The Effect of Massage on the Recovery of Tapak Suci Pencak Silat Athletes at the Pancur Batu Branch

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Abstract.

Background This study was conducted because the effect of massage as a recovery treatment for athletes after training leading up to a competition was unknown.

Objectives This study aimed to determine the effect of massage on the recovery of Tapak Suci Pencak Silat athletes from the Pancur Batu branch.

Methods This study employed a quantitative experimental method. The instrument used was heart rate measurements. Respondents in this study were 30 Tapak Suci Pencak Silat athletes from the Pancur Batu branch who were undergoing training camps for the 2025 Indonesian National Student Penak Silat Championship. The data analysis technique used was quantitative descriptive.

Results Based on the results of the research conducted on the effect of massage on the recovery of Tapak Suci Pencak Silat athletes, the following conclusions can be drawn: The effect of massage on the recovery of Tapak Suci Pancur Batu pencak silat athletes showed a significance value of 0.112 ($p > 0.05$). It can be concluded that there is no statistically significant effect of massage on the recovery of Tapak Suci Pancur Batu pencak silat athletes.

Conclusion Although descriptively the experimental group showed a greater reduction in heart rate (15.47 bpm) compared to the control group (13.00 bpm), as well as an additional effect of 9.93 bpm after the massage treatment, this difference did not reach the required level of statistical significance.

Keywords: Effect, Massage, Recovery, Pencak Silat, Athletes.

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INTRODUCTION

Massage is a technique of applying touch to the soft tissues of the body with the aim of improving physical and mental health. According to Field (2019) 50(5), 845–861, *"Massage therapy is a systematic manipulation of the soft tissues of the body, which can enhance physical and mental well-being."* This technique is not only used for relaxation but also to address various health problems, including muscle pain, muscle tension, and stress. Thus, massage has become one of the popular methods in alternative health practices.

In the context of sports, massage has an important role in the athlete recovery process. Cummings and Cummings (2020) 25(2), 123–134 state that *"Massage therapy has been shown to reduce muscle soreness and improve recovery times in athletes."* This research shows that massage can help reduce muscle tension and accelerate the recovery process after intensive training. This makes massage an integral part of professional athletes' recovery routines.

Recovery in sports is a physiological and psychological process of the body's systems that helps athletes restore their physical and mental condition after training or competition. Recovery aims to repair tissue damage, replenish energy, and reduce fatigue experienced by athletes after training so that they can return to training optimally. The main purpose of recovery is to restore body condition, repair muscle tissue damage, and replenish energy used during physical activity. McLellan et al. (2020) 50(5), 823–839 state that *"the primary goal of recovery is to restore balance, repair muscle damage, and replenish energy stores, which are essential for preventing injury and improving athletic performance."* With proper recovery, athletes can reduce the risk of injury and improve their ability to train and compete effectively.

The Tapak Suci Pancur Batu Pencak Silat Club is a pencak silat club located in Pancur Batu District. This club frequently participates in pencak silat championship events, both single events and multi-events.

Pencak silat is a high-intensity sport that requires hard training and high discipline. Not infrequently, with the demanding training programs, athletes experience a decline in physical fitness and performance during training. To maintain physical fitness, athletes often engage in various activities outside training, such as total rest, swimming, jogging, and others as recovery measures.

Massage is one method that can be used to maintain athletes' physical fitness. Massage is believed to be a means of relaxing body muscles that are stressed due to high-intensity training. Lee (2020) stated that massage can help relieve stress and provide a relaxation effect on muscles, which ultimately supports overall health. The benefits of massage include relieving muscle pain, improving blood circulation, and relaxing tense muscles; therefore, massage can serve as a good recovery method for athletes.

Based on observations, it was found that the Tapak Suci Pancur Batu pencak silat athletes are currently undergoing a training camp in preparation for the **Indonesia Open Pencak Silat Tournament**, which will be held in August 2025. Observations conducted in the field showed that out of 30 athletes aged 14–17 years who were participating in the training camp, many experienced muscle stress. As a result, the athletes easily felt fatigued, often experienced muscle cramps, and suffered from muscle pain. This condition had an impact on decreased performance during training, thereby frequently disrupting the intensity of the training sessions.

Therefore, after conducting direct observations of the athletes and discussing with the coach regarding appropriate recovery actions for the athletes, the researcher suggested to the coach that massage therapy be implemented as a recovery method for the athletes.

METHOD

Research Design

The research method is a scientific way to obtain data with specific purposes and uses. This research method is quantitative with an experimental design. This study uses a Quasi-experimental design, this method was chosen because researchers want to know the effect of Massage on athlete Recovery. In this study, it will be divided into 2 groups, namely the control group and the experimental group, the control group will not be given massage treatment until the post-test is carried out, while the experimental group will be given massage treatment after training until the post-test is carried out.

Participant

Location: This research will be conducted at the Pencak Silat club PENGCAB 08 Tapak Suci Pancur Batu. Time: This research will be conducted from May to June 2025. The research will consist of eight meetings, with two meetings occurring weekly. The sample will be 15 Tapak Suci Pancur Batu Pencak Silat athletes, out of a total population of 30. The participants will be divided into 15 control groups and 15 experimental groups.

Data Analysis

The activities in data analysis include grouping data based on variables and respondent types, stabilizing data based on variables from all respondents, presenting data for each studied variable, and performing calculations to test the proposed hypotheses. The data analysis techniques used in this study are as follows:

RESULTS AND DISCUSSION

Results

This study was conducted to examine the effect of massage on the recovery of Tapak Suci Pancur Batu pencak silat athletes. The research process began by selecting research subjects based on predetermined inclusion and exclusion criteria. A total of 30 pencak silat athletes were selected and randomly divided into two groups: a control group (n=15) and an experimental group (n=15).

Before the intervention was implemented, both groups underwent a **pretest** to obtain baseline data regarding resting heart rate, heart rate during exercise, and heart rate after exercise. The training protocol used was consistent for both groups to ensure the same physiological stimulus.

The control group underwent standard training sessions without additional intervention, while the experimental group received massage treatment after completing the training session. The massage was

administered using standardized techniques and duration to ensure consistency of the treatment. After the intervention period, both groups underwent a **posttest** using the same protocol as the pretest.

The collected data included measurements of heart rate at various phases of exercise and recovery. Specifically for the experimental group, additional heart rate measurements were taken after the massage to evaluate the immediate effects of the intervention. All data were then analyzed using appropriate statistical methods to test the research hypothesis.

The research process was conducted under controlled conditions by considering external factors that could influence the results, such as measurement time, environmental conditions, and the consistency of the intervention. The following are the complete results of the conducted study.

Descriptive Analysis

1. Control Group (n = 15)

a. Pretest:

- Resting Heart Rate: Mean = 90.13 ± 3.248 bpm (range: 85–95 bpm)
- Exercise Heart Rate: Mean = 189.60 ± 1.993 bpm (range: 185–192 bpm)
- Post-Exercise Heart Rate: Mean = 99.47 ± 3.335 bpm (range: 94–105 bpm)

b. Posttest:

- Resting Heart Rate: Mean = 74.60 ± 2.694 bpm (range: 70–79 bpm)
- Exercise Heart Rate: Mean = 181.33 ± 2.380 bpm (range: 178–185 bpm)
- Post-Exercise Heart Rate: Mean = 86.47 ± 2.949 bpm (range: 80–91 bpm)

c. Changes in the Control Group:

- Resting heart rate: Decreased by 15.53 bpm (90.13 → 74.60)
- Exercise heart rate: Decreased by 8.27 bpm (189.60 → 181.33)
- Post-exercise heart rate: Decreased by 13.00 bpm (99.47 → 86.47)

Table 1. Pretest and Posttest Results in the Control Group

Parameters	Pretest Mean ± SD (*bpm*)	Posttest Mean ± SD (*bpm*)	Change (*bpm*)
Initial Heart Rate	90.13 ± 3.248	74.60 ± 2.694	Down
	(85-95)	(70-79)	15.53
Exercise Heart Rate	189.60 ± 1.993	181.33 ± 2.380	Down
	(185-192)	(178-185)	8.27
Post-Exercise Heart Rate	99.47 ± 3.335	86.47 ± 2.949	Down
	(94-105)	(80-91)	13.00

Discussion

1. Changes in Heart Rate in the Control Group (n = 15)

The control group, which did not receive massage intervention, showed changes in heart rate from pretest to posttest. In the pretest, the mean resting heart rate was 90.13 ± 3.248 bpm, the exercise heart rate was 189.60 ± 1.993 bpm, and the post-exercise heart rate was 99.47 ± 3.335 bpm. In the posttest, these values changed to 74.60 ± 2.694 bpm for resting heart rate, 181.33 ± 2.380 bpm for exercise heart rate, and 86.47 ± 2.949 bpm for post-exercise heart rate.

Specifically, the resting heart rate in the control group decreased by 15.53 bpm (from 90.13 to 74.60 bpm). The exercise heart rate decreased by 8.27 bpm (from 189.60 to 181.33 bpm), and the post-exercise heart rate decreased by 13.00 bpm (from 99.47 to 86.47 bpm).

This decrease indicates the presence of physiological adaptation or general training effects that occurred during the research period, regardless of the specific intervention. These changes serve as a natural baseline of recovery and adaptation that will be compared with the experimental group.

2. Changes in Heart Rate in the Experimental Group (n = 15)

The experimental group, which received the massage intervention, also showed changes in heart rate from pretest to posttest. In the pretest, the mean resting heart rate was 90.33 ± 2.225 bpm, the exercise heart rate was 190.40 ± 2.849 bpm, and the post-exercise heart rate was 100.07 ± 3.900 bpm. In the posttest, these values changed to 81.53 ± 2.356 bpm for resting heart rate, 179.73 ± 2.963 bpm for exercise heart rate, and 84.60 ± 3.269 bpm for post-exercise heart rate.

The changes in heart rate in the experimental group included a decrease in resting heart rate of 8.80 bpm (from 90.33 to 81.53 bpm), a decrease in exercise heart rate of 10.67 bpm (from 190.40 to 179.73 bpm), and a decrease in post-exercise heart rate of 15.47 bpm (from 100.07 to 84.60 bpm).

Most importantly, after the massage treatment was administered, the heart rate of the experimental group showed an additional decrease of 9.93 bpm, from 84.60 bpm to 74.67 bpm. This additional reduction descriptively indicates that massage has a direct effect in accelerating the post-exercise heart rate recovery process.

This finding suggests a potential physiological mechanism in which massage may enhance parasympathetic nervous system activity or reduce excessive sympathetic activity after exercise, thereby accelerating the return of heart rate to resting levels.

3. Descriptive Comparison Between Groups

Descriptively, the experimental group showed a faster and more significant heart rate recovery trend compared with the control group. Although both groups experienced a decrease in post-exercise heart rate from pretest to posttest, the experimental group showed a decrease of 15.47 bpm (from 100.07 to 84.60 bpm) compared with a decrease of 13.00 bpm in the control group (from 99.47 to 86.47 bpm).

Furthermore, the direct effect of the massage intervention in the experimental group resulted in an additional heart rate reduction of 9.93 bpm, reaching 74.67 bpm.

CONCLUSION

Based on the research results, massage did not show a statistically significant effect on the recovery of heart rate and muscle stress in Tapak Suci Pancur Batu pencak silat athletes ($p = 0.112 > 0.05$). Although descriptively, the experimental group experienced a greater decrease in heart rate than the control group and there was an additional decrease after the massage treatment, this difference did not reach the level of statistical significance. However, clinically, massage shows the potential to help athlete recovery, so further research with a larger sample size is needed to prove its significant effect.

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AUTHOR CONTRIBUTION STATEMENT

This research was conceptualized and designed by Mohamad Naoval Riandra, who developed the research objectives and methodology, managed data collection, coordinated with participants, and supervised fieldwork at STOK Bina Guna Medan. Muhammad Isnandar performed data analysis, interpreted the findings, and contributed significantly to the preparation of the manuscript. All authors participated in manuscript revisions, approved the final version for submission, and take full responsibility for the integrity and accuracy of the work.

CONFLICT OF INTEREST AND FUNDING

The authors declare no conflict of interest related to the conduct, authorship, or publication of this study.

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