

A Comparison Between the Effectiveness of Tepurak Therapy Versus Deep Tissue Massage Stretching on Low Back Function in Nonspecific Low Back Pain

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Introduction: The research carried out is a large research project that examined two different massage methods on many variables so that they can determine their effect on variables on a wider scale, namely pain, range of movement (ROM), and low back function. Pain and ROM variables have been published in different journals, and their acute effects are only known after treatment and the results are effective. This study examined the low back function variable 24, 48, and 72 hours after treatment.

Objective: This study aimed to determine the effectiveness of Tepurak and deep tissue massaging with stretching (DTMS) on low back function in nonspecific low back pain (NSLBP) and conduct a comparison of the effectiveness of Tepurak versus DTMS for low back function in NSLBP.

Methods: This research is a quasi-experiment using a pre-test/post-test design to determine the difference in scores before and after treatment. The variable measured involved the low back function using the Oswestry Disability Index. Measurements were carried out four times at pre-test, 24, 48, and 72 hours after the treatments. This study used two different sample groups. The research sample consisted of 42 NSLBP sufferers who were randomly divided into two groups, A and B. Group A received Tepurak treatment, while Group B received DTMS treatment. These treatments were carried out in one treatment session.

Results: The results of the different treatments for the low back function variables in the Tepurak treatment have a p-value of 0.000. The results of the low back func-

tion variables in the DTMS treatment have a p-value of 0.000. The results of the comparison test of Tepurak versus DTMS therapy for the low back function variable had a p-value of 0.771.

Conclusion: Both Tepurak and DTMS are effective in improving low back function in NSLBP cases. In comparison between Tepurak and DTMS, there was no significant difference in the effectiveness in improving low back function in NSLBP cases.

KEYWORDS: Massage therapy; exercise therapy; low back pain

INTRODUCTION

Low back pain (LBP) is a case often experienced by workers. About 80% of people around the world have experienced LBP at least once in their life.⁽¹⁾ The World Health Organization data show that in industrialized countries, 2–5% of workers experience LBP every year. Indonesia, a country with a high population, has a percentage of LBP cases of 7.6–37%.⁽²⁾ This condition can reduce work productivity because the LBP condition causes pain in the waist area and limited range of movement (ROM), resulting in decreased work function.⁽³⁾ This pain will become a severe problem that can disrupt economic growth caused by decreased work productivity if left unchecked.⁽⁴⁾

The waist has an important role in supporting the body during activities. All basic activities such as walking, running, lifting, sitting, and many other work activities require waist function. If low back function is disrupted, the activities carried out will

also be disrupted, considering that it will be tough to move due to pain. Apart from that, the muscles supporting the waist experience spasm, which makes them stiff when moving.⁽⁵⁾ It should be remembered that LBP is a group of symptoms that decrease lower back function, and it is not a diagnosis of disease.⁽⁶⁾ Therefore, it is necessary to know the cause of the injury so that treatment will be more appropriate and effective.

The causes of LBP consist of specific LBP (SLBP) and nonspecific LBP (NSLBP) causes.⁽⁷⁾ SLBP is a cause that is related to pathological diseases such as hernia nucleus pulposus, tumors, fractures, and infections.⁽⁸⁾ Meanwhile, NSLBP is a type of injury that is unknown and is not related to pathological causes of other diseases. Therefore, the treatment focuses more on relieving pain, which makes this disease require appropriate care.⁽⁹⁾

Treatment of NSLBP can be done by pharmacological and nonpharmacological methods.⁽¹⁰⁾ Using anti-pain medication is the right solution to relieve unbearable pain. Even so, the pain will often reappear as the reaction to the medication disappears. Sometimes, NSLBP sufferers take pain medication repeatedly, but the pain still recurs. This makes many people choose alternative treatments in the form of nonpharmacological treatments. This treatment is considered an alternative that has minimal side effects that can occur if you take the drug continuously.

The alternative nonpharmacological treatment options chosen by the community are massage and stretching. The therapy model for treating NSLBP cases is the Tepurak massage method, which combines three techniques, namely pressing, hitting, and moving. The “pressure” technique uses the trigger point method, where pressure is applied to the central point of pain. The second technique is “hit” with the tapotement technique, which aims to stimulate endorphin hormones to reduce pain. The third technique is “movement,” which uses passive stretching techniques with the support of a therapist and aims to increase flexibility and reposition joints.⁽¹¹⁾ The advantage of the Tepurak technique is that it can be done outdoors while the patient is still wearing clothes, does not use cream, and the time taken is less. However, this technique has a limitation that the patient feels uncomfortable

due to severe pain from strong pressure on the pain center.

Another form of treatment that is commonly used is the deep tissue massage (DTM) therapy technique. This technique applies deep and thorough pressure so that it can relax muscles, reduce muscle tension, and eliminate pain. This technique has a calming effect on the patient compared to the Tepurak technique, which presses directly on the pain center and causes an intense pain effect. The DTM technique can be combined with stretching (DTMS), which aims to stretch the muscles and reposition the joints. This method can only be done in a closed room because the patient has to undress and use lotion.

Tepurak and DTMS have differences in technique and application, as well as advantages and disadvantages in treating NSLBP cases. Therefore, it is necessary to investigate whether there is a difference in effectiveness in curing NSLBP. Research on the Tepurak method has been carried out on complaints of pain and tension in the neck muscles. The research results showed that the Tepurak massage method is effective in relieving pain, increasing range of motion, and improving neck function.⁽¹²⁾ Research on DTMS treatment has also been carried out for LBP cases, with the result stating that DTMS therapy is effective in healing LBP.⁽¹³⁾

Based on the above, it encouraged researchers to conduct research to determine the effect of the two different types of therapies, Tepurak and DTMS, on disability when experiencing NSLBP pain, decreased ROM, and lower back function. The research carried out is a large research project that examines two different massage methods on many variables so that they can determine their effect on variables on a wider scale. Recovery indicators are seen from three aspects, namely pain level, ROM, and low back function. Pain and ROM variables only know the effects acutely after treatment. The low back function variable is measured periodically, namely 24, 48, and 72 hours after treatment, so this variable is published separately.

The results of research on pain and ROM variables have been published in the journal *Fizjoterapia Polska* with the title “Comparison of the effectiveness of Tepurak therapy with deep tissue massage and stretching in treating non-specific low back pain injuries” showing that Tepurak significantly reduces pain and increases

ROM in lower back. Likewise, DTMS significantly reduces pain and increases ROM in lower back. The results of the comparison between the two also show that there is no significant difference in reducing pain and increasing ROM in lower back.⁽¹⁴⁾ Therefore, this article is part of a larger study that will discuss the comparative effectiveness of Tepurak versus DTMS on lower back function 24, 48, and 72 hours after treatment in cases of NSLBP in all phases of acute, subacute, and chronic injury.

MATERIALS AND METHODS

Study Design and Ethics

This research was a quasi-experiment without a control group, which used a pre-test/post-test design to determine the difference in scores before and after treatment. The research sample consisted of 42 people, using the incidental sampling method, who were randomly divided into two groups, A and B, totaling 21 people in each group. Group A was given Tepurak treatment, while Group B was given DTMS treatment. All patients participating in this research have signed informed consent.

Participants

The participating patients were selected based on inclusion and exclusion criteria. Inclusion criteria include sufferers of acute, subacute and chronic NSLBP, willing to be respondents, male gender with a high risk of NSLBP, age 20–60 years, having problems with low back function, and experiencing pain in the lower back. Meanwhile, exclusion criteria include having a fracture, open wounds, a history of kidney disease, tumors, pancreatitis, and peptic ulcer.

In determining the number of samples, the researcher used a sample size calculator. This study used two different sample groups. The with a test family using a *t*-test, using one pre-test and post-test treatment. effect size is 0.8, and the significance level is 0.05, which is the possibility of errors made by researchers. Power 80% is the confidence to avoid type error and has a 20% chance that the researcher's assumptions are wrong. Based on the explanation above, a sample size of 42 people was obtained, so there were 21 people in each group.

Measures

The variable measured was the low back function, using the Oswestry Disability Index. This instrument is a measuring tool used to determine subjective low back function ability scores by filling out a questionnaire. This measuring tool is in the form of a questionnaire containing 10 questions that describe the body's ability to carry out daily work functions. The results obtained are in the form of an accumulated score of answers, which is calculated using a unique formula. The smaller the number of scores obtained, the better the function of the lumbar joints. This instrument has a value of $r = 0.947$ and Cronbach's alpha of 0.877, so it is valid and reliable for use in data collection.⁽¹⁵⁾

Data Collection

Initial measurements were carried out before treatment to obtain pre-test data. Then, the respondents were given treatment based on the group. Group A was given the Tepurak massage treatment, and Group B was given the DTMS treatment. Post-test measurements were carried out three times: at 24 hours, 48 hours, and 72 hours after treatment.

Interventions

All interventions were carried out by certified massage experts who have worked in the field of massage therapy for more than 2 years. Before the treatment, the therapist carried out training and coordination so that the treatment is suitable.

In sample Group A, the Tepurak therapy method was applied, which is a combined massage technique consisting of pressure, hitting, and movement techniques. The pressure point technique, performed by pressing on the central point of pain in the part of the muscle that experiences stiffness. Pressure is placed on trigger points in the quadriceps, hamstrings, buttocks, and lumbar muscle groups. The hitting technique, or what is often called tapotement, applies to muscles that experience stiffness. The final form of treatment is movement as a passive stretching movement assisted by a therapist to increase maximum flexibility. The manipulation was carried out in one treatment with a duration of 30 minutes (see Figure 1).




DESCRIPTION	ILLUSTRATIONS
<p>“PRESSURE” Press using thumbs on the trigger points of your waist, buttocks and hamstrings. The duration of treatment for the waist muscles is 5 minutes, buttocks muscles 5 minutes, and thigh muscles 5 minutes.</p>	
<p>“HITTING” Hit using tapotement on the muscles of the waist, buttocks and hamstrings. The duration of tapotement on the waist, buttocks and thigh muscles is 10 minutes.</p>	
<p>“MOVEMENTS” Move using passive stretching techniques assisted by a therapist. The movement is done 8 × 2 counts and repeated 3 times. The total stretching duration is 5 minutes.</p>	

FIGURE 1. Tepurak treatment.

Group B received treatment using the DTMS method, which is a massage technique where deep and slow massage movements are carried out toward the muscle fibers of the waist, thighs, and buttocks. This treatment is then continued with active stretching carried out without the help of a therapist. The manipulation is carried out in one treatment within 30 minutes (see Figure 2).

Statistical Analysis

The data analysis was carried out in the form of normality tests, homogeneity tests, and *t*-tests. The *t*-tests used in this research

are the paired *t*-test, Wilcoxon independent *t*-test, and Mann–Whitney, with a significance value of 0.05. The *t*-test produced a *t* value and probability value (*p*), which can be used to prove whether or not there is a significant difference between the pre-test and post-test. If $p < 0.05$, then there is a significant difference. If $p > 0.05$, then there is no significant difference.

RESULTS

The research results sequentially present the results of the normality test of the Tepurak and DTMS data, the homogeneity


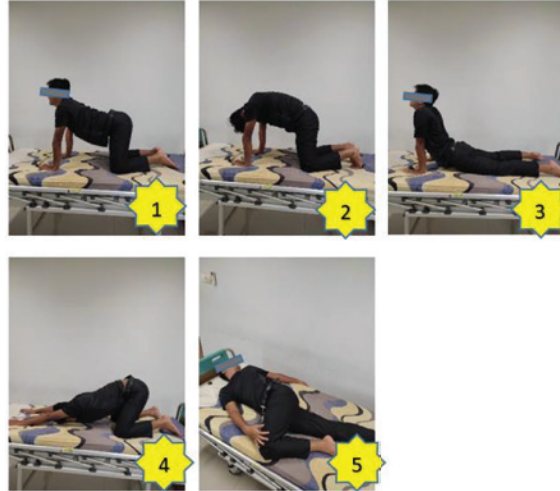
DESCRIPTION	ILLUSTRATIONS
<p>Deep tissue massage</p> <p>Apply deep pressure to the waist muscles for 10 minutes using the palms.</p> <p>Apply pressure to the waist muscles using forearms for 5 minutes.</p> <p>Apply pressure using fists on the buttock muscles for 5 minutes.</p> <p>Apply pressure to the hamstrings using the palms and arms for 5 minutes.</p>	
<p>Stretching</p> <p>Move using active stretching techniques.</p> <p>The movement is done 8 × 2 counts and repeated 3 times.</p> <p>The total stretching duration is 5 minutes.</p>	

FIGURE 2. DTMS treatment. DTMS = deep tissue massaging with stretching.

test, and the *t*-tests in the Tepurak and the DTMS treatment groups, and the results of the *t*-tests to compare the Tepurak and DTMS data. The indicators measured were waist function 24 hours, 48 hours, and 72 hours after the treatments (Tables 1–5).

The results of the normality test for the difference between sample group data and the Tepurak treatment showed that the 72-hour low back function was normally distributed. The 24-hour and 48-hour low back function data were not normally distributed. The results of the normality

TABLE 1. Normality Test Data Results of Waist Function After Tepurak Treatment and DTMS

Waist Function Data	Tepurak (n = 21)		DTMS (n = 21)	
	Sig.	Category	Sig.	Category
24-hour	0.033	Not normal	0.606	Normal
48-hour	0.042	Not normal	0.432	Normal
72-hour	0.396	Normal	0.459	Normal

DTMS = deep tissue massaging with stretching; Sig. = significance.

TABLE 2. Homogeneity Test Data Results of Tepurak and DTMS

Indicators	Levene Statistic	df 1	df 2	Sig. (n = 42)	Category
Function 24-hour	1.258	1	40	0.269	Homogeneous
Function 48-hour	0.011	1	40	0.918	Homogeneous
Function 72-hour	0.134	1	40	0.716	Homogeneous

DTMS = deep tissue massaging with stretching.

TABLE 3. Discriminative Test Data Results of Tepurak

Indicators	Analysis	Sig. (n = 21)	Category
Function 24-hour	Wilcoxon	0.000	Significant
Function 48-hour	Wilcoxon	0.000	Significant
Function 72-hour	Paired t-test	0.000	Significant

Sig. = significance.

TABLE 4. Discriminative Test Data Results of DTMS

Indicators	Analysis	Sig. (n = 21)	Category
Function 24-hour	Paired t-test	0.000	Significant
Function 48-hour	Paired t-test	0.000	Significant
Function 72-hour	Paired t-test	0.000	Significant

DTMS = deep tissue massaging with stretching; Sig. = significance.

TABLE 5. Discriminative Test Data Results of Tepurak and DTMS

Indicators	Analysis	Sig. (n = 42)	Category
Function 24-hour	Mann-Whitney	0.440	Not significant
Function 48-hour	Mann-Whitney	0.157	Not significant
Function 72-hour	Independent t-test	0.771	Not significant

DTMS = deep tissue massaging with stretching; Sig. = significance.

test for differences in data from sample groups with DTMS treatment were all normally distributed (Table 1).

The results of the homogeneity test showed that all low back function data for

24, 48, and 72 hours were homogeneous (Table 2).

The results of the *t*-test in the Tepurak treatment (Table 3) showed the significance value for each indicator was 0.000 < 0.05. Based on these results, it can be understood that there is a significant difference between the pre-test and post-test data in the Tepurak treatment group.

The different tests on the DTM (Table 4) combined stretching (DTMS) treatment indicators, obtaining a significance value for each indicator of 0.000 < 0.05. It was concluded that there were significant differences in each indicator of the DTMS treatment combined with stretching.

It is shown in Table 5 that each indicator of the Tepurak treatment with the value of each indicator of the DTM treatment combined with stretching has a significance value of *p* > 0.05. Therefore, it can be concluded that there is no significant difference in the Tepurak and DTMS treatments on waist function.

DISCUSSION

The therapy model used to treat NSLBP cases was the Tepurak massage method, which combines three techniques at once, namely pressing, hitting, and moving. The pressure technique uses the trigger point method, which is done by pressing on the central points of pain. The second technique is a hitting using the tapotement technique, which aims to stimulate endorphin hormones so that it can relieve pain. The third technique is movement, which will use passive stretching techniques. The trigger point technique has the benefit of reducing muscle tension so that the muscles relax.⁽¹⁶⁾ Relaxing the muscles will cause the joint range of motion to increase and the pain to gradually subside.⁽¹⁷⁾ Trigger points can be found in the fascia, tendons, ligaments, and muscles that are

muscle-tight points, which, when pressed, can cause different painful sensations.⁽¹⁸⁾ The pressure technique is applied directly to the center of pain, causing excessive pain, so other manipulations need to be done to disguise the pain by providing tapotement manipulation. This technique aims to increase arterial blood circulation, especially in muscle tissue, causing muscle contractions (idiomuscular), which can help facilitate the exchange of substances in the body to relieve the pain being experienced.⁽¹⁹⁾

DTMS will invoke a muscle relaxation effect.⁽²⁰⁾ DTM is a type of massage therapy that focuses on the deep tissue in various layers of the body, especially the muscles, fascia, and connective tissue.⁽²¹⁾ This can provide a pain relief effect, which is explained based on the gate control theory. Receptors that are stimulated during massage treatment will send signals faster than the pain experienced so that the pain is disguised.⁽²²⁾ Injured muscles and joints will respond with stiffness or muscle spasms, causing the muscles to become painful and less elastic, so that ROM is limited and function is disrupted. The stretching will increase blood circulation so that more oxygen will be supplied to the cells, which will reduce pain and increase the range of motion and function.⁽²³⁾

Both therapy methods have a significant effect in improving low back function in cases of NSLBP. If the treatment is carried out outdoors, without undressing and in a quick time frame, then Tepurak can be applied even though the intense trigger point pressure can be uncomfortable. If there is a room, the patient can undress and handle the DTMS slowly to provide comfort. Considering that the Tepurak and DTMS massage methods have their respective advantages and disadvantages, the use of both methods needs attention to the situation and conditions.

CONCLUSION

This study concludes that the Tepurak method of therapy is efficacious in improving low back function in NSLBP cases. DTMS therapy is also effective in improving low back function in NSLBP cases. In a comparison of the effectiveness of the Tepurak versus DTMS method, there is no significant difference in effectiveness in improving low back function in NSLBP cases.

This research has the limitation that the samples used were NSLBP sufferers in acute, subacute, and chronic conditions. Therefore, more in-depth research needs to be carried out to determine the effectiveness in different conditions, considering that each condition has different treatment management.

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CONFLICT OF INTEREST NOTIFICATION

The authors declare there are no conflicts of interest.

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