

## Effects of Myofascial Release and Neuromuscular Taping (NMT) on Decreasing Pain in The Condition Myofascial Pain Syndrome Upper Trapezius Muscle

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### ABSTRACT

Myofascial pain syndrome (MPS) refers to soft tissue pain resulting from irritation of local points within the skeletal muscle and myotendinous junctions. MTP produces pain with any activating stimulus (direct or indirect trauma), causing local and referred pain, tenderness, motor dysfunction, autonomic phenomena, and hyperexcitability of the central nervous system. This study aimed to determine the effectiveness of Neuromuscular Taping (NMT) and Myofascial Release (MR) intervention in reducing pain in patients with Myofascial Pain Syndrome of the Upper Trapezius Muscle. **Methods:** Case study with pre and post-test research design that compares the pain values before and after being measured with a measuring instrument Visual Analog Scale (VAS) to determine the effect of Myofascial Release (MR) and Neuromuscular Taping (NMT) on the condition of Myofascial Pain Syndrome in the Upper Trapezius Muscle for 4 weeks **Result:** the results of the Wilcoxon test analysis indicated that  $P < 0.05$ , with a P value of 0.000. Therefore, it was determined that in patients with Upper Trapezius Muscle Myofascial Pain Syndrome, there was a difference in pain levels before and after receiving physiotherapy techniques such as Neuromuscular Taping (NMT) and Myofascial Release (MR).

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### AUTHORS' CONTRIBUTION

- Conception and design of the study;
- Acquisition of data;
- Analysis and interpretation of data;
- Manuscript preparation;
- Obtaining funding

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## INTRODUCTION

Musculoskeletal processes are the most common cause of both acute and chronic pain, as well as temporary or permanent disability (García-Espinoza et al., 2017). Myofascial pain syndrome (MPS) is a painful condition characterized by myofascial trigger points (MTrPs) allocated in the skeletal muscle and is defined as a series of sensory, motor, and autonomic symptoms caused by a stiffness of the muscle, caused by hyperirritable nodules in musculoskeletal fibers, known as

myofascial trigger points (MTP), and fascial constrictions (Miguel & Cirera, 2021) (Ramon et al., 2015).

Patients usually present with localized pain in various parts of the body, most commonly in the neck, shoulder, and back. Generally, the involved muscles may reveal trigger points which are contraction knots of muscle fibers (Tantanatip et al., 2021).

MPS is characterized by autonomic, sensory, and motor symptoms accompanied by subacute or chronic pain that is produced by active trigger points (TrPs). TrPs are hard, extremely irritable muscle spots seen in a tight muscle band that hurt when pressure is applied to them (Barreto Silva et al., 2021). Many persons still experience specific referred pain patterns and unpleasant localized muscle spasms as a result of myofascial pain syndrome (MPS). The two primary clinical indications of MPS are focal palpable taut bands and painful areas with local twitch responses, also referred to as myofascial trigger points (MTrPs). Limitations in range of motion (ROM), fast fatigue, and referred pain are other signs and symptoms of MPS (Chang et al., 2021)

There is no information in the literature regarding the precise prevalence of myofascial pain syndrome (MPS) in the general population. However, this illness affects between 30% and 85% of people with musculoskeletal discomfort (Pasin et al., 2023)

Currently, existing therapies for the elimination of spasticity include antispasticity drugs such as baclofen, dantrolene, tizanidine, and diazepam, which treat the symptoms of the condition and may lead to side effects, or in extreme cases, may contribute to increased dysfunction (Ghannadi et al., 2020). Choosing the right therapeutic technique is necessary to get effective results without significant side effects. Myofascial Release (MFR) and Neuromuscular taping (NMT) are non-chemical therapy techniques that can be used as options.

According to the current study, myofascial release (MFR) improves fascial slide, lessens fibrous adhesion, and relieves symptoms in both acute and chronic situations. The method has a direct impact on human fascia, which means that it can regulate deep muscle and connective tissue, restore fascia tension, and improve function while also reducing discomfort. Furthermore, myofascial release (MFR) facilitates the release and extension of soft tissues, improves local blood circulation, and restores the range of motion of restricted joints, all of which help to alleviate muscle discomfort, stiffness, or extreme exhaustion to some degree (Chen et al., 2021).

Neuromuscular Taping is one of the newest innovative biomechanical therapy methods in 2013. The application of Neuromuscular Taping is able to stimulate skin mechanoreceptors which activate nerve impulses when mechanical loads (touch, pressure, vibration and stretching) cause deformation (Hargiani, 2019). When Neuromuscular Taping (NMT) is administered appropriately, it can alleviate pain and make it easier for lymphatic fluid to pass through skin folds. It is a procedure that includes putting elastic adhesive tape to the skin. As the tape is put on, the skin becomes wrinkled as the body moves. These folds enhance posture, lymphatic drainage, blood flow, pain relief, and muscle and joint action (Blow, 2012)

## METHODS

This study is case study with pre and post test research a design that compares the level of pain before and after being measured with a measuring instrument Visual Analog Scale (VAS) to provide effects of Myofascial Release (MFR) and Neuromuscular Taping (NMT) intervention in conditions Myofascial Pain Syndrome of Upper Trappezius Muscles for 3 weeks. The population used in this study were men and women aged 19 – 34 years. The samples were put into one group and then carried out physiotherapy procedures in the form of myofascial release and neuromuscular taping (NMT). This research took 4 weeks, starting from 17 to 14 September 2023. The research was carried out in several places, the physiotherapy laboratory, physiotherapy clinic and Abdurrahman University physiotherapy center.

## RESULTS AND DISCUSSION

**Tables 1** and **2** provide a description of the characteristics of the research sample subjects, including information on their age (years), weight (kg), and height (cm).

**Table 1.**

Distribution of Samples Based on Descriptive Data

Variables	N	Mean	Std. Deviation
Age	24	27.46	5.099
Height	24	161.92	4.676
Weight	24	57.21	4.764
Pain Before	24	5.92	0.830
Pain After	24	1.83	0.702

According to their age (years), weight (kg), height (cm), and Visual Analog Scale (VAS) Score, respondents are listed in Table 1. 24 persons made up the study's sample size (n = 24), and it was discovered that their average ages were 27.46+5.099, their average heights were 161.92+4.676, and their average weights were 57.21+4.764.

**Table 2.**

Normality Test

Samples (n= 24)	Shapiro Wilk Normality Test Visual Analog Scale (VAS)	
	Mean $\pm$ SD	P
Pain Before	5.92 $\pm$ 0.830	0.004
Pain After	1.83 $\pm$ 0.702	0.000

The findings of the Shapiro-Wilk test-based Normality test is presented in Table 2. The average Visual Analog Scale (VAS) Score value before treatment was 5.92 $\pm$ 0.830 with a P value of 0.004, whereas the average value after treatment was 1.83 $\pm$ 0.702 with a P value of 0.000. As P<0.05 indicated that the data was not normally distributed, the Wilcoxon Test was applied to this treatment group.

**Table 3.**

Visual Analog Scale (VAS) Value Before and After Neuromuscular Taping (NMT) and Myofascial Release (MR) Intervention

Samples (n= 24)	Mean $\pm$ SD	P
Pain Before	5.92 $\pm$ 0.830	0.000
Pain Before	0.830 $\pm$ 0.702	

Based on **Table 3** from the results of the Wilcoxon test analysis, the values obtained from 24 respondents, namely the average value of pain before treatment was 5.92, with an SD of 0.830, then the pain after treatment value was 0.830, with an SD of 0.702. As for the P-Value of 0.000 ( $P < 0.05$ ), it can be concluded that there is an effect of the application of Neuromuscular Taping (NMT) and Myofascial Release (MR) Intervention on decreasing the pain of the Upper Trapezius Muscles with Myofascial Pain Syndrome.

When treating Myofascial Pain Syndrome, Neuromuscular Taping (NMT) and Myofascial Release (MR) Intervention are highly successful in minimising pain. The findings of study or additional studies that corroborate these findings serve as proof of this. Numerous studies have demonstrated the effectiveness of Neuromuscular Taping (NMT) in reducing Myofascial Pain Syndrome-related neck discomfort.

Myofascial Pain Syndrome sufferers experience a reduction in pain when receiving NMT application because the decompression method of installing Neuromuscular Taping (NMT) on the upper trapezius creates a biomechanical effect in the treated area and has the effect of pulling the skin upwards through wrinkle formation. By increasing the interstitial space, pain-inducing compounds, or substance P, will be transported and pain will be lessened. Blood circulation will also increase, lymphatic drainage in the painful area will become smooth, and metabolism will naturally improve (Triyulianti, 2022).

In addition to the evidence and theory supporting the successful use of the Neuromuscular Taping (NMT) technique for pain reduction, there is evidence from a number of studies indicating that myofascial release is just as beneficial. This can be seen from one of the studies conducted by Sulistyaningsih in 2022.

The outcomes of the ten evaluated publications demonstrate the efficacy of myofascial release in the treatment of neck pain and functional problems. With the help of the hands, the myofascial release technique mobilises soft tissue with the goal of releasing adhesions in the fascia. This causes the fascia to lengthen and produce a relaxing effect, which can lessen pain, enhance joint range of motion, and enhance soft tissue structure (Sulistyaningsih & Putri, 2020)

## CONCLUSION

From the research results that have been obtained, it can be concluded that Neuromuscular Taping (NMT) and Myofascial Release (MR) Intervention is effective in decreasing the pain of the Myofascial Pain Syndrome of Upper Trapezius Muscles.

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