

Original Research

Effectiveness of massage therapy injury sports methods ali satia graha: experimental study against chronic ankle

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Authors' contribution:

A. Conception and design of the study; B. Acquisition of data; C. Analysis and interpretation of data; D. Manuscript preparation; E. Obtaining funding

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Abstract

Background and Study Aim. The chronic ankle injury will interfere with the range of motion of the ankle joints, such as dorsiflexion, plantarflexion, inversion, and eversion. The motion of the ankle joint will be painful and limited. However, many methods are applied instead of curing the situation. Thus, the purpose of this study was to determine the effectiveness of massage therapy for sports injuries using the Ali Satia Graha method on pain and range of motion in the ankle.

Material and Methods. This study used a Pre-experimental design with a one-group Pretest-Posttest Design. The subjects in this study were determined by the purposive sampling technique, so 15 male patients aged 25–50 years were sampled. Where patients have chronic ankle injuries. In this study, the subjects were given treatment in the form of massage therapy for sports injuries using the Ali Satia Graha method. Instruments in the study were a numeric rating scale (NRS) for pain measurement and a goniometer with units of degrees for range of motion. Analysis in this study was assisted using the SPSS version 26 application.

Results. The results of the treatment of sports injuries with massage therapy by the Ali Satia Graha method on pain perception showed a significance value of $0.000 < 0.05$. So it can be said that there is significant effectiveness in reducing pain perception in chronic ankle pain. Furthermore, massage therapy for sports injuries using the ali satia graha method on dorsiflexion, plantarflexion, inversion, and eversion movements shows a significance value of $p = 0.000 < 0.05$. Based on these results, it provides evidence that massage therapy for sports injuries using the Ali Satia Graha method has a significant effect on range of motion in chronic ankles.

Conclusions. Based on these results, it has been established that the treatment of sports injuries with massage therapy by the Ali Satia Graha method can reduce pain perception and provide an increase in the range of motion in chronic ankle injuries.

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Introduction

Ankle injuries are common among athletes and non-athletes alike. Possible injuries include ligament and muscle tears (Barelds et al., 2018). The injury will interfere with ankle joint motions such as dorsiflexion, plantarflexion, inversion, and eversion. So that the motion of the ankle joint will be painful and limited (Jona James & Al-Dadah, 2021). Ankle injuries can occur due to sudden sprains laterally or medially, which result in the tearing of ligament fibers in the ankle joint (van den Bekerom et al., 2013). In addition, this is also influenced by the pressure of movement, physical contact, and non-physical contact between players (Konseptual & Sumartiningih, 2012). Based on the results of research by Clifton et al., (2017) the incidence rate of causes of ankle sprain injuries is influenced by physical contact between players (58.3%) and non-physical contact (40.2%).

The ankle is formed by three joints: the talocrural articulation, the subtalar articulation, and the distal tibiofibular articulation. The foot and ankle are very complex joint structures consisting of many bones, ligaments, muscles, and tendons. This serves for stabilization and locomotion. Muscles and ligaments are joint stabilizers, including in the sensorimotor system (Kisner et al., 2012). Ankle sprain injuries can occur due to overstretching of the ankle lateral ligament complex in inversion and plantar flexion positions that suddenly occur when the foot does not rest perfectly on the floor or ground. It generally occurs on uneven surfaces. Ligaments in the lateral ankle include the anterior talofibular ligament, which functions to resist movement towards plantar flexion (Mustaqim et al., 2022). Posterior talofibular ligament, which serves to resist movement in the direction of inversion. The calcaneocuboideum ligament, which functions to resist movement in the direction of plantar flexion, Talocalcaneus ligaments that function to resist movement in the direction of inversion and calcaneofibular ligaments that function to resist movement in the direction of inversion (Chan et al., 2011).

Ankle injuries will result in limited ROM (range of motion) or limited joint motion, which results in discomfort when performing daily activities. ROM limitations are caused by many factors, including a lack or imbalance of muscles and disruption of the normal function of the entire kinetic chain. Limitations in joint range of motion are caused by pain, swelling, muscle spasm, muscle stiffness, joint contractures, and nerve damage, as well as increasing age (S. M. Wilson et al., 2011). Not only is the limitation of ankle ROM felt, but when experiencing an ankle injury, you will definitely feel pain when doing activities. Pain is an unpleasant sensory and emotional experience as a result of actual and potential tissue damage that hurts the body and is expressed by the individual experiencing it. When a tissue is injured or damaged, it results in the release of materials that can stimulate pain receptors such as serotonin, histamine, potassium ions, bradykinin, prostaglandins, and other substances that will result in a pain response (Kozier et al., 2009).

Seeing the description above, we can conclude that this ankle injury must be handled properly, quickly, and precisely. Because if it is not good at handling, then the ankle injury will become a more serious injury and will greatly interfere with daily activities and training time (A. Wilson & Lichtwark, 2011). Injuries to the ankle, from mild to severe, can be treated with medical treatment such as surgery or with traditional treatment. According to survey results in a study by Cooke et al., (2003), ankle injuries account for 3–5% of all visits to the UK Emergency Department, or the equivalent of 5,600 incidents per day. Another study by Bridgman et al., (2003) explained that the incidence rate of ankle injuries per year in UK A&E departments for new cases reached 302,000 and the rate of severe injuries reached 42,000.

Many people and even sportsmen do not know how to handle acute and chronic injuries. Incorrect handling will cause the injury to worsen and even make the athlete lose his best performance. Injuries to the ankle, from mild to severe, can be treated with medical treatment such as surgery or with traditional treatment. Efforts to cure pain disorders and decreased ROM can take the form of pharmacological and non-pharmacological treatments. In this study, the solution offered is non-pharmacology, which is a treatment carried out with various types of therapies such as acupuncture, shiatsu, heat therapy, cold therapy, masage, and others. One form of non-pharmacological treatment

is masase therapy, namely masase therapy for sports injuries by the Ali Satia Graha method. In the Ali Satia Graha method of sports injury therapy, there are friction (friction and effleurage), pulling or traction, and repositioning techniques.

Scouring or friction techniques are useful for destroying myogilosis or piles of residual combustion in the muscles. Effleurage is useful for improving blood circulation. Pulling or traction is useful for providing space from both joints that have experienced joint shift errors and repositioning to be returned to a normal position without shifting between the two joint bones so that it will increase the range of ROM (Graha, 2019). Therefore, this study aims to further investigate the effectiveness of the ali satia graha method of sports injury massage therapy to reduce pain and increase ROM in chronic ankle injuries. This is expected to be a new option for both athletes and non-athlete patients in the selection of alternative healing for chronic ankle injuries.

Materials and Methods

Participants.

The subjects in this study were determined by the purposive sampling technique. So that a sample of 15 male patients aged 25–50 years was obtained. Where patients have chronic ankle injuries and experience pain and limited range of motion (ROM) in the ankle. The time carried out in this study began in April–May 2023, while the research site took place at the Ali Satia Graha Method of Sports Injury Therapy Masage service at Plaza UNY Lt. 4 Yogyakarta.

Research Design.

This research method is an experimental design using a one-group pretest and posttest design. This data collection method uses two stages: the initial stage and the final stage, namely before treatment and after treatment (Pelamonia & Puriana, 2023; Suryadi et al., 2021, 2023). The initial stage in collecting this data is that the respondent first fills out a medical record questionnaire before being given treatment, and the researcher divides the respondent into several groups according to the criteria determined by the researcher, which are seen from the medical records that the respondent has filled out. After the treatment is given, the feeling of pain and ROM will be measured again by filling out the medical record questionnaire. A comparison of the results of filling out the two questionnaires (pretest and posttest) will show the effect and comparison between the Ali Satia Graha Method of Sports Injury Therapy Massage.

The pain measurement instrument is a tool used to obtain the results of the degree of pain, namely the Numeric Rating Scale (NRS) or Numeric Scale, which has a score of 1 to 10 to determine signs of red inflammation, pain, swelling, and heat. Furthermore, measurement of the space of motion (ROM) using a goniometer with units of degrees is needed to see the space of motion of the joints in the ankle before and after treatment. The number on the goniometer shows the angle in degrees, like an arc.

Statistical analysis.

The type of data obtained in this study is quantitative, obtained from measurements of the ROM of the ankle joint and pain scales in the ankle. The data analysis in this study used the SPSS version 26 application through the normalistas test and hypothesis testing stages.

Results

Descriptive statistical data analysis of pain perception data and ROM pretest and posttest values for dorsiflexion, plantarflexion, eversion, and inversion. Before the effect test is carried out, the normalization prerequisite test is first carried out. If the data is normally distributed $p > 0.05$, the t test will be carried out, while if the data is not normal $p < 0.05$ then use a non-parametric test. The data from the normality test results with the Kolmogorov-Smirnov and Shapiro-Wilk formulas show a significance value of $p > 0.05$, which means that the data is normally distributed. Therefore, it can be continued using the paired sample t test. The results can be seen in Table 1.

Table 1. Prerequisite Test of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Pretest Pain	0,217	15	0,056	0,862	15	0,126
Posttest Pain	0,280	15	0,122	0,812	15	0,105
Pretest Dorsoflexion	0,178	15	0,200*	0,945	15	0,451
Posttest Dorsoflexion	0,184	15	0,182	0,854	15	0,120
Pretest Plantarflexion	0,101	15	0,200*	0,986	15	0,996
Posttest Plantarflexion	0,129	15	0,200*	0,958	15	0,653
Pretest Eversion	0,140	15	0,200*	0,945	15	0,445
Posttest Eversion	0,295	15	0,131	0,751	15	0,201
Pretest Inversion	0,186	15	0,172	0,949	15	0,511
Posttest Inversion	0,193	15	0,139	0,942	15	0,403

Table 2. Hypothesis Test of Pain and Range of Motion

Group	Result	Mean	Std. Deviation	t	df	Sig. (2-tailed)
Pair 1	Pre Pain – Post Pain	3,733	1,387	10,425	14	0,000
Pair 2	Pre Dorsoflexion – Post Dorsoflexion	-6,000	1,254	-18,537	14	0,000
Pair 3	Pre Plantarflexion -Post Plantarflexion	-9,000	2,330	-14,960	14	0,000
Pair 4	Pre Eversion – Post Eversion	-5,800	1,014	-22,149	14	0,000
Pair 5	Pre Inversion - PostInversion	-7,867	1,407	-21,647	14	0,000

Based on the results of hypothesis testing, it is found that the effect of massage therapy for sports injuries by the Ali Satia Graha method on pain perception shows a significance value of $0.000 < 0.05$. These results can be concluded to show that sports injury massage therapy using the ali satia graha method has a significant influence on the perception of pain in chronic ankle pain. Furthermore, the sports injury massage therapy ali satia graha method on dorsiflexion, plantarflexion, eversion, and inversion shows a significance value of $p = 0.000 > 0.05$. Based on these results, it proves that the sports injury massage therapy method of Ali Satia Graha has a significant effect on increasing Range of Motion (ROM) in chronic ankle injuries. Results can be seen in Table 2.

Table 3. Results of Descriptive Analysis of Pain Perception and ROM

Result	N	Range	Minimum	Maximum	Mean	Std. Deviation
Pretest Pain	15	3	5	8	6,87	1,060
PosttestPain	15	3	2	5	3,13	1,125
Pretest Dorsoflexion	15	6	9	15	12,33	1,799
Posttest Dorsoflexion	15	5	15	20	18,33	1,718
Pretest Plantarflexion	15	14	15	29	22,47	3,603
Posttest Plantarflexion	15	12	25	37	31,47	3,662
Pretest Eversion	15	5	6	11	8,33	1,543
Posttest Eversion	15	2	13	15	14,13	0,915
Pretest Inversion	15	10	13	23	17,33	2,944
Posttest Inversion	15	10	20	30	25,20	3,052

Based on the data in the table, the mean posttest pain value is 6.87 and the pretest is 3.13, which means there is a decrease in chronic ankle pain. Furthermore, the mean posttest dorsiflexion was 18.33 and pretest 12.33, the mean posttest plantarflexion was 31.47 and pretest 22.47, the mean posttest eversion was 14.13 and pretest 8.33, and the mean posttest inversion was 25.20 and pretest 17.33, which means an increase in ROM in chronic ankles after being given the treatment of massage therapy for sports injuries by the Ali Satia Graha method. The results can be seen in Table 3 and Figure 1.

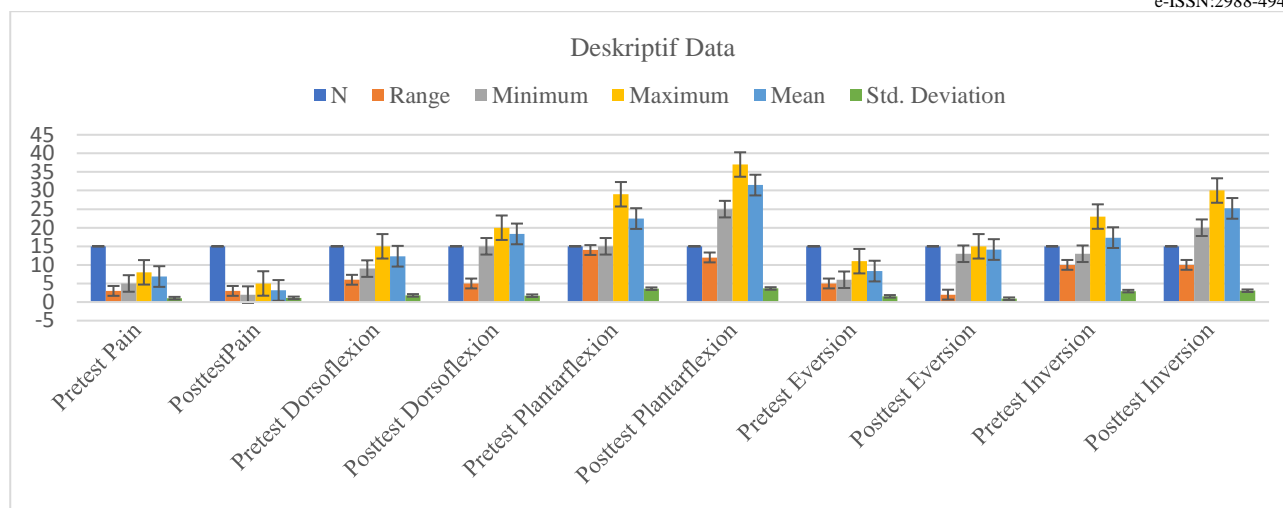


Figure 1. Results of Descriptive Data Analysis

Discussion

This study aims to further investigate the effectiveness of sports injury massage therapy using the Ali Satia Graha method to reduce pain and increase ROM in chronic ankle injuries. The results showed that massage therapy for sports injuries using the Ali Satia Graha method had an effect on pain perception and ROM in chronic ankle injuries. The results of the t count are greater than the t table, and the value is significant. So it can be concluded that the treatment of sports injuries with massage therapy using the Ali Satia Graha method can reduce pain and increase the ROM of chronic ankle injuries. The results of research by Delano, (2021) show that masase therapy using the Ali Satia Graha method with stretching has a significant effect on blood pressure in the elderly.

Another study revealed that massage, which has a distraction effect, can also increase the formation of endorphins in the descending control system and create muscle relaxation (Ilmi, 2018). In addition, sports massage treatment on the lower extremities is proven to increase the flexibility of soccer players (Ripai & Graha, 2019). Massage therapy and stretching performed on martial arts athletes turned out to provide good benefits for injury management (Satia Graha, 2015). From some of these reviews, it has been illustrated that massage therapy can have a positive effect on injury healing.

Incorrect handling will cause the injury to worsen and even make the athlete lose his best performance. Injuries to the ankle, from mild to severe, can be treated with medical treatment such as surgery or with traditional treatment. This statement is reinforced by the results found by Maulana & Graha, (2019) where masase with heat therapy has a significant effect on the recovery of trapezius muscle pain disorders. The use of traditional therapy and physiotherapy can be done by someone in the healing process. Traditional therapy can be done by massaging, such as sports injury massage therapy using the Ali Satia Graha method (Delano, 2021).

There was a decrease in pain and an increase in ROM in the chronic ankle after being treated with sports injury massage therapy by the Ali Satia Graha method. In its application, the manipulation of sports injury massage therapy will cause relaxation in the muscles by pressing and grinding on the muscles that have contracted with high intensity so that the muscles will relax and the pain will disappear. The weakness of this study is that it does not know exactly how to handle and treat injuries experienced by patients. This is because the research sample used is a patient with a chronic ankle injury, which is indicated by complaints of pain and limited ROM of the impaired ankle joint.

Conclusion

The results of the study have a strong foundation related to the handling of cirrhotic ankle injuries that have been listed in the discussion. The results of the study found that sports injury massage therapy using the Ali Satia Graha method had a significant effect on pain perception in chronic ankle

pain. Furthermore, sports injury massage therapy using the ali satia graha method has a significant effect on increasing Range of Motion (ROM) in chronic ankle injuries. Based on these results, it provides evidence that the massage treatment of sports injuries using the Ali Satia Graha method is the right method to overcome the problem of pain perception and increase ROM in chronic ankles. These results have provided new references related to chronic ankle injury treatment. Recommendations for further research can compare the massage method Ali Satiagraha with other therapies to see the difference in the effect given.

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Conflict of Interest And Funding

There is no conflict of interest.

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