

## Conference Paper

# The Difference Between Old and New Intervention Effect to Decrease Pain on Frozen Shoulder

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## Abstract

Frozen shoulder is a pain resulting in limited range of motion (LGS) on the shoulder. It may arise because of a trauma, or gradually without signs or history of trauma. To deal with the pain in frozen shoulder, physiotherapy can provide modalities often used to reduce pain, that is, Transcutaneous Electrical Nerve Stimulation (TENS) and Short Wave diathermy (SWD). Besides modalities, there is also a new method that is Neuromuscular Taping (NMT) on the reduction of pain in patient's frozen shoulder. NMT is a technique that involves applying elastic adhesive tape on the skin, provides local therapeutic effect and reduces pain. The difference between the effect of the provision of routine physiotherapy (TENS and SWD) and NeuroMuscular Taping (NMT) to a decrease in pain in cases of frozen shoulder. The type of research is an experimental approach to design Quasi-experimental study pre- and post-test two group design. Respondent of this study, as many as 20 people, were divided into two groups. Ten in the control group and 10 in the treatment group. The research was done twice a week for four week. Measurement pain do is Visual Analog Scale (VAS) with analysis techniques using Mann-Whitney Test. In the control group, the mean pre-test was 6.62 and post-test 5.74, while in the treatment group mean pre-test was 6.53 and post-test 4.24. Based on the statistics obtained through Mann-Whitney, available  $p$ -value = 0.0001. Different influences between physiotherapy routine and NMT to reduces pain.

**Keywords:** frozen shoulder, pain, Transcutaneous Electrical Nerve Stimulation, short wave diathermy, NeuroMuscular Taping

## 1. Introduction

Shoulder pain is one of the most common disorders in daily life. Because of these conditions will prevent a person in performing their activities optimally. According to the journal of orthopedic & sports physical therapy, recent evidence suggests that cytokine levels may affect the inflammatory/fibrotic response of the synovial lining,

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causing frozen shoulder. This condition affects the decrease of functional activity about 2% from 5% of frozen shoulder patients. Usually occurs in the 40- to 65-year age range with problems lasting for 1 to 2 years.

Frozen shoulder can cause pain when predisposing factors are not handled appropriately. Due to the inflammation, shrinkage, thickening, and shrinking of the capsule surrounding the shoulder joint. Pain that occurs when not treated immediately can cause spasm and reflex muscle spasm. Pain and spasm cause immobilization of the shoulder causing adhesive/extra cellular adhesion to the capsule. Pain will arise especially when moving the shoulders, so the patient will be afraid to move his shoulder. And due to the long immobilization of the muscles will be reduced strength.

To resolve complaints of pain in frozen shoulder, physiotherapy can provide modalities that are often used to reduce and even overcome the disorders, especially related to the motion and function in the frozen shoulder conditions of Short Wave Diathermy (SWD) and Transcutaneous Electrical Nerve Stimulation (TENS). SWD is one of the physiotherapy interventions that generate warmth causing vasodilation and increase metabolism in the body so that blood circulation becomes smooth and SWD has a therapeutic effect that is lowering pain because in neural tissue can increase the elasticity of neural tissue wrapping, improve nerve conduction (nerve conduction) and increase threshold stimulation/threshold to reduce pain through sedative effects. TENS is one of the physiotherapy interventions to reduce pain by using modified electrical energy to stimulate the nervous system. TENS able to activate nerve fibers, both large and small diameter nerve fibers that will deliver sensory information to the central nervous system that will cause analgesic effects that can reduce pain In addition to the usual modalities used there is also a new method of Neuromuscular Tapping (NMT) on the reduction of pain In frozen shoulder patients. NMT is a technique involving the application of elastic adhesive tape to the skin, providing a local therapeutic effect, when NMT is applied properly to reduce pain and facilitate lymphatic drainage through skin folds. NMT techniques unlike other taping techniques NMT is based on the concept of facilitating skin and muscle motion to achieve the effect of biomechanical therapy in treated areas and muscles is one of the most important targets for NMT action that also indirectly affect venous, lymphatic and body temperature.

The problem formulation in this research is whether there is any difference of the effect of routine application in handling of frozen shoulder case with TENS and SWD with Neuromuscular Tapping Application (NMT). The purpose of this research is to know whether there is any difference of influence in application of TENS and SWD routine and NMT application in reducing pain in frozen shoulder case.

## 2. Methods

This research is experimental research with the design used is Pre and Post Test Group Design. The research was conducted at Rumah Sahabat Jakarta Selatan. Respondents of this study as many as 20 people are divided into two groups. Ten in the control group and 10 in the treatment group.

The study was conducted 2 times a week for 4 weeks. Measurements of pain performed is a Visual Analog Scale (VAS) with analytical techniques using Mann-Whitney Test.

## 3. Result

Based on Mann-Whitney Test Statistics test results showed the difference of influence between giving physiotherapy with SWD and TENS in the control group and NMT administration in the treatment group. The treatment group was given the application of Neuromuscular Taping (NMT) on rotator cuff muscle for 2 times a week for 4 weeks (8 treatments). Differential effect test on control group and treatment group as in Table 1.

TABLE 1: Differential test results influence between control group and treatment group.

Uji Mann-Whitney	Z	p-value	Conclusion
Treatment-control group	-3.794	0.0001	Ha accepted

Note: Primary Data 2017

Data analysis based on Table 1 shows that the value of z is -3.794 with p-value = 0.0001 or  $p < 0,05$  means that Ha is accepted. This shows that there is a difference of influence between the control group and the treatment group. While differences in the difference between the pain value of the control group with the treatment as in Table 2.

TABLE 2: Results average score in the control group and treatment group.

Description	Pre-Test	Post-Test	Difference
Control Group	6.62	5.74	0.08
Treatment Group	6.53	4.24	2.29

Based on Table 2 shows that there is a difference in the mean value between the control group and the treatment group, with the result of the average score of control

group 6.62 to 5.74. While in the treatment group 6.53 to 4.24. It shows that there is a difference of effect of SWD and TENS with NMT on the decrease of frozen shoulder pain.

## 4. Discussion

The result of this research is difference of effect of SWD and TENS with NMT to decrease pain in frozen shoulder case.

Based on hypothesis test by using different test after treatment that is Independent *T*-test got value  $p = 0.0001$  ( $p < 0.05$ ) meaning that there is significant difference mean of pain value after treatment of control group (SWD and TENS) with group Treatment (NMT).

Provision of NMT influences frozen shoulder patients because with the decompression technique and without taping it causes the formation of lifting on the skin or skin lifted, which causes the space between tissues will become wider so that the spasmic tissues such as rotator cuff muscles will relax So the spasm will decrease. The wider the space between the tissues will cause the blood circulation, the lymphatic circulation in the affected area will become smooth and the metabolism will automatically get better, so that the irritant pain or P substance will be transported and the pain is reduced. In general, changes in pain decrease as seen in Figure 1.

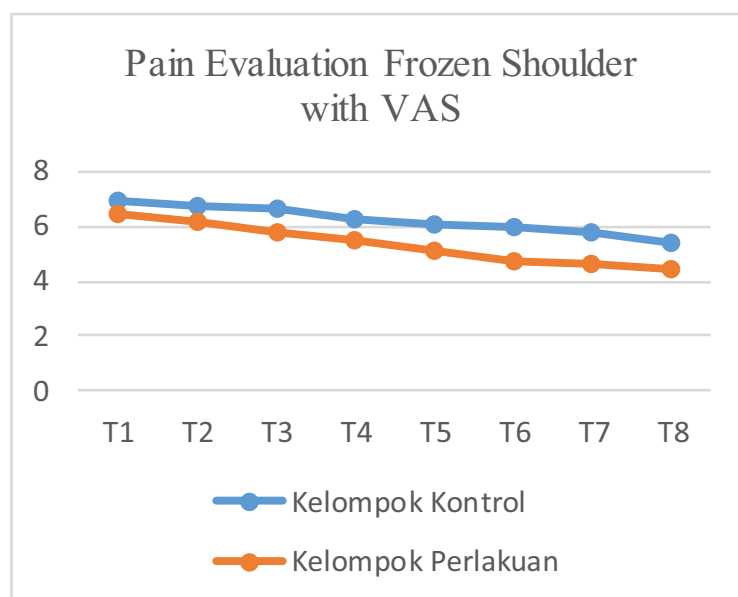


Figure 1: Pain evaluation frozen shoulder.

## 5. Conclusion

Based on the results of research conducted at Rumah Sahabat in January–February 2017, who received treatment of routine physiotherapy and NMT administered 2 times a week for 4 weeks showed that there was a difference of influence between routine physiotherapy at Rumah Sahabat and NMT at Rumah Sahabat In the reduction of pain in the case of frozen shoulder.

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