

Effectiveness of Circulo Massage on Fatigue Recovery and Sleep Quality of Field Workers



Wildan Wirawan Pinandita¹, BM. Wara Kushartanti², Enggista Hendriko Delano³, Inas Gita Amalia⁴, Sabda Hussain As Shafi⁵, Wahyu Aji Nugroho⁶, Anggun Saraswati⁷, Rulianta Dwi Mundita⁸

^{1,2,3,4,5,6,7,8} Department of Sports Science, Faculty of Sports and Health Sciences, Yogyakarta State University.

ABSTRACT: The aim of the research was to determine the effectiveness of Circulo Massage for fatigue recovery and improving sleep quality. This study is quasi-experimental research with a one-group pretest-posttest design. The research included 30 field workers complaining of fatigue symptoms and decreased sleep quality. The treatment lasted 90 minutes and was administered once. Measurements were taken before and 24 hours after the treatment using the modified Fatigue Assessment Scale (FAS) to assess the fatigue scale, and the modified Pittsburgh Sleep Quality Index (PSQI) to measure the sleep quality index. Data analysis involved the paired t-test and Wilcoxon test. The results indicated that Circulo Massage effectively reduced the fatigue scale (p-value: 0.000) and significantly increased the sleep quality index of field workers (p-value: 0.000). In conclusion, Circulo Massage was found to be effective in reducing the fatigue scale and improving the sleep quality index. This research suggests that Circulo Massage can be beneficial for field workers experiencing fatigue and decreased sleep quality.

KEYWORDS: Circulo Massage, Fatigue, Sleep Quality

I. INTRODUCTION

Labor is defined as development and economic actors, both individually and in groups. It plays a crucial role in regional and national economic activities, aiming to enhance productivity and community welfare (Soleh, 2017). Another perspective on labor was presented by Adam (2017), stating that labor is the primary factor that can drive and influence an economy's competitiveness. Labor is categorized into two types: office labor and field labor. Office workers spend their working hours in the office, while field workers operate outside the office or company to fulfill the requirements of their profession. The key difference between office and field workers lies in their working hours. Office workers generally have more flexible working hours, while field workers often depend on achievement targets set by the company and may work beyond specified working hours.

The Employment Law Number 13 of 2003 governs working hours during the week. For a six-day working week, the recommended working time is seven hours per day and 40 hours per week. In the case of a five-day working week, the recommended working time is eight hours per day and 40 hours per week. A minimum rest period of at least half an hour is required after four hours of work, and a weekly rest of one day for a six-day working week, and two days for a five-day working week should be provided (Verawati, 2017).

Tarwaka (2015) stated that excessive working hours can accelerate the onset of fatigue, leading to decreased accuracy and thoroughness of work. Work fatigue is the primary factor contributing to work accidents, with approximately 50% of work accidents being attributed to it (Soleh, 2017). According to the International Labor Organization (ILO), nearly 2 million workers die each year due to work accidents caused by fatigue. Factors influencing work fatigue can stem from inadequate work environment conditions to psychosocial issues (Wurarah et al., 2020). Field workers, who have demanding targets necessitating high energy and mobility, are particularly susceptible to fatigue. In addition to the risk of fatigue, irregular rest hours can result in poor sleep quality for field workers.

Sleep quality refers to the state an individual experiences upon waking, leading to a feeling of freshness and fitness. It encompasses quantitative aspects such as sleep duration and latency, as well as subjective elements like deep sleep and rest (Rachman, 2018). Field workers frequently report disrupted sleep patterns due to work fatigue, resulting in decreased sleep

Effectiveness of Circulo Massage on Fatigue Recovery and Sleep Quality of Field Workers

quality. To alleviate fatigue and enhance sleep quality, workers often address their physical condition by resting, using traditional herbal remedies, and seeking massage therapy (Chompoopan et al., 2022).

Massage is an art involving gentle touches on the body through the manipulation of hands using various techniques, including friction, shaking, tapping, and vibration (Anggait, 2022). This method of massage treatment yields physiological effects on the body, such as reducing the pulse rate, relaxing muscles, and enhancing blood and lymph flow (Delano & et al., 2022). Additionally, it increases endorphin and serotonin hormones, which can help reduce cortisol and depression, while also improving dopamine levels to alleviate anxiety (Khasanah & Sulistyawati, 2020). Massage offers extensive benefits for body fitness and care, primarily through the principle of relaxing the body's muscles. It has evolved into various types of massage therapy, such as acupressure, reflexology, sports massage, and Swedish massage (Anggriawan & Kushartanti, 2019). Based on interview results, field workers often resort to body massage as one of the effective methods to alleviate fatigue and improve sleep quality. There are several massage purposes to choose from, including massage for fatigue and therapeutic massage. Fatigue massage aims to alleviate exhaustion (Nugroho, W. A., & et al., 2023), while therapeutic massage is used to enhance the body's physiological and anatomical functions. Circulo Massage, as an alternative, is designed to relieve fatigue and tiredness (Arovah & Prastowo, 2015). This type of massage is intended to improve peripheral blood circulation, aiding in the removal and processing of metabolic waste, and is beneficial for relaxing muscles and nerves (Purnomo, 2013). Manipulation techniques in Circulo Massage encompass rubbing (effleurage), friction, tapotement (hitting), walking (rubbing across the muscles), and vibration (Purnomo, 2013). Circulo Massage has the physiological effect of improving blood and lymph circulation. The manipulations administered during Circulo Massage stimulate the release of endorphin hormones, thyroxine hormones, and adrenaline hormones (Sumarjo & et al., 2021: 1100). Endorphin hormones function to create a sense of comfort and alleviate pain (Delano & et al., 2023) (Saraswati, & et al., 2023) (Wijaya, F & et al., 2023). The implementation of Circulo Massage can reduce fatigue levels and enhance the sleep quality of field workers. Given the aforementioned background, researchers seek to assess the effectiveness of Circulo Massage in facilitating fatigue recovery and improving sleep quality among field workers.

II. METHODS

This research constitutes a quasi-experimental study utilizing a Pretest-Posttest Design, involving a pretest before treatment and a posttest after treatment, thereby enabling the comparison of data before and after treatment (Sugiyono, 2007). The subjects of this research were patients at the Health and Sports Center therapy clinic, Faculty of Sports and Health Sciences, Yogyakarta State University. The patients encompassed various types of field workers, including construction workers, offline marketing workers, online motorcycle taxi drivers, as well as farmers and fishermen who reported experiencing fatigue and sleep disturbances and sought fatigue recovery services. The research employed a random sampling technique over a period of 3 months, and the number of subjects for Circulo Massage was determined using a Sample Size Calculator application, resulting in 30 participants. Prior to the research, respondents completed and signed an Informed Consent form to indicate their agreement to participate as research subjects. The instrument used for data collection in this study was a questionnaire. The questionnaire technique was utilized to assess the level of fatigue and sleep quality among the respondents. The first questionnaire (Pre-test) was completed prior to the Circulo Massage manipulation, while the second questionnaire (Post-test) was filled out 24 hours after the Circulo Massage treatment. The data instrument in this study utilized the Fatigue Measurement Scale, adapted from the Fatigue Assessment Scale, for measuring fatigue. The Fatigue Measurement Scale is a subjective instrument for assessing chronic fatigue, developed based on commonly used fatigue questionnaires in research. It has been reported to have high reliability for measuring fatigue among workers (Michielseon, Vreis, Van Heck, 2003), with a reliability value of 0.812, signifying a high level of reliability. Sleep quality was assessed using the Pittsburgh Sleep Quality Index (PSQI) scale developed by Curcio et al. (2012) and adapted to the Indonesian version. The treatment administered was Circulo Massage, lasting 90 minutes and provided only once. Circulo Massage is specifically designed to address complaints of fatigue and physical fitness issues, and it encompasses a full-body massage using lotion to ensure the patient's comfort.

III. RESULTS

In this section, data from the normality test and t-test will be presented. the prerequisite test was used to determine the data processing method to be employed in hypothesis testing. the normality of the data was assessed using the shapiro-wilk normality test.

Table 1. Normality Test Results for Fatigue Variables and Sleep Quality

Variables	SIG.	Category
-----------	------	----------

Effectiveness of Circulo Massage on Fatigue Recovery and Sleep Quality of Field Workers

Fatigue	0.107	Normal
Sleep Quality	0.017	Not Normal

The results of the normality test for fatigue data in the table above indicate a significance value of 0.107, suggesting that the data is normally distributed, and the subsequent hypothesis test analysis was conducted using the parametric Paired T-test. However, the normality test results for the quality data yielded a significance value of 0.017. Therefore, it can be inferred that the data difference is not normally distributed, and the subsequent hypothesis test analysis utilized the nonparametric Wilcoxon test.

Table 2. Treatment T-test *Circulo Massage*

Indicators	Analysis	Significance	Results
Fatigue	<i>Paired T Test</i>	0.000	Significant
Sleep Quality	<i>Wilcoxon</i>	0.000	Significant

Based on the table above, the Paired T-test for the fatigue indicator yields a significance value of 0.000 ($p < 0.05$), indicating a significant difference. In contrast, the analysis of sleep quality indicators using the Wilcoxon test yields a significance value of 0.000 ($p < 0.05$), also demonstrating a significant difference.

IV. DISCUSSION

Work fatigue represents a decrease in the body's capacity and endurance. It encompasses a complex physiological response, comprising both physiological and psychological fatigue, but predominantly associated with physical decline, decreased work motivation, and productivity (Zainul Hidayat, 2016). From a clinical perspective, physiological fatigue can be identified by the presence of fatigue, weakness, muscle stiffness, and pain (Arovah & Kunto Prastowo, 2015). Certain forms of fatigue within the work environment manifest as a chronic condition. This situation is not solely attributed to a single cause, such as excessive workload, but also to the accumulation of daily pressure over an extended period. Feelings of tiredness often emerge upon waking in the morning, even before the commencement of work, such as in the form of "hatred" stemming from disrupted emotions (Lestari, 2016). Sleep quality refers to the condition experienced by an individual to achieve freshness and vitality upon waking. It encompasses quantitative aspects such as sleep duration and latency, as well as subjective elements like deep sleep and rest (Rachman, 2018). For field workers, adequate sleep quality is essential to enhance health and recuperate from fatigue, ultimately leading to improved productivity (Grimaldi et al., 2021). The recovery of fatigue and improvement of sleep quality among field workers are pursued through various means, including pharmacological and non-pharmacological therapies. Pharmacological therapy entails the use of medications, whereas non-pharmacological therapy encompasses strategies such as rest or massage therapy. Massage therapy is employed due to its perceived direct impact on alleviating fatigue and enhancing sleep quality. Circulo massage is utilized as an alternative method to alleviate fatigue and tiredness. This type of massage is specifically designed to enhance peripheral blood circulation, aiding in the transportation and processing of metabolic waste, while also promoting muscle and nerve relaxation (FIK UNY Physical Therapy Clinical Team 2006: 1). The differentiating factor of circulo massage compared to other massage techniques lies in its specific massage technique. The primary technique employed in circulo massage involves friction, initiated from the distal to the proximal body (Arovah & Kunto Prastowo, 2015). This friction is executed through circular movements, with tapotement utilized to maximize the friction results and effleurage intended for calming purposes. Initially, friction is deliberately applied to induce a shock and stimulate the release of endorphins, which serve as a calming agent. Circulo massage encompasses manipulation of all body parts, from the soles of the feet to the head, taking into account muscle structure and the body's organ function (Arovah & Kunto Prastowo, 2015). The primary objective of circulo massage is to enhance blood and lymph circulation. Effective blood circulation facilitates the smooth distribution of nutrients to cells. Nutrients, serving as a source of cellular energy, are metabolized with oxygen (O₂). The removal of metabolic by-products aids in alleviating feelings of fatigue, stiffness, and muscle tension in the nerves. Additionally, the distribution of nutrients and oxygen supports overall bodily fitness (Klinik Terapi Fisik FIK UNY, 2008: 1)

V. CONCLUSIONS

This research concludes that the application of Circulo Massage is effective in reducing fatigue and improving the sleep quality of field workers. Researchers recommend applying non-pharmacological therapy in the form of Circulo massage in cases of fatigue and sleep disorders.

REFERENCES

- 1) Adam, L. (2017). Membangun Daya Saing Tenaga Kerja Indonesia Melalui Peningkatan Produktivitas. *Jurnal Kependudukan Indonesia*, 11(2), 71. <https://doi.org/10.14203/jki.v11i2.205>
- 2) Arovah, N. I., & Kunto Prastowo. (2015). Perbandingan Efektivitas Circulo Massage Dan sport Massage Dalam Mengatasi Kelelahan Kerja karyawan Laki-Laki Gadjah Mada Medical Center. *Medikora*, 1. <https://doi.org/10.21831/medikora.v0i1.4584>
- 3) Chompooan, W., Eungpinichpong, W., Chompooan, W., & Sujimongkol, C. (2022). The Effect of Traditional Thai Massage on Quality of Sleep in Adults with Sleep Problem. *Trends in Sciences*, 19(7). <https://doi.org/10.48048/TIS.2022.3063>.
- 4) Delano, E. H., Kushartanti, W., Amajida, A., Humam, M. F., & Shafi, S.H.A. (2022). The effectiveness of massage therapy with stretching to blood pressure of elderly people with hypertension. *Jurnal Keolahragaan*, 10 (2), 196-207. doi: <https://doi.org/10.21831/jk.v10i2.47877>
- 5) Delano, Enggista Hendriko., Kushartanti, Wara., Arovah, Novita Intan., As-Shafi, Sabda Hussain. Nugroho, Wahyu Aji., Sabillah, Muhamad Ichsan., & Ndayisenga, Japhet. (2023). Comparison of the effectiveness Tepurak therapy with deep tissue massage and stretching in treating non-specific low back pain injuries. *Fizjoterapia Polska*. 2(23).
- 6) Grimaldi, D., Reid, K. J., Papalambros, N. A., Braun, R. I., Malkani, R. G., Abbott, S. M., Ong, J. C., & Zee, P. C. (2021). Autonomic dysregulation and sleep homeostasis in insomnia. *Sleep*, 44(6), 1–13. <https://doi.org/10.1093/sleep/zsaa274>
- 7) Nugroho, Wahyu Aji., Kushartanti, Wara., Delano, Enggista Hendriko., Shafi, Sabda Hussain As., Saraswati, Anggun., Amalia, Inas Gita., Khasanah, & Evi Nur. 2023. The effect of Thai massage on decreasing fatigue levels and blood pressure. *Int J Yogic Hum Mov Sports Sciences*, 8(2):119-121. DOI: <https://doi.org/10.22271/yogic.2023.v8.i2b.1444>
- 8) Purnomo, N. T. (2013). Pengaruh Circulo Massage dan swedia Massage terhadap Penurunan Kadar Asam Laktat darah pada Latihan Anaerob. *Journal Of Physical Education Sports*, 2(1), 181–185.
- 9) Zainul Hidayat. (2016). Pengaruh Stres Dan Kelelahan Kerja Terhadap Kinerja Guru Smpn 2 Sukodono. *Jurnal Penelitian Ilmu Ekonomi WIGA*, 6(1), 36–44.
- 10) Saraswati, Anggun., Arovah, Novita Intan., Delano, Enggista Hendriko., Shafi, Sabda Hussain As., Khasanah, Evi Nur., & Nugroho. Wahyu Aji. (2023). The effectiveness of manipulative therapy in reducing pain and improving range of motion in patients with shoulder injuries. *Int J Phys Educ Sports Health*. 10(4): 91-94. DOI: <https://doi.org/10.22271/kheljournal.2023.v10.i4b.3012>
- 11) Soleh, A. (2017). Masalah ketenagakerjaan dan pengangguran di indonesia. *Jurnal Ilmiah Cano Ekonomos*, 6(2), 83–92.
- 12) Tim Klinik Terapi Fisik FIK UNY. (2008). Pelatihan Circulo Massage. Makalah. Yogyakarta: Klinik Terapi Fisik Fakultas Ilmu Keolahragaan Universitas Negeri Yogyakarta.
- 13) Sugiyono (2019). *Metode Penelitian Kuantitatif, Kualitatif, dan R&D*. Bandung: Alfabeta.
- 14) Sumarjo & *et all*. (2021). The effect of sport and circulo massage on the improvement of work productivity of the physically disabled. *Advances in Social Science, Education and Humanities Research*, volume 278.
- 15) Tarwaka, dkk., 2004, *Ergonomi untuk Kesehatan Kerja dan Produktivitas*, Surakarta: UNISBA Press.
- 16) Verawati, L. (2017). Hubungan Tingkat Kelelahan Subjektif Dengan Produktivitas Pada Tenaga Kerja Bagian Pengemasan Di Cv Sumber Barokah. *The Indonesian Journal of Occupational Safety and Health*, 5(1), 51. <https://doi.org/10.20473/ijosh.v5i1.2016.51-60>.
- 17) Wijaya, F.M., Kushartanti, W., Ambardini, R.L., Delano, E.H., Manihuruk, F., & Murnianah. (2023). Effectiveness of manipulative therapy and heat therapy on pain reduction, increased range of motion and motion function in cases of low back pain. *International Journal of Physical Education, Sports and Health*.
- 18) Wurarah, M. L., Artur, P., Kawatu, T., Akili, R. H., Kesehatan, F., Universitas, M., & Ratulangi, S. (2020). *Journal of*. 1(April), 6–10.



There is an Open Access article, distributed under the term of the Creative Commons Attribution – Non Commercial 4.0 International (CC BY-NC 4.0) (<https://creativecommons.org/licenses/by-nc/4.0/>), which permits remixing, adapting and building upon the work for non-commercial use, provided the original work is properly cited.