

The Effect Of A Combination Of Short Wave Diathermy And Dynamic Stretching On Pain Values In Cases Of Myogenic Low Back Pain Employees At Menur Mental Hospital, Surabaya

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ABSTRACT

This study aims to evaluate the impact of a combination of Short Wave Diathermy (SWD) and Dynamic Stretching therapy on pain levels in cases of myogenic Low Back Pain (LBP) in employees at Menur Mental Hospital, Surabaya. This study involved the participation of a group of employees who suffered from myogenic LBP and were divided into a control group and an intervention group. The intervention group received a combination of SWD therapy and Dynamic Stretching exercise sessions, while the control group did not receive any intervention other than standard care. Evaluation was carried out using the pain scale assessment method before the intervention, after the intervention, and at the next follow-up. Results showed that the combination of SWD and Dynamic Stretching resulted in a significant reduction in pain scores compared to the control group. These findings highlight the potential effectiveness of this combined therapy in managing pain in cases of myogenic LBP, providing a basis for further understanding regarding the use of this combined therapy in the treatment of similar conditions.

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1. INTRODUCTION

One of the most common causes of missing work and medical attention is back discomfort. This may be tiring and uncomfortable. Injuries experienced during activities and a number of other medical problems can cause this disease. People of all ages may suffer from back discomfort due to various reasons. The likelihood of developing back discomfort increases with age due to things like job demands and degenerative diseases. Because the neck and waist are the most mobile spinal areas in the human body, discomfort in these places is the most common type of back pain. The ribs anchor the spine in the chest, limiting its range of motion, so discomfort rarely occurs in this area.

One of the common musculoskeletal diseases is low back pain (LBP). Age, gender, BMI, smoking habits, physical fitness, history of bone disease, history of trauma, and psychological or psychosocial problems are risk factors that contribute to the occurrence of low back pain (LBP). Elements of the physical environment include vibrations and disturbances, as well as problems related to working positions, incorrect body posture, bending or standing for long periods, and positions when turning the body (Arma et al., 2019).

Hospital staff members are not immune to back discomfort either; In fact, their often awkward work environment increases their risk of developing musculoskeletal problems and back pain. Reduce the number of workers who spend a lot of time sitting still or in awkward positions, for example when typing or using a computer. Hospital administrative staff members are hospital workers who handle a variety of jobs. Based on research and interviews conducted by the author, administrative staff at Menur Mental Hospital spend an average of five to seven hours a week in front of the computer. Therefore, employees in hospital management are susceptible to paralumbar muscle spasms.

It is estimated that around 65% to 80% of the human population during their lifetime will experience pain in the back area. Approximately 90% of patients feel better after undergoing therapy

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for 8 weeks. The remaining 7%, 10% of patients feel pain in the lower back area which lasts for a long time, approximately 6 months(Aqil et al., 2021). The rate of decline in functional ability caused by low back pain increases with age. For cases of LBP, an estimated 60% occur in women and the remaining 40% occur in men.(Andini, 2015).

The causes of back pain vary from mild to severe. Although lower back pain is rarely fatal, the pain experienced results in limited function and wasting a lot of time so that you cannot work optimally(N. Susanti & Kuntowato, 2015). Many people experience discomfort in their lower back as a result of lifting heavy objects with incorrect posture or as a result of working in positions that require them to stand or sit for long periods of time. The abdominal and back muscles may be weak due to inactivity or sedentary activity, which is another possible explanation. If the body shape is not right, this may be another cause(Thrisminarsih et al., 2023).

In the treatment of low back pain (LBP), the role of physiotherapy is very large in dealing with pain complaints and increasing the patient's physical capacity and functional abilities. When treating problems related to lower back pain, physiotherapy techniques such as Short Wave Diathermy (SWD) devices and exercise can be utilized. The term "shortwave diathermy" refers to a hot electrical modality device that uses high frequency radio current with a frequency of 27.12 MHz and a wavelength of 11.06 nm(dos Reis do Nascimento et al., 2021). The physiological effects caused by Short Wave Diathermy (SWD) will be produced by differences in body tissue structure, and these effects will vary from one tissue to another. Connective tissue will experience a decrease in tissue matrix viscosity, which will result in an increase in elasticity five to ten times greater than before. Additionally, it has the potential to increase muscle tone, and Short Wave Diathermy (SWD) has the ability to significantly decrease muscle tone by regulating nocisensory sensation. In the nervous tissue there will be an increase in the flexibility of the nerve tissue sheath and an increase in the threshold of stimulation. These physiological effects will have an impact on increasing the physiological process of tissue healing, reducing pain, normalizing muscles, and increasing the performance of the metabolic system, which is more often referred to as the therapeutic effect.(Pramita et al., 2014).

Stretching exercises are a form of physical exercise that is useful for relieving muscle tension. Apart from that, stretching is a form of exercise treatment that can be done at home to prevent complaints of low back pain from getting worse. These stretches, which are intended to stretch soft tissue structures, can be administered to muscles experiencing spasm to relax them. As a result, the discomfort caused by spasms is reduced and eventually disappears(Suwantini et al., 2015). Sitting and stretching are simple exercises that people can do while working. Stretching done while sitting is called sitting stretching. This stretch can be done between work hours because it only lasts five to ten minutes. Apart from improving blood circulation in the back area, the essence of the chair stretching movement is useful for massaging the lower back muscles which feel tired and stressed due to doing static tasks.(Putra et al., 2018). Pain is a distressing sensory and emotional experience that can be caused by actual or potential tissue damage, or can be defined in terms of such harm. The sensation of pain is multifaceted and multidimensional. These events may vary in severity (mild, moderate, or severe), quality (blunt, burning, or acute), duration (transient, intermittent, or persistent), and spread (superficial or deep, localized or localized). spread out). Pain is a feeling; However, it also involves cognitive and emotional components, which are considered a type of suffering for the person experiencing it. Changes in autonomic output and avoidance reflexes have also been associated with pain in addition to other associations(Bahrudin, 2017).

The degree of pain/pain varies from mild to severe for each person. Calculation of pain criteria is subjective with perceptions differing from one person to another. An objective approach in measuring the degree of pain is considered effective in being able to create the body's physiological response to relieve pain, besides that the objective assessment of the degree of pain is also uncertain.(Widaningsih et al., n.d.).

This research is important because there has been no research on the effect of SWD and dynamic stretching on low back pain scores in cases of myogenic LBP. So the author is interested in conducting research on the effect of Short Wave Diathermy (SWD) and dynamic stretching on the value of lower back pain in cases of myogenic Low Back Pain (LBP). Until finally the researchers

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decided on the title "Short Wave Diathermy (SWD) and Dynamic Stretching on the value of lower back pain in cases of myogenic Low Back Pain (LBP) in employees at Menur Mental Hospital, Surabaya".

2. METHOD

This research method uses pre-experimental using "One Group Pre-test and Post-test design". So that researchers can find out what changes have occurred, in this experiment a preliminary test is carried out which is also called the first observation. Based on the findings of this study, there was one group that received therapy in the form of stretching and short wave diathermy, but there was no control or comparison group used.

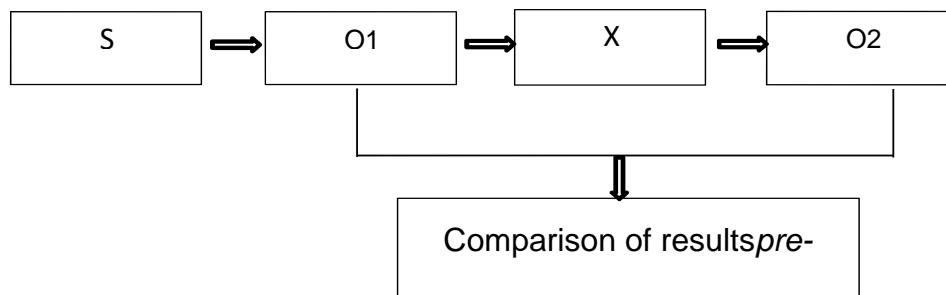


Figure 1. Research design

Information :

S = Subject

O1 = *Pre-test*(Pain measurement in patients with lower back pain before being given a combination of SWD and stretching

X = Providing a combination of SWD and Stretching actions.

O2 = *Post-test*(Pain Measurement in patients with low back pain below myogenic after being given a combination of SWD and Stretching actions

3. RESULTS AND DISCUSSION

Research participants were administrative staff at Menur Mental Hospital in Surabaya. Table 1 data on respondent characteristics shows that of the total number of respondents, 21 people (or 70%) were female and the remaining 9 people (30%) were male.

Table 1. General Characteristics of Respondents

Gender Variable	Amount	Percentage
Gender		
Man	9	45%
Woman	21	55%
Total	30	100%
Age		
25-29 Years	3	15 %
30-35 Years	4	20 %
36-40 Years	10	50 %
41-45 Years	7	35 %
46-50 Years	4	20 %
51-55 Years	2	10 %

Based on the characteristics of respondents based on age presented in Table 1, the majority of respondents are between 30 and 55 years old, namely forty percent of the total respondents. The ages ranged from 27 to 58 years, and the youngest was 27 years old. The findings of research conducted regarding pain are presented in the form of a table that compares the results of pre-test and post-test discomfort examinations. Both before (during the pre-test) and after (during the post-test) the patient

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participated in stretching activities, research data was collected. The training was carried out for four weeks, meetings were held three times a week with high intensity.

It is clear from the data that five people, or seventeen percent, of the study participants experienced back pain that met the criteria of "mild" (R), while twenty-five people, or eighty-three percent, experienced lower back pain. meets the "Moderate" (S) criteria. Therefore, it can be concluded that the majority of respondents who are administrative officers at the Menur Mental Hospital in Surabaya who suffer from low back pain complain of "Moderate" low back pain. This means 83% of respondents.

Table 2. Descriptive Test Results Pre-test and Post-test Data

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Pre Test	30	2.00	6.00	4,4000	1.00344
Post Test	30	1.00	3.00	1.8333	.74664
Valid N (listwise)	30				

The average pretest and posttest scores are displayed in the table which can be seen above. The average difference between the pre-test and post-test is 1.83, which shows an increase.

Table 3. Tests of Normality

	Kolmogorov-Smirnova			Shapiro-Wilk		
	Statistics	df	Sig.	Statistics	df	Sig.
Difference	,272	30	,000	,822	30	,000
Lilliefors Significance Correction						

The significant value of 0.000 is less than 0.05, which indicates that the research data (both pre-test and post-test) do not follow a normal distribution. This can be seen in table 5.5 which can be seen above. Therefore, the Wilcoxon Signed Rank test will be used to ensure that the research hypothesis is proven.

Table 4. Wilcoxon Signed Rank Test.

Ranks				
	N	Mean Rank	Sum of Ranks	
Post Test - Pre Test	Negative Ranks	30a	15.50	465.00
	Positive Ranks	0b	.00	.00
	Ties	0c		
	Total	30		
a. Post Test < Pre Test				
b. Post Test > Pre Test				
c. Post Test = Pre Test				

Table 5. Test statistics with the Wilcoxon signed Ranks Test

Test Statistics	
Post Test - Pre Test	
Z	-4.889b
Asymp. Sig. (2-tailed)	,000
a. Wilcoxon Signed Ranks Test	
b. Based on positive ranks.	

The results of hypothesis testing using Wilcoxon which can be seen in table 8 show the p value (Asymp sig 2 tailed): $0.000 < 0.05$, so the result received is H1, which means there is a meaningful or significant difference between pre-test and pre-test. post-test.

Discussion

Responding to the problem formulation in this research, it has been proven that SWD and Dynamic training techniques have a large impact in reducing pain in individuals suffering from myogenic low back pain (LBP). By using the Visual Analog Scale (VAS), a pain scale can be used to

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identify pain in back muscle spasm situations in respondents who are administrative staff at the Menur Mental Hospital. This is based on the problem formulation that was carried out at the beginning of the research. All the pain complaints experienced by people participating in the study initially, before they started stretching exercises, were between moderate and mild discomfort. Twenty-five respondents reported experiencing moderately severe pain, while five respondents reported experiencing mild discomfort.

A decrease in the amount of discomfort experienced by back muscle spasms was seen after one month of participating in Dynamic Stretching exercises. As many as thirty people who took part in the exercises said that the level of discomfort had decreased. This is demonstrated by statistical test findings which show that respondents experienced a significant reduction in pain after doing physical activity.

Previous investigations conducted by Prasetyo and colleagues (2021) revealed comparable results. Within the scope of this research project, participants performed a combination of stretching exercises and treatments using Short Wave Diathermy (SWD). After performing dynamic stretching activities with a friend for eight seconds, the exercises are repeated three to five times, with a five second break between each pair of exercises. The use of exercise in conjunction with SWD therapy has been shown to reduce the pain of back muscle spasms and reduce the amount of tension that occurs in the back muscles.

The impact of expanding soft tissue structures and relaxing muscles experiencing spasm is the mechanism responsible for reducing pain that occurs due to stretching (Suwantini et al., 2015). The number of exercises performed and the duration of exercise over a period of one month showed an effect in reducing discomfort due to back muscle spasms. The treatment ends with dynamic stretching which can be used for prevention and can be used as a lifestyle if done regularly. However, there are several shortcomings in this research, such as the assessment of final results using the Visual Analog Scale (VAS) pain scale is still subjective, the research sample is still limited, and comparisons are needed. sample with the group that did not receive intervention.

4. CONCLUSION

Based on the research results above, it was concluded that the SWD procedure and dynamic exercise carried out on a schedule 3 times a week had a significant effect on reducing pain in respondents who were administrative employees at Menur Mental Hospital, Surabaya.

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