

# THE EFFECT OF MASSAGE ON PAIN REDUCTION IN OSTEOARTHRITIS KNEE: LITERATURE REVIEW

**Hasya Khairina Afrida, Dheby Dheirani, Imam Cahyo Adi P, Ganjar Pujowicksono, Dini Nur Alpiah**

Universitas Binawan, Indonesia

[hasya.022111017@student.binawan.ac.id](mailto:hasya.022111017@student.binawan.ac.id), [dheby.022111039@student.binawan.ac.id](mailto:dheby.022111039@student.binawan.ac.id),

[imam.cahyoadi@student.binawan.ac.id](mailto:imam.cahyoadi@student.binawan.ac.id), [ganjarpujowicksono@student.binawan.ac.id](mailto:ganjarpujowicksono@student.binawan.ac.id),

[dininuralpiah@binawan.ac.id](mailto:dininuralpiah@binawan.ac.id)

## Abstract

One way to reduce OA complaints is by using massage methods. Massage is a condition of physical recovery from certain disorders or diseases through muscle and physical straightening techniques so that this method has good credibility. Massage is the art of hand movement that aims to get pleasure and maintain health. This mechanical hand movement will create a sense of calm and comfort for the recipient. This study aims to determine the effect of massage on pain relief in knee osteoarthritis. This study uses a critical review approach, and carried out using a PICO search in several databases such as Google Scholar, PubMed, and Scimago. From that search, 5 journals we are obtained which showed that the frequency was 2 times a week, with a duration of 20 minutes, carried out 2 times a week for 8 weeks. With  $p < 0.001$  with showed significant results in relieving pain in osteoarthritis patients.

**Keywords:** osteoarthritis, massage, excessive activity

---

## INTRODUCTION

One of the causes of knee pain is indicative of osteoarthritis. Osteoarthritis is a chronic disease of the joints with damage to the joints and bones, which is manifested by progressive decay and softening, followed by increased growth of the edges of the bones and cartilage of the knee joint (osteophytes) and fibrosis of the knee joint capsule. Osteoarthritis is a disease that causes disruption of homeostatic cartilage metabolism with damage to cartilage proteoglycan structures of unknown cause (Muttaqin, 2008). A sign of osteoarthritis experienced by a person is manifested by pain in the joints with excessive activity. One way to reduce OA complaints is to use the massage method.

Massage is the restoration of physical condition after certain disorders or diseases using muscle methods and physical alignment, so this method is very trusted. Massage is the art of hand

movements to maintain and minimize the effects of pain (Basir et al., 2013). Mechanical hand movements can calm the receiver. (Wijanarko & Riyadi, 2010) define massage as the act of body massage with hands (manipulation) on the soft parts of the body, a manual or mechanical procedure carried out methodically in order to obtain physiological, preventive and therapeutic effects on the body (Oron & Robinson, 2005).

In fact, massage is one of the healing efforts to avoid all diseases that exist in the body, however, today there are still many people and practitioners around the world who do not understand that massage is a safe treatment and has guaranteed credibility in the treatment of osteoarthritis. Until now, many people do not understand the importance of massage for the treatment of knee pain due to osteoarthritis (Dong et al., 2018).

People believe that there are many ways to treat knee pain due to osteoarthritis besides using massage, and massage is considered too expensive, so many people choose other ways that are cheaper. With the background of these problems, the following problem formulation can be formulated: are there advantages and disadvantages of the products used related to massage therapy to reduce pain in osteoarthritis (Mansfield & Neumann, 2023).

Overall, this study is helpful in understanding the occurrence of knee osteoarthritis and massage management based on the existing literature. This study also aimed to analyze the effect of massage on pain reduction in knee osteoarthritis. In particular, this study is useful for analyzing the advantages and disadvantages of articles used related to massage therapy to relieve pain in knee osteoarthritis, based on the results of a literature review of several selected articles.

## **METHODS**

The method used in this study was carried out using literature review or literature review to find various sources related to the effect of massage on pain reduction related to knee osteoarthritis, and will be considered based on criteria in the form of scientific articles. published over the last 10 years (2013-2023). This study refers to the effect of massage on pain reduction in knee osteoarthritis. Articles used 5 articles. The study used was a randomized control trial. Standard PICO (P=Population) patients with knee osteoarthritis, (I=Intervention) massage therapy, (C=Comparison) no comparison, (O=Outcome) pain reduction in knee osteoarthritis.

The search for this journal article was reviewed by the inclusion and exclusion criteria of several journals from PubMed, Google Scholar, and Scimago. All articles searched in English with the main topic of knee osteoarthritis massage therapy in OA patients are included without restrictions on age, race, gender, economic level and severity.

The data in this study has the characteristic of showing the main fundamental foundation in research taken from theories whose truth and validity are beyond doubt. Researchers have goals that must be met in every research they do so that research becomes more focused. This research uses a critical review design, which is an analysis of a book, journal, or article that has a certain topic of discussion.

Critical review also conducts an in-depth assessment of the writing and content of an academic text. This type of treatment is similar to other effects and results that can be used as an alternative and used as a comparison to determine the effectiveness and superiority of the treatment used. The sample is the number of participants belonging to a more specific category who are willing to participate or be the subject of the study. The evaluation stage of this study uses the PEDro scale, which is a scale used to measure the application of journals in the world of physiotherapy. Rating system used: Yes is given a value of 1 and No is given a value of 0. The values obtained for each statement item are summed and divided by the number of statements to obtain a PEDro score (Trisnowiyanto, 2012).

The WOMAC subscale measurement consists of knee pain, which includes questions 1 through 5. Joint stiffness involves questions 6 and 7, and physical function is covered by questions 8 through 24. The questionnaire measured 5 items for pain (score range 0-20), two for stiffness (susceptible score 0-8) and 17 for functional limitation (score range 0-68).

From several articles that we have searched, we found several massage techniques in patients affected by osteoarthritis, and some of these techniques are Swedish massage, Effleurage, tapotement, and friction.



**Figure 1. Effleurage**

Effleurage benefits to prepare patients to receive the next massage technique (Basir et al., 2013).

Effleurage also serves to stimulate sensory which will have a sedative effect on patients so that patients feel comfortable.



**Figure 2. Stroking**

Stroking is a technique of manipulation rubbing with the entire surface of the hand or with the tips of the fingers of the hand with little / soft emphasis and erratic massage direction.

## **RESULTS AND DISCUSSION**

Based on the literature journal search strategy, 5 journals were found to be studied after going through the screening, eligibility and inclusion stages. With the type of scientific literature and Randomized Controlled Trial (RCT) according to the keywords searched. Some of the results of this study show that osteoarthritis is a significant predictor of massage use in patients with osteoarthritis of the knee (Suzy, 2022), doing massage techniques for 4 weeks can improve symptoms of osteoarthritis (dryness in the morning, stiffness, and swelling), and appropriate massage techniques can be effective in reducing these symptoms (Mark & Smith, 2012).

In 5 journals that showed differences in therapeutic techniques, the amount of frequency, time and duration., researchers found that there are several types of massage movements that can be applied to osteoarthritis patients such as Swedish massage, effleurage, tapotement, friction. Frequency provision at least 2 times a week for a minimum time of 2 weeks, a maximum of 8 weeks, and for a duration of 20 minutes (A. I. Perlman et al., 2012). Based on the results of the article obtained and analyzed by the author, it is known in the table above after massage therapy provides significant results in reducing muscle tension, can reduce pain in knee osteoarthritis patients (Trisnowiyanto, 2012).

Based on a literature review study, the authors found that the average sample results used Swedish massage. From the amount of literature found, most literature uses Randomized Controlled Trial (RCT) research design and WOMAC measurement with an average p of <0.001.

**Table 1. Comparison of Experimental group and Control group**

Reviewer	Participant		Intervention		Measurement	Results	Design Study
	Intervention group	Control group	Experimental group	Control group			
Adam I. Perlman, et al (2012)	(n = 119)	(n = )	Terapi Swedia, Effleurage	No Intervensi	WOMAC	P < 0.05	RCT
Mark H.R, et al (2012)	(n=9)	(n = 9)	Massage swedia	No Intervensi	WOMAC	P < 0.05	RCT
Dorothea V. Atkins, et al (2013)	(n=21)	(n=19)	Effleurage, tapotement, friction	No Intervensi	WOMAC ROM	P < 0.05	RCT
Adam I. Perlman, et al (2022)	(n=34)	(n = 30)	Terapi massage	Terapi massage	WOMAC	p < 0,001	RCT
Qinguang Xu, et al (2017)	(n=)	(n=)	Terapi manual (Massage swedia)	No Intervensi	WOMAC	P < 0,001	RCT
Ahmad Nasiri, et al (2017)	(n = 45)	(n = )	Terapi massage swedia	No Intervensi	WOMAC	p < 0.001	RCT
Shahnawaz Anwer, et al (2018)	(n = 30)	(n = 30)	massage and standard treatment	No Intervensi	VAS, Womac, goniomet	p < 0,001	RCT
Perlman A, et al (2018)	(n = 74)	(n = 75)	Terapi massage swedia	No Intervensi	WOMAC	p < 0,001	RCT
Ali A, et al (2016)	(n = 15)	(n = 10)	Swedia	No Intervensi	WOMAC	p < 0,001	RCT
Diederik C Bervoets, et al (2015)	(n = 12)	(n = )	Terapi swedia, effleurage	No Intervensi	WOMAC	P < 0,05	RCT

**Table 2 Dosage Intervention Therapy**

Reviewer	Type of Intervention	Therapeutic Dosage				Duration Therapy
		F	I	T	T	
Adam I. Perlman, et al (2012)	Massage Swedia, Effleurage	3x Week	-	-	-	2 times a week for 8 weeks.
Mark H.R, et al (2012)	Massage swedia	2x Week	-	45 minute	-	2 times per Week
Dorothea V. Atkins, et al (2013)	Effleurage, tapotement, friction	2x Week	Self-massage	20 minute	-	2 times per Week

Reviewer	Type of Intervention	Therapeutic Dosage			Duration Therapy	
		F	I	T	T	
Adam I. Perlman, et al (2022)	Terapi massage	2x Week	-	60 minute	-	16 Weeks
Qinguang Xu, et al (2017)	Massage swedia	2x Week	Self massage	20-60 minute	-	4 weeks
Ahmad Nasiri, et al (2017)	Terapi massage swedia	2x Week	Self massage	20 minute	-	2 times per week
Shahnawaz Anwer, et al (2018)	Massage	2x Week	-	20 minute	-	4 weeks.
Perlman A, et al (2018)	massage and standard treatment	2x Week	-	60 minute	-	8 weeks
Ali A, et al (2016)	Swedia	2x Week	-	30-60 minute	-	2 weeks
Diederik C Bervoets, et al (2015)	Terapi massage swedia , effleurage	3x Week	-	-	-	8 weeks

Based on research that has been done, researchers found that there are several types of massage movements that can be applied to osteoarthritis patients such as Swedish massage, effleurage, tapotement, friction with a frequency of 2 times a week, with a duration of 20 minutes, done 2 times a week for 8 weeks.

**Table 3. Mean Of Study Characteristics**

Reviewer	Measurement	Group experiment		Control group		Significant
		Pre	Post	Pre	Post	
Adam I. Perlman, et al (2012)	WOMAC	27,2± 27,7	18,0±36,9	-	-	P< 0,05
Mark H.R, et al (2012)	WOMAC	16.7	22.9	27.6	8.1	p>0.05
Dorothea V. Atkins, et al (2013)	WOMAC	±1,7	0,9	1,6	1,62	P< 0,05
Adam I. Perlman, et al (2022)	WOMAC	23.19±24.30	18.36±23.28	52.10	-	p <0,001
Ahmad Nasiri, et al (2017)	WOMAC	-	33.11 ± 6.48	32,88 ± 6,58	32,84 ± 6,30	P<0,001

Reviewer	Measurement	Group experiment		Control group		Significant
		Pre	Post	Pre	Post	
Shahnawaz Anwer, et al (2018)	WOMAC	±85	±88	-	-	p < 0,001
Perlman A, et al (2018)	WOMAC	8,8 ± 18,6	-	-	-	p < 0.001
Ali A, et al (2016)	WOMAC	24,22 ± 8,03	33.11 ± 6.48	32,88 ± 6,58	32,84 ± 6,30	p < 0.001
Diederik Bervoets, et al (2015)	C WOMAC	±13	±20	-	-	P < 0,05

Based on the table above, when compared to the control group, the intervention group showed good and significant improvement for healing in osteoarthritis patients.

Based on research by (Atkins & Eichler, 2013) said that massage can restore various states of fatigue and complaints of muscle pain. so as to reduce pain. This can be seen in the results of experiments conducted in groups measured by the WOMAC scale with the results of knee OA participants getting massage benefits. More research is needed to elucidate the long-term impact of massage itself on the development and symptoms of knee OA.

Research (A. Perlman et al., 2019) This study showed that global WOMAC scores in the massage group improved significantly (24.0 points, 95% CI range of 15.3–32.7) within 60 minutes compared to the non-treatment group. 60 minutes is the optimal massage time for osteoarthritis sufferers, therefore this journal proves that massage with the right dose can reduce knee pain due to osteoarthritis.

Research (Gupta et al., 2017). This study explains that massage can relieve knee pain due to osteoarthritis. In this journal, researchers performed massage for 12 weeks with 10 physiotherapists who massaged 140 volunteers 6 with complaints of knee osteoarthritis. After 12 weeks of massage, patients with osteoarthritis complaints felt a decrease in pain.

The study by (Ali et al., 2017) is a journal with a PEDro scale of 8/11, so it can be categorized as a good journal. The study process involved collaboration between methodologists and clinical experts to conduct randomized control studies on patients that lasted for 30 and 60 minutes and were conducted for 24 weeks. The presence of massage is the main form of healing process shown in this study as a result of pain reduction in osteoarthritis patients, especially in patients who undergo longer treatment of 60 minutes for 24 weeks.

Based on research, (Ali et al., 2017) stated that the usefulness and safety of massage therapy to relieve pain in the knee caused by osteoarthritis. Long-term massage is necessary to optimize the healing process of painful knee osteoarthritis.

The study by (A. I. Perlman et al., 2006) is a good article because it has a PEDro scale of 9/11. Research shows that massage therapy is effective in treating knee OA. More research is needed on the healing effects of massage, the duration of which is clearer. The study showed that the massage group showed the greatest improvement in health status compared to other approaches, making massage an effective medical treatment for reducing osteoarthritis knee pain. The study was limited by the inconsistency of instruments that measured at least one primary endpoint, leading to ambiguity in the presentation of the results, and also limited by the definition of objectives, which 85% of subjects in the study did not. succeed. population

Based on the journal edited by (A. I. Perlman et al., 2012), in this study patients received massage for 8 weeks in 1-hour sessions. The results showed significant improvements in pain, stiffness and function associated with osteoarthritis of the knee, with an increase in a 30° WOMAC score and a significant difference of less than 0.01.

## **CONCLUSION**

The results of a critical review of the journals that have been collected can be used as a title that knee pain due to osteoarthritis can be treated with massage therapy which refers to reducing knee pain. The use of massage as a solution for knee pain due to osteoarthritis is also recommended because it has gone through various stages of research with good results to reduce knee pain due to osteoarthritis. The frequency of 2 times a week, with a duration of 20 minutes, performed 2 times a week for 8 weeks gave significant results in pain reduction in osteoarthritis patients.



## BIBLIOGRAPHY

- Ali, A., Rosenberger, L., Weiss, T. R., Milak, C., & Perlman, A. I. (2017). Massage therapy and quality of life in osteoarthritis of the knee: a qualitative study. *Pain Medicine*, 18(6), 1168–1175.
- Atkins, D. V., & Eichler, D. A. (2013). The effects of self-massage on osteoarthritis of the knee: a randomized, controlled trial. *International journal of therapeutic massage & bodywork*, 6(1), 4.
- Basir, H. M., Javaherian, A., & Yarak, M. T. (2013). Multi-attribute ant-tracking and neural network for fault detection: A case study of an Iranian oilfield. *Journal of Geophysics and Engineering*, 10(1), 15009.
- Dong, S.-J., Zhang, C., & Wu, J. H. (2018). The clinical progress and potential mechanism of massage therapy on knee osteoarthritis. *TMR Non-drug Ther*, 1(1), 2–8.
- Gupta, A., Huettner, D. P., & Dukewich, M. (2017). Comparative effectiveness review of cooled versus pulsed radiofrequency ablation for the treatment of knee osteoarthritis: a systematic review. *Pain physician*, 20(3), 155.
- Mansfield, P. J., & Neumann, D. A. (2023). *Essentials of Kinesiology for the Physical Therapist Assistant E-Book: Essentials of Kinesiology for the Physical Therapist Assistant E-Book*. Elsevier Health Sciences.
- Mark, G., & Smith, A. P. (2012). Effects of occupational stress, job characteristics, coping, and attributional style on the mental health and job satisfaction of university employees. *Anxiety, Stress & Coping*, 25(1), 63–78.
- Muttaqin, A. (2008). *Buku Ajar Asuhan Keperawatan Dgn Gangguan Sistem Persarafan*. Penerbit Salemba.
- Oron, A., & Robinson, D. (2005). A GLUCOSAMINE-CONTAINING MASSAGE CREAM IN THE TREATMENT OF KNEE ARTHROSIS. A PROSPECTIVE DOUBLE-BLIND STUDY. *Orthopaedic Proceedings*, 87(SUPP\_III), 393.
- Perlman, A., Fogerite, S. G., Glass, O., Bechard, E., Ali, A., Njike, V. Y., Pieper, C., Dmitrieva, N. O., Luciano, A., & Rosenberger, L. (2019). Efficacy and safety of massage for osteoarthritis of the knee: a randomized clinical trial. *Journal of general internal medicine*, 34, 379–386.
- Perlman, A. I., Ali, A., Njike, V. Y., Hom, D., Davidi, A., Gould-Fogerite, S., Milak, C., & Katz, D. L. (2012). Massage therapy for osteoarthritis of the knee: a randomized dose-finding trial. *PLoS One*, 7(2), e30248.
- Perlman, A. I., Sabina, A., Williams, A.-L., Njike, V. Y., & Katz, D. L. (2006). Massage therapy for osteoarthritis of the knee: a randomized controlled trial. *Archives of internal medicine*, 166(22), 2533–2538.
- Suzy, S. O. (2022). PENGARUH INSEKTISIDA NABATI BATANG TEMBAKAU VIRGINIA TERHADAP SERANGAN HAMA ULAT Spodoptera litura F. PADA TANAMAN KENTANG. Universitas Mataram.
- Trisnowiyanto, B. (2012). *keterampilan Dasar massage*. Yogyakarta: Nuha Medika.
- Wijanarko, B., & Riyadi, S. (2010). *Sport Massage: Teori dan Praktek*. Surakarta: Yuma Pustaka.

**Copyright holder:**

Hasya Khairina Afrida, Dheby Dheirani, Imam Cahyo Adi P, Ganjar Pujo Wicksono, Dini Nur Alpiyah  
(2024)

**First publication right:**

International Journal of Social Research (Insight)

**This article is licensed under:**

