



# Angkle Injury Treatment Method Through Sport Massage Reviewing from Range of Motion (ROM)

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**Abstract.** The problem that the researcher poses in this study is regarding the success of handling ankle injuries in terms of Range of motion (ROM) with the sport massage frirage method. Ankle injuries have four movements, namely flexion, extension, inversion and eversion. The purpose of this study was to determine the success rate of sport massage frirage in handling ROM in badminton athletes' ankle injuries and secondly to determine the management of sport massage frirage in handling ROM for badminton athletes with mild ankle injuries. The method used is pre-experimental design pretest-posttest one group with survey and test techniques. The population of this research is the badminton athletes of Universitas Pendidikan Indonesia as many as 32 people. The sampling technique used purposive sampling, totaling 11 people. The research instrument is a questionnaire and a goniometer. The research data analysis technique used paired t-test with the help of the SPSS software version 20.

**Keywords:** Ankle Injury · Sport Massage Frirage · Range Of Motion (ROM)

## 1 Introduction

The human body is a complex and amazing structure that is mutually sustainable. The human body that is so perfect will have limitations. When the body is always doing activities continuously will experience fatigue and injury as signs of human limitations [1].

Doing physical activity, especially sports, is always faced with the possibility of injury and this injury will have an impact on physical, psychological and achievement

disorders. Types of injuries that occur in daily activities and sports are divided into 2, namely: acute trauma and over-use syndrome. Acute trauma is a severe injury that occurs suddenly, such as a scratch injury, a tear in a ligament or a broken bone [2, 3].

As happens to athletes who carry out sports activities with high intensity and continuous training in a directed and measured manner, it will be easy for athletes to get injured. Injuries are not only a problem for professional athletes, they are also a problem for everyone who participates in sports activities. Injuries in sports are divided into two types, namely: injuries due to body contact such as karate, judo, pencak silat, boxing [4]. Classification of injuries from mild to severe with signs of inflammation, such as rubor, calor, dolor and functiolaesa, which is a marked decrease in function in whole or in part. As explained by [5] both rubor, tumor, calor, and dolor will reduce the function of the organ or joint at the site of the injury. Sports injuries must receive help and treatment as early as possible, so that athletes do not suffer from disabilities and can immediately practice and compete again [1].

One of the non-body contact sports where athletes are very vulnerable to injury is badminton. This sport attracts all age groups, various skill levels, both men and women, this is evidenced by the emergence of badminton clubs ranging from regional to national level. From training to tactics, how to attack and defend, don't forget to support it all, plus physical and mental training to create quality players. Behind the practice match there must be an injury during practice.

One of the massages that was developed from previous massages is the frirage massage [6]. This massage frirage, as one of the applied sciences that is included in the field of therapy and rehabilitation, both for the sake of sport medicine, health education and eastern medicine (alternative medicine) which can be useful for helping healing after medical treatment and before medical treatment as one of the prevention and treatment of the body from injury, fatigue and skin care.

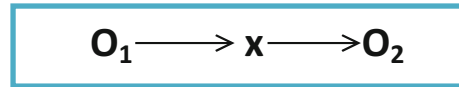
Management for limb injuries on grip manipulation uses 4 ways, namely manipulation of friction, efflurage, traction and reposition which is carried out on the part of the body that is injured only, including nerves, muscles and joints of the body that suffer minor injuries in the form of sprains and muscle construction due to activity.

If the body cannot be fully moved, for example, cannot squat because the knees cannot be fully bent, it means that the joint ROM is limited or below normal values. ROM is useful for: (1) Determining the ability of joints, bones and muscles to move, (2) Assessing bones, joints and muscles, (3) Preventing joint stiffness, (4) Streamlining blood circulation (Rian Tasalim, 2011). From the results of these observations, most badminton athletes do not know about how to handle injuries and post-injury exercises or massage and post-injury therapy, so the researchers want to observe and examine more deeply about "Successful Handling of Ankle Injury in terms of Range Of Motion (Rom) Through the Method Sport Massage Frirage for Badminton Athletes".

## 2 Material and Methods

### 2.1 Study Design

The design of this study was tested before and after being treated with massage therapy, first measuring the range of movement (ROM) of the ankle joint. The research plan is as follows (Sugiyono, 2010:111).



Information:

O1 = Pretest (before treatment) measure the degree ( $^0$ ) Range of Movement (ROM) of the ankle joint in badminton athletes. UPI.

X = Therapy using the massage frirage method until the ankle joint returns to or near normal.

O2 = Posttest value (after therapy) measure the degree ( $^0$ ) Range Of Movement (ROM).

The effect of frirage massage therapy on ankle injuries in badminton athletes. UPI is ( $O_2 - O_1$ ).

In this study, the group was given an initial test, which was to check the range of movement (ROM) at the ankle joint by doing flexion, extension, inversion and eversion movements as much as possible by measuring the angle. The group in this study is a group with ROM disorders/injury to the ankle area. After conducting the initial test, the group was given treatment, namely massage therapy [7]. After being given massage therapy treatment, a final test was held to review the range of movement using a bow and a compass [8] Study Population.

[9] Population is the whole subject of the study. The population is limited by the number of subjects or individuals having the same characteristics. The purpose of the above understanding is that the population is a group of individuals who will be the object of research. All individuals have at least the same characteristics. The population used in this study were all members of the UPI Badminton UKM who were still active. The sample in this study amounted to 11 athletes from a population that had been previously selected according to the researcher's criteria.

The sampling technique used in this study is purposive sampling, in which the determination of the sample is based on certain criteria, [10] The criteria that must be possessed in this study are as follows:

- 1) The sample is moderate or has experienced ROM disorders/ankle injuries, still feels pain in the ankle area and still recurs.
- 2) Willing to be a sample and come when measuring.

## 2.2 Data Collection

The instrument used in this study was a questionnaire used for observation and a goniometer, namely a measuring instrument in the form of an arc and a compass to measure the degree of joint movement angle [8] ROM Measurement.

- Objective: To know the angle of motion of the joint.
- Equipment/facilities: Goniometer (Term and arc).
- Implementation: At the ankle joint. Use of Masase frirage
- Goal: Relax muscles.
- Tools/facilities: Using the thumb of the hand to massage it.
- Implementation: on limbs that require treatment.

## 3 Result

The ROM scale in this study was measured by dorsiflexion and plantarflexion of the subject's ankle before and after applying massage therapy freege with exercise therapy. The data descriptions in this chapter describe dorsiflexion and plantarflexion ranges of motion.

The determination of ankle range-of-motion dorsiflexion is based on calculating the degrees from start to end of maximal ankle motion. The dorsiflexion ROM pre-test and post-test data are as follows.

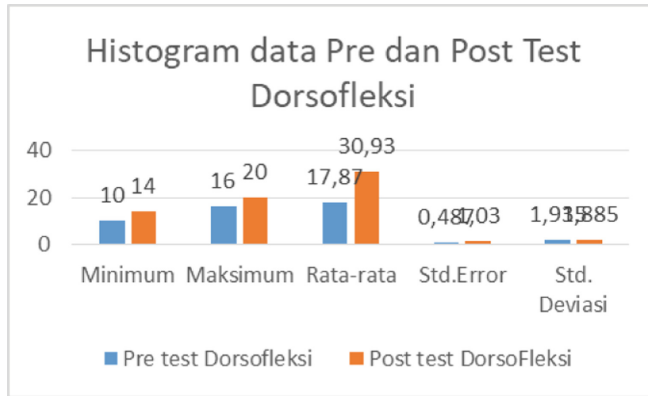
Table 1 shows that the statistical description of the dorsiflexion pretest data using a sample of 15 subjects achieved a mean score of 17.87, standard error of 0.487, standard deviation or standard deviation of 1.935, lowest score of 10 and highest score of 16. is shown. The results of the statistical description of dorsoflexion in the final test data (post-test) using a sample of 15 individuals gave a mean score of 1,030 standard error and 30.93 standard deviation or standard deviation There are 1,885 points, with a minimum of 14 points and a maximum of 20 points. Also, you can see that the average value increases from before the test to after the test. This means that ankle dorsiflexion ROM is increased after treatment in the form of massage frirage. With exercise therapy.

In addition, pre-test and post-test paw drop ROM data are presented fully visually after receiving treatment in the form of massage frirage with exercise therapy. Histogram Fig. 1.

Ankle range of motion plantar flexion determination is based on calculating the degrees from start to end of maximum ankle motion. Below are data from pre- and post-plantar flexion ROM tests.

**Table 1.** Description of Dorsofleksion ROM Data Descriptive Statistics

	N	Minimum	Maximum	Mean		Std Deviation
	Statistic				Std. Error	Statistic
Pretest Dorsofleksi	11	10	16	17.87	.487	1.935
Posttest Dorsofleksi	11	14	20	30.93	1.030	1.885



**Fig. 1.** Histogram of dorsoflexion pretest and posttest data

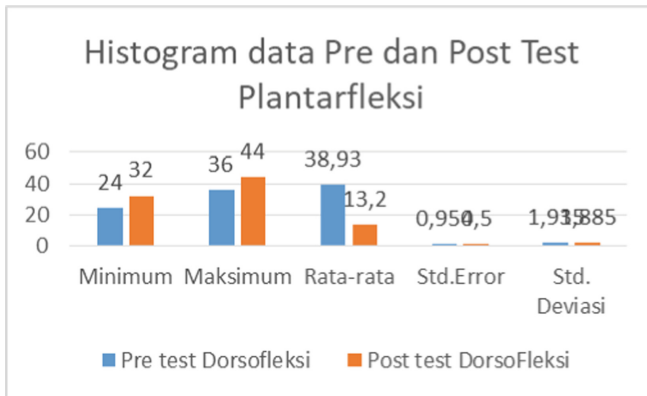
**Table 2.** Description of Plantarflexion ROM Data Descriptive Statistics

	N	Minimum	Maximum	Mean		Std. Deviation
	Statistic				Std. Error	Statistic
Pretest Plantarfleksi	11	24	36	38.93	.954	3.990
Posttest Plantarfleksi	11	32	44	13.20	.500	3.693

Table 2 shows that the statistical description of the plantarflexion pretest data using a sample of 11 subjects achieved a mean score of standard error of 0.954, standard deviation or standard deviation of 3.990, lowest score of 24 and highest score of 38.93. is showing. 36. Results of statistical description of plantarflexion posttest data from a sample of 15 individuals showed a mean score of 13.20, standard error of 0.500, standard deviation or standard deviation of 3.693, lowest score of 32, highest score. We can also see that the average value increases from before the test to after the test. This means that plantar flexion of the ROM ankle is increased after treatment in the form of frilage her massage with exercise therapy.

In addition, the pretest and posttest data for ankle plantarflexion ROM after receiving treatment in the form of frilage massage with exercise therapy are fully presented in the following Fig. 2.

The t value for massage fireage treatment with dorsiflexion exercise therapy is 11.068 and for plantarflexion is 18.330, with a known probability (sig.) of 0.000. The probability value (Sig.) is  $0.000 < 0.000$ , so  $0.05$ ; therefore  $H_0$  is rejected and  $H_1$  is accepted. This means that there is a significant effect of frilage massage therapy combined with exercise therapy on increasing ROM in ankle injuries. It can be concluded that treatment is effective in increasing ROM of ankle injuries (Table 3).



**Fig. 2.** Histogram of plantarflexion pretest and posttest data

**Table 3.** Paired T Test results for ankle injury ROM

Paired Samples Test									
		Paired Differences					t	df	Sig.(2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Pretest plantarfleksi	-	1.690	.436	−8.936	−7.064	−18.330	10	.000
	Posttest plantarfleksi	8.000							
Pair 2	Pretest dorsofleksi	-	1.633	.422	− 5.571	−3.762	−11.068	10	.000
	Posttest dorsofleksi	4.667							

## 4 Discussion

The results of the analysis showed that frilage massage therapy with exercise therapy was effective in increasing the ROM of ankle injuries in UKM UPI badminton players. Based on observations of plantarflexion and dorsiflexion components. Test results for all observation points show t counts > t table values with significance less than 0.05 ( $p < 0.05$ ). Its effect is evident in the increased range of motion that badminton players can perform after undergoing kinesitherapy massage therapy. A grade 1 ankle injury is a common type of injury suffered by badminton players. According to Arovah (2010: 3), sports injuries are injuries to the skin system, muscles, and skeleton caused by sports activities. A badminton game involves a lot of sudden movements in different directions,

which can easily hurt your ankles. Various types of therapy are options that can be implemented to heal an injury. The types of treatments you can choose from include massage therapy with exercise therapy. Frilage massage is a massage therapy for health and wound healing, as well as healing of other parts of the body (1)b The massage technique used to rehabilitate ankle injuries is a massage (fir manipulation) technique that combines friction techniques and effleurage techniques that use the thumb to release muscle tension. Then pull the ankle (pull) and bring it back (reposition). The administration of massage therapy is declared successful if the standard ankle movements are: On the other hand, exercise therapy, as one of the modalities of physical therapy, is active or Use passive body movements (6) These two types of treatments can be combined for more effective results. The results showed that massage therapy freege treatment with exercise therapy had a significant effect in treating ROM recovery from ankle injury in UPI UKM badminton players. Observations were made with plantarflexion and dorsiflexion exercises.. Joint range of motion has been shown to increase after the treatment of frilage massage therapy with exercise therapy, which means that the ability to move the ankle improves after performing frilage massage therapy with exercise therapy. A significant difference was observed in the measurement results of ankle plantar flexion before and after treatment. The effect of frilage massage therapy combined with exercise therapy on the measured values before and after treatment was 0.000 ( $p < 0.05$ ). Was shown to be. The benefits of knowing a person's ROM are that it can be used, (1) determine the value of the ability of the joints of bones and muscles to move (2) examine bones, joints, and muscles (3) prevent joint stiffness (4) accelerate blood circulation (5) improve muscle tone (6) increases joint mobilization (7) improves muscle tolerance for exercise (Maimurahman and Fitria, 2012: 2). Ankle dorsiflexion measurements were significantly different before and after treatment. The effect of the frilage massage therapy combined with exercise therapy on the measured values before and after treatment showed a probability value of 0.000 ( $p < 0.05$ ), indicating that the frilage massage therapy combined with exercise therapy was effective in improving ankle dorsiflexion. Was shown to be The above statements are true and according to Kushartanti (2009:3), exercise therapy is defined as flexibility, strength, and muscle training aimed at increasing ROM, strength and endurance of the legs and lower extremities, knees and upper extremities. It claims to be an endurance exercise. as well as better shoulders and arms. Overall, it can be interpreted that massage therapy combined with exercise therapy in UKM UPI badminton players had a significant effect on increasing ROM of ankle injuries. The results of this study confirmed the hypothesis proposed in this study. There is an effect of frilage massage combined with exercise therapy on increased ROM of ankle injuries in UPI UKM badminton players. Consistent with this flexibility exercise therapy of [11] ROM). Stretching exercises help increase mobility, strength training (strengthening) improves function, and aerobic exercise improves cardiovascular function.

## 5 Conclusion

Based on the results of a study on the effect of sports massage therapy on ankle injuries in badminton players, the following conclusions can be drawn. Frilage massage successfully treated an ankle injury in a badminton player by increasing the ankle flexion

ROM score to 7.4°. 1.7° extension movement. 4.5° reversal movement. Abduction 5.8°. Treatment of Ankle Injuries ROM Free Large with massage therapy can be performed in a sitting/lying position. In the supine position, perform a combined friction and outflow maneuver of the flexor muscles of the lower leg. A combination of upward friction and flushing of the instep muscles. Manipulation that combines upward friction and outflow at the ankle joint of the gastrocnemius muscle. In addition, in the prone position, combined manipulation of upward friction and drainage of the gastrocnemius/calf muscles. A combination of upward friction and drainage on the back of the Achilles tendon muscle/ankle. Hold the heel of your foot with one hand and the instep of the foot with the other hand to finish the traction. He then slowly pulls and pulls down, with the ankle in a state of interest, and he rotates the leg in and out by rotating it 360°. The success rate of Frirage Massage in one treatment time is recovered by 4 samples, but the success rate in two treatment times is recovered by 7 samples.

**Acknowledgment.** The author thank to Universitas Pendidikan Indonesia for supporting this project.

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