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The Effect of Sports Massage Treatment on Knee Pain Relief in Sports Activities Aged 40-60 Years

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Abstract
Knee pain is a condition in which a person experiences a sensation of pain in the knee area during activities such as walking, engaging in physical activity, or even while at rest. Sports massage is a manual or mechanical manipulation technique using the hands on the soft tissues of the body, aimed at eliminating metabolic waste products in the muscles, such as lactic acid. Massage can improve blood circulation within the muscles, contributing to increased oxygen transport and accelerating the body's metabolic processes. This study uses a pre-experimental method to assess the effectiveness of **s**ports massage treatment in reducing knee pain. The research design employed is a one-group pretest-posttest design. The population in this study consists of males and females aged 40–60 years in Depok City. The sampling technique used is non-probability sampling with purposive sampling. The research instrument used is the Visual Analog Scale (VAS), with a scale range from 0 to 10. Data analysis began with prerequisite testing using the one-sample Kolmogorov-Smirnov test before conducting the paired sample t-test. Based on the Kolmogorov-Smirnov normality test results, the Sig. value for the pretest was 0.200 and for the posttest was 0.090. Since both Sig. values are greater than 0.05, it can be concluded that the pretest and posttest data are normally distributed. Based on the paired sample t-test results, the average difference between the pretest and posttest scores was 3.933, indicating an improvement of 3.933 points. The Sig value (2-tailed) is 0.000, which indicates that the difference between the pretest and posttest is statistically significant. Based on the research results and discussion above, it can be concluded that sports massage **is** effective in reducing knee pain in physically active individuals aged 40–60 years.

Keywords: *Sport Massage, Knee Pain*

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INTRODUCTION

Sports activities shape a sporting spirit, personality and good character, which ultimately forms a quality human being. (Ati Safitri, Imroatul Maghfiroh, Ahmad Khafis, 2021). Knee pain itself is a condition where a person feels a painful sensation in the knee when doing activities such as walking, doing activities, or when standing still. (Cahyady Et Al.,

2021). Persistent knee joint pain doesn't directly cause disease. If left untreated, it can lead to osteoarthritis, a condition affecting the knee joints. Sports massage is the manual or mechanical manipulation of soft body parts that helps remove waste products from the muscles, such as lactic acid. (Roepajadi, 2022).

Exercise has a significant impact on a person's physical fitness, primarily because it directly contributes to physical fitness. However, the type of exercise should be tailored to the individual's age, particularly for women and men entering middle age and older age, who are already experiencing declines in bodily functions and physical changes. It's important to do it with the proper technique and rules. Even if someone has a strong interest in sports, it's still important to consider their age and physical condition to ensure the activity remains well-maintained and controlled. Exercise is also one of the main ways to reduce stress by positively motivating someone (Hadjarati & Haryanto, 2020). The knee is one of the most sensitive areas to injury and is the most complex joint in the human body (Wijayasurya & Setiadi, 2021). It is important for patients experiencing knee joint pain to monitor their condition and take steps to prevent osteoarthritis (Fahmi et al., 2022). Knee pain management is necessary to restore knee function and reduce pain. Sports massage is a massage technique designed to help improve and maintain an individual's physical condition, with the goal of increasing blood circulation, reducing tension, and accelerating the recovery process. This objective to determine the effect of sports massage treatment on reducing knee pain in sports enthusiasts aged 40-60 years.

The results of this study align with previous research conducted by Anas Wahyu Bachtiar et al (2022), which found that sports massage had an effect on reducing pain in lower extremity muscles. However, my research shows that sports massage is not only effective in reducing lower extremity muscle pain but can also help reduce knee pain in athletes aged 40-60 years. Another study conducted by Mochamad Azhar Ilmi et al. (2018) also found that sports massage manipulation can reduce pain intensity after eccentric activity.

METHOD

This study uses a pre-experimental method to assess the effectiveness of sports massage treatment in reducing knee pain. This study will use a one-group pretest-posttest design. The diagnosis is determined based on a pain scale measurement sheet. The population in this study were men and women aged 40-60 years who experienced knee pain while exercising in Depok City, West Java. The sampling technique used in this study was non-probability sampling using purposive sampling. Therefore, the sample size selected for this study was 15 people. The level of pain was measured using a Visual Analog Scale (VAS) with a scale from 0 to 10, where 0

indicates no pain, 1-3 indicates mild pain, 4-6 indicates moderate pain, and 7-10 indicates severe pain. By performing sports massage manipulations on the treatment group, such as effleurage, petrissage, shaking, and tapotement, on the quadriceps, hamstring, gastrocnemius, and plantaris muscles. Treatments were performed for 20-30 minutes per individual, with massage intensity adjusted to the thickness of each individual's muscles. In this study, data analysis techniques were used with descriptive analysis, normality tests, analytical tests with paired sample t test.

RESULTS AND DISCUSSION

Result

Table. 1. Descriptive Quantitative

Tes VAS	N	Min	Max	Mean	Std. Deviation
PRETEST	15	5	8	6.60	1.121
POSTEST	15	1	4	2.67	1.175

Based on the results of the descriptive analysis, it can be seen that in the pretest, the minimum score obtained was 5 and the maximum score was 8, with an average of 6.60 and a standard deviation of 1.121. This indicates that respondents had a relatively high score in the pretest with small variations. In the posttest, the minimum score obtained was 1 and the maximum score was 4, with an average of 2.67 and a standard deviation of 1.175, indicating relatively small variations. Although there was a decrease in the mean and a lower posttest score, this does not necessarily indicate an effect of the treatment on the variable. Therefore, the author needed to conduct a paired sample t-test to determine whether there was a significant difference between the pretest and posttest scores, as explained below.

Table. 2. Normality test

Tes VAS	Kolmogorov-Smirnov[a]		
	Statistic	df	Sig.
PRETEST	0.173	15	0.200
POSTEST	0.205	15	0.090

Based on the results of the Kolmogorov-Smirnov normality test, it can be seen that the Sig. value for the pretest is 0.200 and for the posttest is 0.090. Since both Sig. values are greater than 0.05, it can be concluded that the pretest and posttest data are normally distributed. Thus,

the normality assumption for conducting the paired sample T-test has been met, so that parametric tests can be conducted to analyze the differences between the pretest and posttest.

Table. 3. Paired Sample T Test

TES	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
PRETEST - POSTEST	3.933	1.335	0.345	3.194	4.672	11.415	14	0,000

Based on the results of the paired sample t-test, it can be seen that the average difference between the pretest and posttest is 3.933, which indicates an increase in the score of 3.933 points. The Sig. value (2-tailed) is 0.000. Since the Sig. value is <0.05, it can be said that the difference between the pretest and posttest is statistically significant.

Discussion

Based on the results of the paired sample t-test, it can be seen that the average difference between the pretest and posttest is 3.933, which indicates an increase in the score of 3.933 points. The Sig. value (2-tailed) is 0.000. Since the Sig. value is <0.05, it can be said that the difference between the pretest and posttest is statistically significant.

The existence of this significant difference shows that sports massage treatment has an effective influence in reducing knee pain, so it can be said that sports massage treatment has a significant influence in reducing knee pain in sports enthusiasts aged 40-60 years. Research by Asfri Sri Rahmadeni and colleagues (2023) showed that massage with red ginger was effective in reducing knee osteoarthritis pain in the elderly. The findings in my study indicate that sports massage also has similar benefits, not only in relieving pain from knee osteoarthritis, but also potentially reducing knee pain in individuals aged 40–60 who are active in sports.

One way to achieve this is through regular and consistent sports massage, as suggested by Roepajadi (2022), who notes that sports massage can help reduce knee pain by relieving muscle tension, increasing joint flexibility, and improving blood circulation. Furthermore, other factors such as intensity, duration, and sports massage technique also need to be considered to achieve optimal results. Apart from sports massage, other supporting factors such as regular physical exercise and stress management can also help reduce knee pain, as

suggested by Page (2012) that regular physical exercise can help increase muscle strength and reduce pain.

CONCLUSION

Based on the research results and discussion above, it can be concluded that sports massage is effective in reducing knee pain in athletes aged 40-60 years. The results of this study indicate a significant difference between pain scores before (pretest) and after (posttest) sports massage, with an average difference of 3.933 points. If the Sig. value is <0.05, a significant difference can be concluded. The data show a Sig. value (2-tailed) of 0.000, indicating that the difference between the pretest and posttest is statistically significant.

Therefore, sports massage can be an effective therapy option for reducing knee pain and improving quality of life. However, further optimization is needed to achieve maximum results, such as performing sports massage regularly and consistently, and considering other supporting factors such as regular physical exercise and stress management.

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