

The Effect of Myofascial Release Technique On Low Back Pain Changes

Sartoyo¹ Rachma Putri Kasimbara² Ahmad Fariz³

¹Physiotherapy, Institut Teknologi Sains dan Kesehatan of Malang, Malang, 02215, Malang, Indonesia
*rputrikasimbara@gmail.com

Abstract Purpose: This study aimed at knowing the clinical efficacies of myofascial release technique to determine the most beneficial result-oriented physiotherapeutic approach for treating pain due to low back pain. Methods: This was a randomized, controlled pretest–posttest experimental study that myofascial release technique. These techniques were compared using a convenience sample of 30 participants with back pain due to muscle spasms with 35-65 age. The numeric pain rating scale were used to assess the participants' pain due to back pain, and pain of LBP, at baseline (day 0), day 6, and day 12 post intervention and at during follow-up. All groups were given myofascial release technique. Repeated-measures ANOVA were used to analyze the data. Results: The within-group analyses showed significant improvement ($P < 0.05$) for all variables. Conclusion: MFRT are equally effective for reducing pain with nonspecific low back pain. Furthermore, advice promoting pain reduce can be an adjunct to physiotherapeutic interventions for reducing low back pain and its symptoms. A combination of these manual therapies advice might be a good treatment option for nonspecific pain in physiotherapy clinics

Keywords Myofascial Release technique, Low Back pain

1. Introduction

Low back pain (LBP) is a musculoskeletal and neuromuscular condition that affects the adult population. (1) LBP complaints can focus on "what structure is causing the pain?" The answers often present a diagnostic dilemma. Until the question is expanded into 'what process' causes LBP, for example; through pain-based neuroscience, contextual cognitive behavioral therapy, attention-based stress reduction, or biomechanics but less pathoanatomically focused. Thus, LBP can also be said to be a contemporary neurophysiological pain model that differs pathways that can distort pain perception.(2) An estimated 50 to 70% of each population complains of low back pain and half of the population seeks health care for their pain. (3) Time range Between 2005 and 2015, it was noted by The Global Burden of Disease that the prevalence of chronic LBP increased by 18.7% every three months, while the prevalence of patients who had LBP for more than three months increased by 17.5%.(4) Patients who present with LBP complaints often report impaired ability to perform daily activities. The impact of pain often leads to the assumption of limited motor function and inability to carry out activities of daily life so that they feel less physically active, which is reflected in LBP treatment. Physiotherapy treatment is recommended to increase physical activity to aid recovery and reduce disability.(5)

Physiotherapy is a form of health service aimed at individuals and / or groups to develop, maintain and restore movement and body functions throughout the life span using manual handling, increased movement, equipment (physical, electrotherapeutic and mechanical) functional training, communication.(6)

There are many physiotherapy modalities that can be applied to LBP patients, namely; electrotherapy, manual therapy, kinesiotherapy and specific exercise therapy. Conservative physiotherapy in the development of intervention administration nowadays leads to the application of electrotherapy. One of them is the application of infrared (IR) and transcutaneous electrical nerve stimulation (TENS).(7) Similar to the application of a manual form of therapy that focuses on reducing pain due to muscle spasm is the myofascial release technique.(8)

A study by Tozzi, P et al (2011) that studied pain perception and mobility of the fascial layer using dynamic ultrasound (USG) in 60 patients with nonspecific complaints of neck pain (NP) and u60 patients with unspecific complaints of low back pain (LBP). By comparison of pain before and after MFR technique administration according to the area of pain. Demonstrated results that MFRT is effective in relieving impaired fascial shift mobility, and for improving pain perception in patients with non-specific complaints of NP or LBP.(9)

2. Materials and Methods

This study aimed at knowing the clinical efficacies of myofascial release technique to determine the most beneficial result-oriented physiotherapeutic approach for treating pain due to low back pain.

Primary data is data that is collected directly by researchers using measuring instruments. For the NPRS pain distribution test, the researcher provided an understanding in advance for the action process. With the research method pre-test and post-test using 30 samples of both men and women, with ages between 35-65 years who were taken randomly. The population sample of patients who came to the Hospital Physiotherapy Installation. Dr. Soepraeon Malang, during December 2020 - January 2021. Which were divided into two groups; Group A was the group that gave MFRT intervention 6 times of physiotherapy and giving MFRT intervention 12 times of physiotherapy. This study used a numerical rating pain scale (NPRS) measurement tool before, and after 6 physiotherapy interventions and 12 physiotherapy interventions for 2 months. This research is based on a letter of approval from the local ethics commission.

After the data was collected, the data were processed and analyzed using SPSS version 19.00, which was processed using the univariate statistical test to describe the normal distribution of data distribution. This study used the normality test. To see the correlation between the test variables used in this study is bivariate analysis with normal data distribution using the paired t-test sample.(9)

2.1. Myofascial Release Technique

MFRT is a manual technique of therapy by applying light pressure along with stretching the painful muscle area. The patient sleeps on his back in a comfortable and relaxed state, the trunk and hips are in a neutral position. One hand of the physiotherapist is on the knee fossa poplitea and is in full flexion of the knee, and the other hand is on the sore muscle. Then the physiotherapist performs muscle stretching followed by applying pressure following the stretched muscle movement. Performed as many as 4-5 sets (in 1 set 90-120 seconds) with the MRT Indirect technique for 5-10 minutes.

2.4. Result

Table 1. Nilai mean pre, post 6x dan 12 kali intervensi MFRT

	Mean	Significance
MFRT post 6x	5,9	0,001
MFRT post 12x	4,0	

Table 1 shows that both pre and post 6 times physiotherapy have a significant effect on reducing pain values in lowback pain patients. Both 6 times and 12 times the MFRT provision showed a significance value of 0.001.

2.5. Discuss

These results support the study conducted by Arguisuelas and colleagues, they state that the myofascial release technique significantly reduces pain and disability due to low back pain.(11) Myofascial release technique uses mechanical pressure which can reduce adhesion between tissue tissues and reduce muscle fiber tension. . Applying pressure to the muscle belly activates the autonomic nervous system by stimulating the interstitial type III and IV nerve receptors that respond to light touch; which ends in Ruffini fascia so that it responds to pressure by decreasing sympathetic activity, increasing gamma motor neuron activity and relaxing intra-fascial smooth muscle cells. In addition, the pressure exerted by physiotherapists can reduce ischemia that occurs due to increased local blood circulation to the skin and muscles, reducing parasympathetic nervous activity and release relaxation hormones and endorphins, remove waste metabolic waste and supply oxygen.(12) Parasympathetic stimulation changes serotonin, cortisol, endorphins, and oxytocin, reducing pain perception. Furthermore, the reduction of the parasympathetic reflex can decrease pain sensitivity by reducing stress on myofascial tissues by relaxing tension in soft tissue smooth muscle.(13)

Another study by Cathcart concluded that the myofascial release technique caused biomechanical changes in tissue elasticity that created increased tissue flexibility.(12) This increase in tissue flexibility is associated with increased joint area of motion. Namely, when applying manual pressure it is possible to elongate the sarcomere which shortens due to excessive muscle contraction. The occurrence of reactive hyperemia after applying ischemic compression causes an increased oxygen supply, decreases inflammation and reduces the production of nociceptive and inflammatory substances, thereby repairing damaged muscle fibers and increasing muscle strength and flexibility.(11) Samani and colleagues conducted a study of giving myofascial release technique on 30 respondents with complaints of low back pain with nucleus pulposus hernia conditions by comparing the effect of conventional physiotherapy interventions (TENS and ultrasound) with conventional physiotherapy intervention combined with myofascial release technique. They concluded that the myofascial release technique was effective in reducing low back pain in disc herniation.(13) Static force stretches that do not relieve muscle spindle activation after 8 seconds can damage the spindle receptors and increase the risk of muscle tension or tearing. Golgi tendon organ (GTO), which is located in the tendon, reacts to changes in tension in the

muscles. If GTO senses excessive muscle contraction potentially damaging the associated soft tissue structures, excitation occurs and results in relaxation or contraction failure. GTO stimulation blocks the muscle spindle and causes muscle relaxation. This phenomenon is called autogenic inhibition. Autogenic inhibition can also occur if emphasis is applied to the MFR technique so as to stimulate GTO. When stimulation passes a certain threshold of stimulation, it can inhibit muscle spindle activity and reduce spasm.(11)

3. Conclusion

MFRT are equally effective for reducing pain with nonspecific low back pain. Furthermore, advice promoting pain reduce can be an adjunct to physiotherapeutic interventions for reducing low back pain and its symptoms. A combination of these manual therapies advice might be a good treatment option for nonspecific pain in physiotherapy clinics

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