, Shoulder and Hand (DASH) questionnaire to assess upper-limb function and hand dynamometry to quantify grip strength [9], [10]. These measures can give good information on the recovery of patients and the effectiveness of treatment. Thus, the primary concerns of conservative management are to alleviate pain, restore grip strength, enhance upper-limb function and allow the housewives to return to their daily life activities safely and efficiently, with the emphasis in treatment on pain relief and functional restoration.

Active Release Technique in the Management of Lateral Epicondylitis

Active Release Technique (ART) is a highly specialized manual technique that focuses on the identification and treatment of soft tissue disorders that affect muscles,

tendons, nerves, fascia and ligaments. It is now used more commonly in the conservative management of lateral epicondylitis, as this condition is linked to repetitive overuse and soft tissue restrictions and degenerative changes in the wrist extensor tendon. In ART, the manual pressure is applied with precision, and the patient is actively moved, to restore normal tissue mobility and decrease pain. As a non-invasive technique, ART has been advocated as a supportive technique to therapeutic exercise and conventional physiotherapy in enhancing upper-limb function [11].

Principles of Active Release Technique

The basic concept of ART is to locate and eliminate adhesions or fibrotic restrictions that form in soft tissues as a result of repetitive microtrauma or overuse. In treatment, the therapist provides the tension to the affected tissue, and the patient moves the muscle that is affected through its full range of motion. This coordinated movement will help to restore normal tissue extensibility, increase muscle flexibility and improve functional movement patterns without placing too much stress on the damaged tendon.

Proposed Mechanisms

There are several biomechanical and physiological mechanisms that explain the therapeutic effects of ART. It is thought that manual tension and active movement work together to break down any abnormal cross-links/adhesions in the muscle-tendon unit, which would allow for greater mobility of the tissues and less mechanical stress to the extensor tendon. ART may also improve local blood flow, increase collagen fibre alignment, decrease myofascial tightness and decrease nociceptive input from pain-sensitive structures. These changes help reduce pain, increase grip strength and restore upper limb function in everyday activities [12].

Treatment Procedure

Treatment typically involves the extensor carpi radialis brevis, extensor digitorum, extensor carpi radialis longus and the surrounding musculature of the forearm in patients with lateral epicondylitis. The therapist starts by feeling the tissues to determine where they are tender or tight. Manual pressure is then applied along the length of the affected muscle or tendon with the patient actively moving the wrist and elbow in controlled motion (wrist flexion and elbow extension or prescribed motion). Typically, treatment involves a few slow repetitions and can be augmented by stretching and eccentric strengthening exercises for best functional recovery [13].

Evidence from Clinical Studies on Pain Reduction and Functional Improvement

It has been shown in recent clinical studies that ART is successful in people suffering from lateral epicondylitis. Randomized and comparative trials have demonstrated pain intensity relief on the Visual Analogue Scale (VAS) or Numeric Pain Rating Scale (NPRS) and increased grip strength and functional measures like the Patient-Rated Tennis Elbow Evaluation (PRTEE) and Disabilities of the Arm, Shoulder and Hand (DASH) questionnaire. ART has also been demonstrated to enhance the pliability of soft tissue and enable a more timely return to normal life when performed within more extensive physiotherapy programs. There is good evidence of its clinical effectiveness, but most of the studies reported have a limited sample size and require larger, high quality, randomized controlled trials, especially in housewives whose repetitive domestic tasks are specific to the upper limb.

Myofascial Release Technique in the Management of Lateral Epicondylitis

Myofascial Release (MFR) is a popular manual therapy treatment that attempts to return the fascia and surrounding soft tissues to their normal mobility and flexibility. Lateral epicondylitis can cause pain and dysfunction of the upper limb due to fascial tightness, increased muscle tension and the formation of myofascial trigger points from repetitive overuse of the wrist extensor muscles. MFR is a non-invasive physiotherapy tool that has received a lot of interest as it promotes functional recovery and pain relief whilst working on soft tissue restrictions. It is often used as part of a holistic rehabilitation plan, along with other treatments such as therapy exercises and patient education [14].

Principles of Myofascial Release

The basic concept of MFR is to apply sustained low load manual pressure to the regions of fascial restriction to restore tissue extensibility and normal movement. MFR is a massage technique that concentrates on releasing restrictions in the fascial system (the network that surrounds muscles and tendons) as opposed to traditional massage. Slow and sustained stretches gradually extend the fascia and help to normalize the tension in it and increase the mobility of the affected tissues. In lateral epicondylitis (lateral strains), this method is of great value in stiffening soft tissue and limiting forearm movement due to repetitive mechanical loading [15].

Mechanisms of Action

MFR's therapeutic benefits are thought to be due to both biomechanical and neurophysiological processes. Fascial

stretching for an extended period of time softens the tissue, increases the blood flow and lymphatic drainage in the area, and decreases the tension in the muscle tissues surrounding the common extensor tendon. Additionally, MFR can help to decrease pain by stimulating mechanoreceptors, influencing nociceptive pathways and relaxing hyperirritable myofascial trigger points. Better mobility in the fascial system also supports the transmission of forces during the movements of the upper limbs, which helps to strengthen the grip and increases functional performance and the absence of discomfort during repeated movements [16].

Clinical Application

The MFR technique is used on the wrist extensor muscles, forearm fascia and soft tissues around the wrist which are tender or have limited mobility in clinical practice. The therapist gently pushes out with palms or fingers and then slowly stretches the fascial tissues until they give less resistance and a sense of relaxation is felt. Treatment sessions are usually several minutes and often include stretching, eccentric strengthening exercises, ergonomic recommendations, and activity modification to optimize treatment benefits. This integrated approach is more relevant for people who use the upper parts of their body in repetitive movement on a daily basis, such as housewives doing routine household jobs [17].

Evidence Regarding Pain Relief and Improved Functional Performance

Based in the current evidence, MFR is effective as an adjunctive technique for alleviating pain and enhancing upper-limb function of patients suffering from lateral epicondylitis. Randomised controlled trials and systematic reviews have shown large decreases in pain intensity as measured by the Visual Analogue Scale (VAS) or the Numeric Pain Rating Scale (NPRS) as well as increased grip strength and improvements in functional outcome measures, including the Patient-Rated Tennis Elbow Evaluation (PRTEE) and the Disabilities of the Arm, Shoulder and Hand (DASH) questionnaire.

Additionally, studies indicate that MFR in conjunction with therapeutic exercise has even more functional improvement than exercise alone is able to create, primarily because of the improvement in tissue mobility and the decrease in muscle stiffness. Despite the positive evidence that is available, more extensive, high quality randomized controlled trials with larger samples are needed to develop consistent treatment protocols and to determine the long-term efficacy of MFR, especially for housewives with lateral epicondylitis.

Table 1: Comparison of Active Release Technique (ART) and Myofascial Release Technique (MFR) in the Management of Lateral Epicondylitis

Parameter	Active Release Technique (ART)	Myofascial Release Technique (MFR)
Primary Target Tissue	Muscles, tendons, ligaments, fascia, and entrapped nerves.	Fascia, muscles, and surrounding connective tissues.
Treatment Principle	Releases adhesions through active movement while the therapist applies tension to the affected tissue.	Restores fascial mobility through prolonged stretching and sustained manual pressure.
Mechanism of Action	Breaks down fibrotic adhesions, improves tissue extensibility, promotes collagen alignment, and enhances local circulation.	Reduces fascial stiffness, improves blood and lymphatic circulation, decreases muscle tension, and releases myofascial restrictions.
Pain Reduction	Reduces pain by decreasing tissue adhesions, mechanical irritation, and nociceptive stimulation.	Reduces pain by decreasing fascial tension, improving circulation, and modulating pain receptors.
Effect on Functional Performance	Improves grip strength, range of motion, muscle flexibility, and upper-limb function.	Improves flexibility, tissue mobility, grip strength, and functional performance during daily activities.
Clinical Application	Commonly applied to the extensor carpi radialis brevis, extensor digitorum, extensor carpi radialis longus, and associated forearm muscles.	Applied to the forearm fascia, wrist extensor muscles, and surrounding myofascial tissues.
Limitations	Requires active patient cooperation and therapist expertise; may cause temporary post-treatment soreness.	Effects may require multiple treatment sessions; evidence for long-term benefits remains limited.
Evidence in Lateral Epicondylitis	Clinical studies report significant improvements in pain (VAS/NPRS), grip strength, and PRTEE/DASH scores, particularly when combined with conventional physiotherapy.	Clinical studies demonstrate significant reductions in pain and improvements in grip strength and functional outcome measures, especially when combined with exercise therapy.

LITERATURE REVIEW

(Akbar et al., 2024) [18] The second most often diagnosed musculoskeletal disorder is lateral epicondylitis.

LE disproportionately affects women, particularly housewives. Persistent elbow pain, diminished grip strength, restricted arm mobility, and trouble carrying out everyday chores are all possible outcomes. Only 16.95% of those who were diagnosed with lateral epicondylitis reported pain in their left arm, while 71.19% (42 out of 59) experienced pain in their right arm. However, 11.86% (7 out of 59) reported pain in both arm. Of the people with lateral epicondylitis, 40.67% (24 out of 59) had acute pain, and 59.32% (35 out of 59) had chronic pain. Among housewives, we discovered a high prevalence of lateral epicondylitis (39.33%). Raising awareness among housewives about the importance of altering their lifestyle and activity routine in order to prevent conditions like L.E. To demonstrate clear proof, robust investigations with bigger sample numbers are required.

(Samagh et al., 2016) [19] Examine how various demographic factors are affected by lateral epicondylitis. The study included 52 cases of lateral epicondylitis of the elbow that were diagnosed and met the inclusion and exclusion criteria. Demographic and examination characteristics were measured as part of a comprehensive evaluation of the patients. There was no discernible difference between the demographic characteristics of gender, age, BMI, and side affected, indicating that LE had an equal impact on all of them. However, a comparison of mean scores revealed that women scored lower than men. Additionally, it was shown that lateral epicondylitis was more common in those who had affinity for their dominant hand.

(Uttamchandani & Phansopkar, 2024) [20] Tennis elbow, also known as lateral epicondylitis (LE), is a common overuse injury to the elbow. LE is a disorder that significantly impairs upper extremity function and produces pain. Conservative methods include the use of electrical and thermal agents. Because it frequently results from occupation, it is a serious public health concern. Additionally, it occurs with repetitive upper extremity motions, such as using a desktop computer, exercising with weights, making powerful forearm movements, and performing repetitive vibratory motions—all of which are among the most frequent tasks carried out by engineers. Inflammation of the extensor muscle origin results in lateral epicondylar pain, which is excruciating. Additionally, activities of daily living are restricted. It affects not just racquet sport players but also the majority of men and women in their fourth and fifth decades, which limits their ability to engage in everyday activities, employment, and home chores. Rest, injectables, and nonsteroidal anti-inflammatory medicines are the choices to be used if the pain does not go away after rehabilitation, which appears to be the most effective treatment for both acute and chronic disorders. In LE, physiotherapeutic therapy is crucial.

(Trivedi et al., 2020) [7] The purpose of this case study is to discuss the effectiveness of virtual reality in treating lateral epicondylitis using myofascial release and EMG biofeedback. This research describes the effectiveness of virtual reality using myofascial release method, EMG biofeedback, and pulsed ultrasound therapy in a 37-year-old male patient without diabetes who had been diagnosed with chronic lateral epicondylitis. In this instance, the primary intervention was four weeks of pulsed ultrasound treatment combined with virtual reality via "EMG biofeedback and myofascial release technique (MFR)". Reducing pain and inflammation while strengthening the wrist extensor muscles was the aim of the treatment in order to prevent recurrence. The 11-point Numerical Pain Rating Scale, the hand dynamometer for grip strength, and the Patient Rated Tennis Elbow Evaluation for functional score were used to gauge the effectiveness of the pain treatment. Every outcome measure was collected and examined both before and after the course of therapy. In conclusion, the combination of pulsed ultrasound therapy and virtual reality using EMG biofeedback and myofascial release method showed encouraging results in the rehabilitation of lateral epicondylitis, enabling a prompt return to work and play.

(Nagore et al., 2023) [21] explains the author's seven years of suffering with lateral epicondylitis, which included functional impairment in daily life, before beginning physical therapy treatment. Lateral epicondylitis was verified by the use of Mill's and Cozen's assays. Beginning in 2023, four weeks of regular physiotherapy sessions were conducted, which included both conventional therapy and active release techniques. The Visual Analogue Scale (VAS) outcome measure score was 7/10 before therapy and 2/10 after treatment, while "the Patient-Rated Tennis Elbow Evaluation (PRTEE)" outcome measure score was 50/100 before treatment and 25/100 after treatment. The findings from this specific case study indicate that physiotherapy significantly improves range of motion, muscular strength, everyday living activities, and overall quality of life. According to the study's findings, a physiotherapist is essential for treating overuse injuries and helping patients resume their regular activities.

(Dabkara et al., 2022) [22] focuses on how these soft tissue methods compare to traditional therapy in terms of providing patients with lateral epicondylitis with relief. This

investigation involved 30 participants who were equally allocated to two groups. As part of the conventional treatment for lateral epicondylitis, Group A was administered active release technique, while Group B was administered deep friction massage. The Numeric Pain Rating Scale (NPRS), a hand dynamometer, and the "Patient Rated Tennis Elbow Evaluation (PRTEE)" questionnaire were used to evaluate each patient on the first, eleventh, and twenty-first days. Both treatments improved pain, grip strength, and functional activity status in patients with chronic lateral epicondylitis, according to statistical analysis of the data. However, an independent t-test showed a highly significant difference between the deep friction massage and active release technique groups. According to NPRS scores, the study verified that group B's therapy was more effective than group A's, while group A's (ART) therapy was more effective than group B's (DFM) on PRTEE and grip strength. Additionally, among patients with chronic lateral epicondylitis, there was a statistically significant difference between group A and group B before and after the program, according to a paired sample test. According to the study's findings, deep friction massage and active release method are both beneficial therapies when combined with traditional therapy. When it came to treating lateral epicondylitis, the active release approach outperformed deep friction massage.

CONCLUSION

Lateral epicondylitis is a common overuse condition that significantly impacts housewives, since many such activities involve forceful gripping, lifting and wrist rotations. Chronic pain, weakness, and upper-limb dysfunction affect daily activities, and affect quality of life. Current evidence suggests that conservative physiotherapy is the most effective approach of which there is evidence and that Active Release Technique (ART) and Myofascial Release Technique (MFR) may be effective manual therapy techniques. In comparison, ART mainly restores mobility in the tissues through soft tissue manipulation and MFR works specifically to decrease fascial restrictions and muscle tension to normalize movement. Both techniques have shown to be effective in the clinic in reducing pain, increasing grip strength and functional performance, especially when accompanied by therapeutic exercises and ergonomic recommendations. While there are promising results for now, the available evidence is small in size and includes treatment protocols that vary in nature. Well designed randomized controlled trials in housewives are needed in the future to evaluate the long-term efficacy, to develop standardized intervention practices and to maximize evidence-based physiotherapy management of lateral epicondylitis.

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