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## The effect of Thai massage on decreasing fatigue levels and blood pressure

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### Abstract

The research aimed to determine the effect of Thai massage on fatigue recovery and blood pressure. This research was conducted at the Health and Sports Center (HSC) Therapy Clinic, Yogyakarta State University, using the pre-experimental research method with a one-group pretest-posttest design. The research instrument involved a fatigue measurement scale questionnaire and a digital sphygmomanometer. The study population included patients at the Health and Sports Center Therapy Clinic, Yogyakarta State University (UNY), who complained of fatigue. The sample in this research was 30 people who were calculated using the sample size calculator program. The significance of the differences in the pretest and posttest data was obtained using a paired t-test. The results of this study showed that the average pretest fatigue score was 30.6+2.5, and the average posttest score was 24.9+2.2. The difference between the two results in a significant decrease with  $P=0.000$  ( $p<0.05$ ). The average pretest systolic score was 115.5+6.3, and the posttest was 119.5+6.3. The difference between the two was tested by paired t-test resulting in a significant increase with  $P=0.000$  ( $p<0.05$ ). The average pretest diastolic value was 79.1+7.6, and the average posttest value was 81.6+6.4. The difference between the two was tested by paired t-test resulting in a significant increase with  $P=0.004$  ( $p<0.05$ ). Based on the analysis results, it can be concluded that Thai Massage can significantly reduce fatigue and increase blood pressure.

**Keywords:** Thai massage, fatigue, blood pressure

### Introduction

In an increasingly modern era, humans must always work hard to achieve goals and fulfill daily needs, often neglecting health conditions. Poor health conditions will cause humans to experience an illness preceded by fatigue easily. Fatigue is a common thing in humans, especially workers and athletes. Workers in Indonesia generally have 8 hours of work and often get overtime work, so they experience fatigue. Continuous fatigue will have a negative impact on one's performance which will make it not optimal and cause injury.

*Fatigue* is a condition in which a body experiences a decrease in the ability to work muscles, accompanied by fatigue and decreased endurance, which can be caused by problems with energy supply, ATP + PC, anaerobic glycolysis, accumulation of lactic acid, altered nervous system, and failed muscle mechanics <sup>[1]</sup>. Research conducted by the International Labor Organization (ILO) found that 32% of workers worldwide experience fatigue from their daily work. The percentage level of severe fatigue in workers worldwide is 18.3-27%, and the prevalence of fatigue in industry is 45% <sup>[2]</sup>. Data from the Director General of Labor Inspection (*Binwasker*) in 2012 stated that out of 847 work accident cases, 36 occurred due to work fatigue. Based on observations at the Yogyakarta State University (UNY) Health and Sports Therapy Clinic from December 1, 2021, to January 31, 2022, 50 patients complained of fatigue and requested fatigue recovery services.

Based on the fatigue data on workers above, serious treatment of fatigue is needed. An unhealthy lifestyle, such as excessive workload, irregular sleep times, irregular meal times, and insufficient rest periods, can cause fatigue [3]. Fatigue in the human body, especially muscles, can be caused by the accumulation of metabolic wastes, namely lactic acid.

Lactic acid in the muscles will interfere with the mechanism of action in the muscle cells [4]. Fatigue will affect a person's performance physically and psychologically.

Physically fatigue comes in various forms, one of which is stress. Workers with stress while working have a 5.62 times higher chance of having blood and pulse pressures. Even though those are not significant, prevention is still necessary so that when someone has fatigue, there would be proper help [5]. Blood pressure arises on the walls of the arteries as a result of cardiac activity. Peak blood pressure occurs when the ventricles contract, often called systolic pressure. Meanwhile, diastolic blood pressure occurs when the heart is resting. Normal blood pressure in adults ranges from 100/60 to 140/90. If blood pressure is below or above this range, it can be said that a person has abnormal blood pressure.

*Fatigue*, characterized by a physiological response to stiffness in muscles and joints and changes in blood pressure and pulse frequency, requires efforts to get the body back in a stable condition. One effort that can be made is non-pharmacological therapy, which does not use drugs, such as massage, relaxation, or music therapy [6]. Massage therapy is good for lymph flow, muscles, nerves, digestive tract, and stress. Furthermore, other physiological effects of massage include stimulating the nerves, especially the peripheral nerves, improving sensitivity to stimuli and muscle elasticity to increase working power, cleaning and smoothing the skin, relieving nervous tension to reduce pain, and enhancing blood circulation [7]. The massages developed to recover from fatigue include Thai, Sports, and Swedish Massages.

Thai Massage uses techniques of giving pressure on the acupressure points and doing yoga stretching. Thai Massage therapy is given all over the body on the upper and lower extremities by positioning the body lays on the back or stomach. The goal is to stimulate the sympathetic and parasympathetic nerves, reduce muscle tension, relieve pain, increase joint ROM, and improve blood circulation [8]. Furthermore, Thai Massage is very practical because it does not require lotion, the patient does not have to undress, does not have to use a massage table, and the massage duration is shorter. Meanwhile, the drawback lies in lower comfort compared to other massage methods. Although Thai Massage has many advantages, the facts on the ground, especially at the UNY HSC Therapy Clinic, show that patients prefer Sports Massage over Thai Massage. In addition, there has not been much research on Thai Massage in Indonesia, especially in overcoming fatigue and its effect on blood pressure. Based on the background of the problems above, the researchers conducted research and observations regarding the effects of Thai Massage on fatigue recovery and blood pressure.

## Materials and Methods

The research method applied was pre-Experimental with one group pretest-posttest design, with the population included patients at the Health and Sports Center Therapy Clinic, Yogyakarta State University who had complaints of fatigue. This study selected thirty people as the research subjects who were calculated using the sample size calculator program. The research instrument was a fatigue measurement scale questionnaire and a digital sphygmomanometer.

The type of massage therapy used in this study was Thai Massage, with manipulation in the form of giving pressure on

acupressure points and doing yoga stretching. During therapy, the patient still puts their clothes on, and the therapy is practiced on a mattress placed on the floor. The therapy involved full body therapy from feet to head for 50 minutes for one session.

The data analysis techniques used in this study involved the normality test and the t-test. The normality test was carried out to determine whether the data were normally distributed or not. The data is said to be normal when the value of  $p > 0.05$ , while the data is not normally distributed when  $p < 0.05$ . After the normality test, if the data is normally distributed, then proceed to parametric calculations. Meanwhile, if the data is not normally distributed, it proceeds to non-parametric calculations. The test for the data on the level of fatigue, systolic blood pressure, and diastolic was carried out by applying a paired t-test. Data analysis results are said to be significant if  $p < 0.05$ , and data are said to be insignificant if  $p > 0.05$ . Finally, the analysis of the research data was carried out using the SPSS 20 program.

## Results and Discussion

This research was conducted to determine the effect of Thai massage on reducing fatigue and blood pressure (systole and diastole). The following is the data from the Thai effect research, which can be described as follows.

### A. Pretest data on fatigue, systole, and diastole

The pretest data on fatigue were collected using a questionnaire instrument, while the blood pressure data (systole and diastolic) were obtained using a digital sphygmomanometer, which was carried out before being given Thai Massage therapy. The data obtained can be presented as follows.

**Table 1:** Pretest data on fatigue, systole, and diastole

Variables		Min	Max	Mean	SD
Fatigue		25	36	30,6	2,5
Blood Pressure	Systole	100	129	115,5	6,3
	Diastole	64	98	79,1	7,6

Based on the table above, it can be seen that the minimum value of the fatigue data is 25, and the maximum value is 36. The average value of the fatigue data is 30.6, and the standard deviation is 2.5. Blood pressure data consists of systolic and diastolic, with a minimum systolic value of 100 and a maximum value of 129. The average systolic value is 115.5, and the standard deviation is 6.3. Meanwhile, the minimum diastolic value is 64, and the maximum is 98. The average diastolic value is 80.1, and the standard deviation is 7.6.

### B. Posttest data on fatigue, systole, and diastole

**Table 2:** Post-test data on fatigue, systole, and diastole

Variables		Min	Max	Mean	SD
Fatigue		20	29	24,9	2,2
Blood Pressure	Systole	106	129	119,5	6,3
	Diastole	71	97	81,6	6,4

Based on the fatigue, systole, and diastole pretest data, it can be seen that the minimum value of fatigue is 20, and the maximum value is 29. The average fatigue value is 24.9, and the standard deviation is 2.2. Blood pressure data has two variables, systolic and diastolic, with systolic data whose maximum value is 129 and the minimum value is 106. The average systolic value is 119.5, and the standard deviation is 6.3. Diastolic data has a minimum value of 71 and a maximum value of 97. The average diastolic value is 81.6,

and a standard deviation of 6.4.

Below is the average difference in fatigue and blood pressure data before and after being given the Thai Massage treatment.

**Table 3:** The average difference in the pretest and posttest data of fatigue, systole, and diastole

Variables	Pre-test	Post-test	Difference	Percentage	
Fatigue	30,6	24,9	5,7	18,6	
Blood Pressure	Systole	115,5	119,5	4	3,4
	Diastole	79,1	81,6	2,5	3,1

Based on the table above, it can be seen that there are differences between pretest and posttest results. The data on fatigue before being given the treatment had an average value of 30.6. After being given the treatment, the average data dropped to 24.9. The value decreased as much as 5.7 (18.6%). The systole data before giving the treatment had an average data as much as 115.5 and increased to 119.5 after being given the treatment. The systole data decreased as much as 4 points (3.4%). The diastole data before the treatment had an average value of 79.11, and after being given the treatment, it turned to 81.6. The data decreased as much as 2.5 points or 3.1%.

**C. The T-Test**

The data tested through normality tests were then going to a t-test to discover whether there were changes in the data. The t-test in this study applied was the paired t-test. The t-test results are acceptable if the significant value (sig.) > 0.05 and are unacceptable if the significant value (sig.) < 0.05.

The t-test aimed to prove whether the hypothesis in this study was accepted. The H0 stated that Thai Massage has no effect on fatigue recovery and blood pressure (systole and diastole). From the paired t-test, the researchers obtained the following data.

**Table 4:** The Results of the paired t-test

Variables	Sig (2-tailed)	Conclusion	
Fatigue	0,000	Significant	
Blood Pressure	Systole	0,000	Significant
	Diastole	0,004	Significant

Based on the table above, the data obtained shows that fatigue, systole, and diastole have a significance value of < 0.05. So, it can be concluded that H1 is accepted while H0 is rejected. Thus, it can be said that there is a significant effect of Thai massage in reducing fatigue levels and increasing blood pressure.

Many factors cause fatigue, including work, physical activity, work pressure, and many more. Therapeutic interventions in Thai Massage combined with Sen Sib pressure on meridian points will stimulate the release of endorphins and expedite energy points, while passive stretching will increase body flexibility<sup>[9]</sup>.

The manipulation given to Thai Massage has several benefits, such as increasing oxygen in the muscles so that the muscles are not easily stiff, relieving symptoms of fatigue, increasing energy, releasing stress, increasing body relaxation, eliminating muscle pain, reducing muscle tension, and increases the duration of muscle endurance<sup>[10, 11]</sup>.

Emphasis on the body's meridian points simultaneously will suppress the superficial and deep arteries, stimulating increased blood circulation, increasing the temperature of the damaged area, eliminating toxins in the muscles, and reducing stress and anxiety<sup>[12]</sup>. When given Thai Massage treatment, increased blood flow occurs when the meridians are given

pressure for 30-60 seconds<sup>[9]</sup>.

**Conclusions**

Based on the research results, it can be concluded that 1) Thai Massage significantly affects fatigue recovery in patients at the UNY HSC therapy clinic. 2) Thai massage significantly increases blood pressure in patients at the UNY HSC therapy clinic.

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