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PAIN REDUCTION IN LOW BACK PAIN BY USING WARM OIL RUBBING

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Abstract
Exercise plays an important role in maintaining the health of the human body from various circles. However, sports also have a risk of physical injury if done without proper preparation, technique or supervision. Sports injuries can occur in muscles, joints, ligaments, bones or soft tissues due to repetitive movements, impacts or overload. Low back pain is a condition of pain or discomfort that occurs in the lower back area, which is between the last rib and the pelvic bone. This study uses a quantitative approach with a comparative method. The main objective of this study is to understand in detail the effect of warm oils on lower back pain. The population in this study is football youth in Maos Kidul Village with the use of a sample of 15 football youth in Maos Kidul Village. There are several research instruments used in this study, namely VAS (Visual Analogue Scale) and V-Sit and Reach Test. The results of this study show that the t-value of the table > t is 2,671 > 1,706 with a significance level of 0.000 < 0.05. These results can be concluded that manipulation therapy with the effleurage technique using warm oil has a positive and significant effect on low back pain. The results of this study were calculated by t value > t table which was 3,208 > 1,706 with a significance level of 0.000 < 0.05. The results of this study show that manipulation therapy with the effleurage technique using warm oil can experience an improvement in ROM (range of motion) and movement function has a positive and significant effect on low back pain in football youth in Maos Kidul Village.
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INTRODUCTION

Exercise is a physical activity that is carried out in a planned, structured and repetitive manner with the aim of improving and maintaining physical fitness, body health and mental balance (Elder et al., 2017). This activity involves working muscles, joints, heart and lungs so that it can facilitate blood circulation, increase strength and endurance. Exercise plays an important role in maintaining the health of the human body from various circles. However, sports also have a risk of physical injury if done without proper preparation, technique or supervision (Chiarotto &

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Bart, 2022). Sports injuries can occur in muscles, joints, ligaments, bones or soft tissues due to repetitive movements, impacts, overload or suboptimal warm-up . Therefore, it can be known that it is important for every sportsperson to warm up and cool down, use the right equipment and adjust the intensity of training to the body's abilities so that the benefits of exercise can be obtained optimally without causing the impact of physical injury (Aryandani, 2024).

Sports injuries can occur in muscles, joints, ligaments, bones or soft tissues due to repetitive movements, impacts, overload or suboptimal warm-up (Arisman & Noviarini, 2021). Common types of injuries include sprains, muscle cramps, knee injuries, back pain to shoulder injuries that are often found in sports such as football, basketball, running, weightlifting and gymnastics (Ad et al., 2015). Low back pain or LBP is one of the most common musculoskeletal disorders worldwide. According to Riskesdas 2018 which states that 18.2% of the adult Indonesian population suffers from low back pain. This number continues to increase due to increasing age and increasing physical workload. In accordance with the Ministry of Health of the Republic of Indonesia in 2022, more than 60% of industrial workers suffer from low back pain at least once a year. In addition to harming patients' quality of life, the disorder also leads to high long-term health care costs. It can be known that effective, safe and easy to implement countermeasures are needed that can be reached by the community (Utami et al., 2020).

Low back pain can be affected by various factors, including improper posture, continuous muscle tension and lack of physical activity (Muna et al., 2023). Low back pain is generally classified into two types, namely acute and chronic. Acute low back pain usually lasts for about 4 to 6 weeks and is generally caused by muscle tension or minor injury (Pohan et al., 2024). Meanwhile, chronic low back pain is a painful condition that lasts for a long period of time, which is more than 12 weeks, and is often related to changes in body tissues or disorders in the nervous system (Hayati & Devi, 2020).

Masase is an art of hand movements that aims to relax muscles and maintain physical health (Priyonadi, 2011:2). Various massage techniques include

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effleurage, petrissage, tapotement, shaking, friction and so on. Effleurage is one of the massage techniques that is safe and easy to do, does not require special equipment and requires relatively low costs (Hasibuan et al., 2023). This technique also does not cause significant side effects and can be done independently or with the help of others (Sukraeny, 2024). The rubbing technique is a technique that uses soft, slow and long or uninterrupted strokes and this technique causes a relaxation effect (Wulandari & Putri, 2018).

Masash can be done by utilizing various types of media that function as a lubricant while providing a warm effect, one of which is the use of warm oil (Daneau et al., 2015). Today, there are various types of warm oils available on the market, such as essential oils and eucalyptus oil, which are commonly used in massage practices and traditional therapies. The use of warm oil aims to help reduce the intensity of pain, improve muscle function and elasticity and provide a sense of comfort to individuals who experience low back pain. This warm sensation can increase local blood flow and divert the perception of pain, thus helping to relieve the pain felt (Imamura et al., 2008).

Most researchers have only examined the effects of massage or heat therapy separately, rather than a combination of the two in a measured manner (Putri & Nugroho, 2021). In addition, quantitative approaches that measure the rate of pain reduction using VAS or NPRS are still rare. Other limitations include variations in the type of oil, temperature, and duration of therapy used that make it difficult to compare results between researchers (Arisman & Agun Guntara, 2021). There is no clinical reference in physiotherapy or treatment practice. With this, researchers still have the urgency of the gap regarding the rubbing of warm oil in reducing lower back pain. It is hoped that the application of warm oil as an additional medium in massage therapy for the treatment of low back pain can increase the effectiveness of treatment.

METHODS

This study uses a quantitative approach with a comparative method. The main objective of this study is to understand in detail the effect of warm oils on

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lower back pain. The research process is carried out through three stages, namely pretest, treatment and posttest so that it allows the researcher to know the results before and after treatment in a respondent. This research method is a survey with test measurement techniques to obtain the necessary data. Research location refers to the place or location where a research is conducted. The location of this research was carried out in Maos Kidul Village. This research was carried out for two months, starting from January 2026 to February 2026.

The data used in this study used two data sources, namely primary data and secondary data. The primary data in this study was taken by using the survey method coupled with testing techniques and measurement processes. The secondary data in this study are reference books, journals, articles and previous theses. The population in this study is football youth in Maos Kidul Village with the use of a sample of 15 football youth in Maos Kidul Village. Data collection instruments are tools or means used by researchers to collect information from respondents, objects, or phenomena that are systematically studied. There are several research instruments used in this study, namely VAS (Visual Analogue Scale) and V-Sit and Reach Test.

RESULTS AND DISCUSSION

This study succeeded in collecting a total of 15 youth soccer respondents in Maos Kidul Village. Based on the data that has been collected, it can be seen that the average age of football youth in Maos Kidul Village is 18 years old, which is dominated by men. The results of this study describe based on research instruments that refer to pain data with Visual Analogue Scale and Range of Motion Data measured by V-Sit and Reach Test. Pain data with visual analogue scale is data taken by being treated using effleurage technique manipulation therapy with warm oil obtained as a result of direct observation in the field that the minimum pretest value is 4 and the maximum pretest value is 7. The result of the minimum posttest score is 2 and the maximum is 5 in the youth football of Maos Kidul Village. The statistical results of the range of motion research data measured by the V-Sit and Reach Test obtained direct observation results that the minimum pretest value is 14

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and the maximum pretest value is 21. The results of the minimum posttest score are 16 and the maximum is 22 in the youth football of Maos Kidul Village.

In this study, direct observation methods were used as a data collection technique needed in this study and to evaluate the validity of each statement item that had been prepared in the research questionnaire. This study uses the SPSS version 23 application as a data processing technique as well as to evaluate the reliability of variable constructs in the analysis model.

Table 1. Normality Test

One-Sample Kolmogorov-Smirnov Test		
		Unstandardized Residual
N		15
Normal Parameters, b	Red	0.0000000
	Std. Deviation	1.21371073
Most Extreme Differences	Absolute	0.064
	Positive	0.064
	Negative	-0.063
Test Statistic		0.064
Asymp. Sig. (2-tailed)		.200c,d

Based on the table above, it has been known that the results of the normality test using non-parametric analysis through the Kolmogorov-Smirnov test have a 2-tailed Asymp Sig value of 0.200 > 0.05. Based on these results, it can be concluded that the variable has a nominal distribution.

Table 2. Pain Data Linearity Test

ANOVA Table							
			Sum of Squares	Df	Mean Square	F	Sig.
Low Back Pain * Pain Data	Between Groups	(Combined)	64.621	22	2.937	2.057	0.000
		Linearity	13.218	1	13.218	9.255	0.000
		Deviation from Linearity	51.402	21	2.448	1.714	0.342
	Within Groups		9.998	7	1.428		
	Total		74.618	29			

Based on the table above, the results of the linearity test on pain data with visual analogue scale and low back pain are significant values of 0.342 > 0.05 with an F value of 1.714. It can be concluded that pain data with visual analogue scale and low back pain have a linear relationship.

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Table 3. Linear Test of Data Range of Motion

			Sum of Squares	Df	Mean Square	F	Sig.
Low Back Pain * Data *Range of Motion*	Between Groups	(Combined)	17.697	10	1.770	0.591	0.000
		Linearity	13.357	1	13.357	4.458	0.000
		Deviation from Linearity	4.340	9	0.482	0.161	0.211
	Within Groups		56.921	19	2.996		
	Total		74.618	29			

Based on the table above, the results of the linearity test on the range of motion data measured by the v-sit and reach test and low back pain were significant values of 0.211 > 0.05 with an F value of 1.161. It can be concluded that the range of motion data measured by the v-sit and reach test and low back pain have a linear relationship.

Table 4. T Test

Models		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	14.505	5.489		7.821	0.000
	Pain Data	0.120	0.030	0.151	2.671	0.000
	Data *Range of Motion*	0.208	0.038	0.043	3.208	0.000

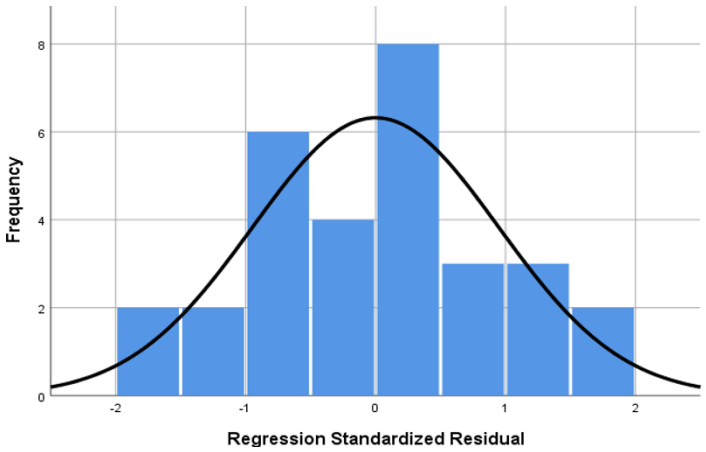

Figure 1. Significance Graph

Based on the table and figure above, regarding the results of the T Test in the SPSS Application version 23 in the t and sig. columns, it can be explained as

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follows: 1) Based on the results of the T test in the table above, it is known that the pain data variable with visual analogue scale to low back pain has a t-value calculated > t of the table, which is 2,671 > 1,706 with a significance level of 0.000 < 0.05. These results can be concluded that pain data with visual analogue scale have a positive and significant effect on low back pain and H1 Acceptance. 20 Based on the results of the T test in the table above, it is known that the range of motion data variables measured by the v-sit and reach test for low back pain has a t-value calculated > t of the table, which is 3,208 > 1,706 with a significance level of 0.000 < 0.05. These results can be concluded that the range of motion data measured by the v-sit and reach test had a positive and significant effect on low back pain and H2 Accepted

Table 5. Test F

	Models	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	31.898	3	10.633	6.471	.000b
	Residual	42.720	26	1.643		
	Total	74.618	29			

a. Dependent Variable: Low Back Pain
b. Predictors: (Constant), Pain Data and Range of Motion Data

Based on the table above in columns F and sig. obtained the magnitude of the Fcal > Ftable values, which are 6,471 > 2,975 with a significance level of 0.000 < 0.05, this shows that the hypothesis test is accepted. These results can be concluded that simultaneously warm oil has a positive and significant effect on low back pain measured using pain data with visual analogue scale and range of motion data measured by v-sit and reach test.

Discussion

Based on the results of the T test, it can be seen that the t-value of the table > t is 2,671 > 1,706 with a significance level of 0.000 < 0.05. The results can be concluded that manipulation therapy with the effleurage technique using warm oil has a positive and significant effect on low back pain in football youth in Maos Kidul Village. Manipulation therapy with the effleurage technique using warm oil is one of the effective manual therapy methods in treating low back pain because it

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is able to provide a relaxing and therapeutic effect on muscle tissue and soft tissue. The use of warm oils plays an important role in reducing friction between the therapist's hand and the skin, providing a soothing warm sensation and helping to improve blood circulation to the area experiencing pain (Nopianto et al., 2020). The combination of therapeutic touch and warm effect is significantly able to relax tense muscles, reduce muscle spasms, reduce stiffness and help reduce the intensity of pain which is often the main cause of low back pain so as to support increased comfort and movement function in football youth in Maos Kidul Village.

The results of this study are in line with research conducted by Hasibuan et al., (2023) which stated that manipulation therapy with the effleurage technique using warm oil has a positive and significant effect on low back pain. The effleurage technique with warm oil has a positive and significant effect on reducing the intensity of low back pain through stimulation of the nervous system and improved blood circulation. Gentle touch stimuli can trigger the release of endorphins which act as natural analgesics for the body, helping to reduce pain perception. In addition, increased blood flow helps speed up the tissue healing process and reduces the buildup of metabolic waste that triggers pain. With regular application and proper techniques, effleurage manipulation therapy has been proven to be able to significantly increase the comfort, flexibility and quality of functional activities of low back pain sufferers in football youth in Maos Kidul Village.

Based on the results of the T test, it can be seen that the t-value of the table > t is 3,208 > 1,706 with a significance level of 0.000 < 0.05. These results can be concluded that manipulation therapy with the effleurage technique using warm oil can experience an improvement in ROM (range of motion) and movement function has a positive and significant effect on low back pain in football youth in Maos Kidul Village. The effleurage technique is carried out by gently rubbing movements in the lower back area so that it is able to relax the muscles that are experiencing tension. The use of warm oil helps to increase the elasticity of soft tissues, improve blood circulation and reduce muscle and joint stiffness. This condition allows the muscles and supporting structures of the spine to become more relaxed so that joint

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space for movement increases and the lower back ROM has gradually improved in football youth in Maos Kidul Village.

The results of this study are in line with research conducted by Muna et al., (2023) which stated that manipulation therapy with the effleurage technique using warm oil can improve ROM (range of motion) and motion function positively and significantly affect low back pain. Effleurage therapy with warm oil has been proven to have a positive and significant effect on improving movement function as well as reducing pain in people with low back pain because it is able to create a state of total relaxation in the muscles and soft tissues around the lower back. Optimal muscle relaxation helps reduce tension and spasm which are often the main obstacles to movement, so that in football youth in Maos Kidul Village can move more freely and carry out daily functional activities without excessive pain. Consistent application of therapy and appropriate techniques, effleurage improves the comfort, confidence and quality of life of low back pain sufferers in a sustainable manner in football youth in Maos Kidul Village.

CONCLUSION

Manipulation therapy with effleurage technique using warm oil has a positive and significant effect on patients with low back pain. The results of the study showed that manipulation therapy with the effleurage technique using warm oil applied to football youth in Maos Kidul Village can relieve and significantly reduce low back pain sufferers in football youth in Maos Kidul Village and manipulation therapy with the effleurage technique using warm oil can experience ROM improvement (range of motion) and movement function have a positive and significant effect on patients with low back pain. The results of the study showed that manipulation therapy with the effleurage technique using warm oil could improve the ROM (range of motion) and the movement function applied to football youth in Maos Kidul Village could relieve and significantly reduce low back pain sufferers in football youth in Maos Kidul Village.

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