



Effect of Myofascial Release Therapy and Active Stretching on Pain and Grip Strength in Lateral Epicondylitis

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ABSTRACT

Background: Lateral epicondylitis is one of the common conditions in the elbow joint. Muscles and soft tissue around the elbow are predominantly involved in lateral epicondylitis, studies identified that extensor muscles specifically extensor carpi radialis brevis (ECRB) is affected due to vigorous and repeated wrist movements. Multiple management strategies have been identified ranging from conservative to surgical, Cryotherapy to ergonomic advices, but still the results are inconclusive.

Objectives: The objective is to find out the effect of Myofascial Release Therapy (MFR) and Active Stretching on pain and grip strength in Lateral Epicondylitis.

Methodology: Quasi experimental study design with 42 sample size was selected for the study in consideration of the inclusion and exclusion criteria. Study was approved by the institutional ethical committee. The participants were divided into two groups, group I underwent myofascial release therapy with active stretching, and group II underwent only active stretching for 8 weeks, All participants receive treatment thrice weekly. The outcome measures selected were pain and grip strength. Pain was assessed through visual analog scale and the grip strength was assessed through Hand held Smedley spring dynamometer

Results: The results were analysed using Mann Whitney U test to compare the difference between the experimental group and control group. The result shows that adding Myofascial release therapy with active stretching produce a significant improvement in pain reduction and the grip strength in the patients with lateral epicondylitis.

Conclusion: The study concluded that adding MFR with active stretching produces significant reduction of pain and improvement of the function in lateral epicondylitis.

Key words: Lateral epicondylitis, Myofascial release therapy, Active stretching, Grip strength. Pain.

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INTRODUCTION

Lateral epicondylitis is also referred to as lateral epicondylalgia, or tennis elbow. It is one of the common musculoskeletal lesions in the elbow.⁽¹⁾ It is a prevalent musculoskeletal disorder that is characterized by lateral elbow pain often associated with gripping tasks, it affects at the age group of 30—60 years. It is a soft tissue lesion affecting equally both genders. It affects approximately 4-7% of patients per 1000 patients in a general practice and prevalent of 2—3 % in adults per year. It occurs as frequently as the medial epicondylitis, the ratio ranges from 4:1 to 7:1.^(2,3,4)

Various intrinsic factors are the cause for the chronic lateral epicondylitis which are discussed in numerous literatures.^(5,6) Literatures suggest that extensor muscle groups are affected primarily in the lateral epicondylitis. The studies discussed that extensor carpi radialis brevis is affected due to

repeated wrist motions. Tear of the tendon at the junction between the muscle and bone leads to poor healing of the tissues this is due to lack of overlying periosteal tissues. Repetitive movement creates micro trauma which may occur due to overuse or abnormal joint biomechanics, leading to overload of the repairing tissues, this mechanically distort scar tissue and thus stimulate free nerve endings to evoke mechanical nociceptive pain.⁽⁷⁾ There will be a fibroblastic proliferation of the tendon which will result in degenerative process or failed reparative process result more than acute inflammation.⁽⁸⁾

Symptoms of lateral epicondylitis occurs following any activity like gripping, lifting on the painful side, door knob turning, lifting bags, and shaking hands that produce pain over the lateral epicondyle. These symptoms are exacerbated by activities involving repeated wrist extension while gripping a thin object. (eg: picking up a cup).



Many clinicians advocated various conservative therapies are the treatment of choice for the lateral epicondylitis^(9,10). Physiotherapy is the best conservative treatment which was usually recommended^(2,11,12). There are number of treatment approaches used in the management of lateral epicondylitis, which includes modalities like Cryotherapy, LASER, electrical stimulations, Ultrasound, therapeutic exercises like stretching and strengthening, external appliances like splinting, elbow bands and patient education.^[13] However there is no general consensus that exists as to the most appropriate management strategy for lateral epicondylitis. Bisset et al., 2005, identified the evidences for the elbow manual therapy and the therapeutic exercises.⁽¹⁴⁾

Myofascial release therapy (MFR) is one of the common techniques which is used by physical therapist in managing the symptoms in lateral epicondylitis, however the success rate of the therapy is not well addressed.⁽¹⁵⁾ MFR is applied with low load, long duration stretch on the fascial complex, which intended to restore optimal length, decrease pain and improve function⁽¹⁶⁾. Though there are various treatment methods that show its beneficial effects in the management of lateral epicondylitis, there are a few studies conducted to investigate the effect of MFR and its role on grip strength. This study is focused to find out the effect of myofascial release therapy and active stretching on pain and grip in lateral epicondylitis.

METHODOLOGY

Study design is a Quasi experimental study, this design was adapted since the study doesn't have equal number of participants and there was no randomization in allocating the groups. Initially the study started with 48 participants where as few participants withdrawn due to medical reasons so the study completed with 42 participants. All the participants were selected by the purposive sampling with inclusion criteria which is mentioned below. The study was approved by the institutional ethical committee; K.G. Hospital & Post graduate Institute. The participants were given clear instruction about the study; potential benefits and the consequences were explained well to the

participants. A written consent form was obtained from all the participants they were all divided into equal group by a blinded assessor. Blinded assessor is not actually participating in this research his role is to assess the individual patient and collect the data. 21 participants in group I who underwent Myofascial release therapy (MFR) with active stretching and group II, 21 participants underwent active stretching only. The participants included are patients with lateral epicondylitis with atleast 3 months of duration, acute symptoms are not included, pain on one elbow only, pain not more than 6 in the Numerical pain rating scale, during application of MFR patient may express severe pain if the pain scale is more than moderate level, positive cozen test and positive mills maneuver, patients with severe pain, radiating pain or neurological symptoms are not included. The blinded assessor assessed all participants and they all were included in the study, the study was carried for 8 weeks and the follow up was made on 1st month, 3rd month and 6th month post treatment session. Introduction about the study was given to all the participants and an explanation of the treatment was given to them, questions raised by the participants were cleared. Experimental group participants received Myofascial release therapy which includes focused release of common extensor tendons & Gross release of common extensor tendons and active stretching and the control group participants received active stretching alone. Recommended stretching for the lateral epicondylitis is in elbow extension, forearm pronation with wrist in flexion and ulnar deviation. Hold should be for 30-45 seconds which were found to be effective in increasing extensibility. The outcome selected in this study was pain and grip strength. Pain was evaluated using visual analog scale, visual analog scale is having high reliability when compared with other scales for pain assessment, moreover it is easily, convenient and ready to use at any setting. Grip strength was measured using Hand held Smedley spring dynamometer; it is a light weight, hand held and more easy in use and gives more appropriate result.



RESULTS

Mann Whitney U test was used to analyze the experimental group and the control group. One way Anova was used to analyze the different week improvement and it helps to identify the improvement in different duration. Mann Whitney U test analyze the post test data was taken for the analysis and the result found that there was significant improvement in the experimental group than the control group.

Table 1: MC Whitney U Test

PAIN	No of Subject	Mean Rank	Sum Rank of	S.D	Z score
Group I	21	11.45	240.5	39.75	5.2953
Group II	21	31.55	662.5		
Total	42	27.5	903		

* (Critical value is 142)

Pain was assessed through visual analog scale which shows the Z score of 5.2953 and the S.D of which were lesser than the table value of 142. This table confirms that there will be a significant difference obtained between the groups. However, the experimental group shows significant reduction in the pain scores when compared to the control group. It shows that the study rejects null hypothesis and accepts alternate hypothesis.

Table 2: MC Whitney U TestGrip Strength

Grip Strength	No of Subject	Mean Rank	Sum Rank of	S.D	Z score
Group I	21	31.69	666.5	39.75	5.3708
Group II	21	11.31	237.5		
Total	42	21.05	903		

* (Critical value is 142)

Hand Grip was assessed through Smedley Spring Dynamometer which shows the Z score of 5.3708 and the S.D of which were lesser than the table value of 142. This table confirms that there will be a significant difference obtained between the groups. However, the experimental group shows significant improvement in the hand grip, when compared to the control group. It shows that the study rejects null hypothesis and accepts alternate hypothesis.

One way Anova was used to analyze the differences between the 1st month after treatment, 3rd month and 6th month, the values were found

using telephonic interview with the participants, the details are mentioned in table 3 below.

Table 3: ANOVA ValuesGroupsPAIN VALUES

Groups	PAIN VALUES				
	1 st Months	3 rd Months	6 th Months	Standard Error	F value
Group I	1.90	1.19	0.47	32.29	19.91
Group II	4.29	3.67	3.57	22.10	8.58
	GRIP VALUES				
	1 st Months	3 rd Months	6 th Months	Standard Error	F value
Group I	105.81	112.05	120.41	4227	15.18
Group II	86.96	87.43	87.57	727.2	0.182

DISCUSSION

The purpose of the study is to find out the effect of Myofascial release therapy and active stretching on pain and grip in lateral epicondylitis. There were two therapies implemented in this study, majority of the treatment protocol for the management of lateral epicondylitis ranges from Anti-Inflammatory Medication, Corticosteroid Injection, Electrical stimulation, LASER, acupuncture, counterforce Bracing or Splint, Ergonomics, Ultrasound, Iontophoresis, Phonophoresis, exercises (Flexibility, Strengthening and Endurance training), Manual therapy techniques, (e.g, Transverse Frictions, Joint mobilization and manipulation, Myofascial release, strain and counter strain techniques) etc.⁽¹³⁾. Few studies did analyze the role of fascia in lateral epicondylitis. So based on these findings this study aims to find out the effectiveness of Myofascial release therapy on the lateral epicondylitis.

Myofascial release therapy is used to treat all fascial problems. Studies have reported that the plastic, viscoelastic and piezo electric properties of the connective tissues are regained through application of MFR in the lateral epicondylitis⁽¹⁷⁾. MFR helps to reduce pain, by application of the treatment there will be substantial elongation of the fascia and the fascia backs to its normal length, studies has also provided evidences that MFR is more effective in controlling pain. Studies done by Ajimsha et al., 2012 and Khuman et al. 2013 has shown similar results to our study, that MFR plays a major role in reducing pain and improving functional performance and grip strength in Lateral Epicondylitis.^(15,18). Myofascial release therapy play



a major role in relaxing the deeper tissues in the body and provides lasting and effective relief of pain.⁽¹⁸⁾ When pain reduces there will be reduction of the muscle tightness and the muscles were relaxed and produce good amount of contraction.

Stretching exercises are beneficial in the management of injured tendons. Research has found that static stretching performed in ECRB tendon results in reduction of pain and lengthening of the tendon. Static stretching should be repeated several times, with the treatment session. Research found that 80% of muscle tendon unit length can be obtained after four repetition of a static stretch. This study has found that MFR and Stretching was effective in relieving pain and improving grip strength when compared with stretching only. Similar studies done by Parth trivedi et al., 2014, shows that MFR and Active release therapy were effective in the management of chronic lateral epicondylitis, furthermore the MFR was found to be superior.⁽¹⁹⁾ Khuman et al, 2013, concluded that 4 week MFR was effective in improving pain and grip strength which was similar to our study and it strongly supports our study.⁽¹⁸⁾ This confirms that the study rejects null hypothesis Study limitation shows that it was done with smaller number of participants, need a larger group of study to identify the effectiveness of MFR, Some factors like work activities, daily living activities are not controlled, no relationship found between the demographic and the pain.

CONCLUSION

Through our study MFR therapy and active stretching were shown effective in reducing pain and improving grip strength when it was compared with active stretching only. Although both the groups are shown similar improvement, the MFR group shows an additional benefit in the management of Lateral epicondylitis.

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