Journal of Physical Education and Sports

12 (2) (2023) : 66-74

https://journal.unnes.ac.id/sju/index.php/jpes

The Effect of Combination Massage Frirage and Stretching on Increased The Range of Motion Shoulder Injury in Patients of Mco Yurigi

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Article Info

History Articles
Received:
13 December 2022
Accepted:
15 January 2023
Published:
30 March 2023

Keywords:
Massage Frirage, Stretching, Range of Motion, Shoulder Joint

Abstract

Limited range of motion of the shoulder joint due to injury can limit a person's activity. The purpose of this study was to determine the effect of a combination of frirage massage and stretching on increasing the range of motion of shoulder injuries in MCO Yurigi patients by providing treatment four times a meeting and eight times a meeting, and providing information to choose the right method to accelerate and increase the range of motion of shoulder injuries. This study used a quasi-experiment "one group pretest posttest" design. The sampling technique used purposive sampling technique with a population of 20 people and obtained a sample of 12 people. The data analysis technique uses one way anova with the SPSS version 26 programme. The research variables are 1) independent variable: combination of massage frirage and stretching, 2) dependent variable: range of motion of the shoulder joint. The results of this study showed an increase in the average value of range of motion with treatment for four meetings, namely flexion 24.5°, extension 9.5°, abduction 22.9°, adduction 10°, medial rotation19.1°, lateral rotation 19.1° and treatment for eight meetings, namely flexion 46.6°, extension 19.1°, abduction 46.6°, adduction 19.1°, medial rotation 40°, lateral rotation 38.3°. The conclusion of this study is that the combination of massage frirage and stretching has an influence on increasing the range of motion of the shoulder joint by giving treatment four times and eight meetings.

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p-ISSN 2252-648X
e-ISSN 2502-4477

INTRODUCTION

Excessive physical activity carried out during exercise or during daily activities can cause disruption to body tissues, namely injury (Wicaksono, 2020). Injury can cause inflammation, which is a clinical tissue reaction with manifestations of tumour (swelling), rubor (red), dolor (pain) and calor (heat) (Imtikhani et al., 2022).

Sports injuries or injuries are damage to a person's body tissues such as muscles, tendons, or ligaments that occur when doing sports activities or certain physical activities excessively, these injuries can cause limitations in joint space or range of motion (Setyaningrum, 2019). Range of motion is the range of movement possible by a particular joint or body part. It refers to the degree of rotation or flexion that a joint can perform in one direction without resisting resistance (Thomas et al., 2018).

In research conducted by (Supriyadi et al., 2017) with the title analysis of sports injuries in physical education activities in students of SMA Negeri 1 Nalumasari shows the distribution in percentage of injuries that occur when doing physical activity or sports activities, namely head injuries 30.95%, neck injuries 30.95%, shoulder injuries 19.05%, elbow injuries 19.05%, wrist injuries 30.95%, finger injuries 40.48%, chest injuries 21.43%, back injuries 19.05%, thigh injuries 11.90%, calf injuries 26.19%, ankle injuries 45.24%, and toe injuries 33.33%. Injury to the shoulder joint is one of the injuries that is quite risky because the shoulder joint is an important part of the body's motion system.

One of the sports that is at risk of causing shoulder injuries includes swimming, weight lifting, and badminton (Sekartaji & Wijanarko, 2017). Some common types of shoulder injuries include frozen shoulder, shoulder joint dislocation, rotator cuff tear, Shoulder Impingement, tendinitis and bursitis (Waluyo et al., 2019).

Frozen shoulder or adhesive capsulitis is a condition of stiffness in the shoulder joint and significant pain, this condition occurs because the capsule (the layer of tissue surrounding the shoulder joint) has shrunk and caused scarring which causes stiffness in the joint (Suharto et al., 2016).

Shoulder joint dislocation is a condition in which the upper arm bone (humerus) slips out of the socket or bowl of the shoulder bone (scapula) and out of its normal position within the shoulder joint (Salim & Saputra, 2021).

Rotator cuff tear is a tear that occurs in the tendon of the rotator cuff muscles (supraspinatus, infraspinatus, teres minor, subscapularis) (Tse et al., 2016). The symptoms of a rotator cuff strain are pain during the first 45° of abduction, but the pain subsides after exceeding 120°(Oh et al., 2018).

Shoulder tendinitis is a chronic or acute inflammatory condition that occurs in the tendons (connective tissues that connect muscles to bones) (Sukmawati et al., 2022). Prevention of tendinitis can be done by warming up when going to do physical activity, paying attention to body position and correct movements when performing movements that require the use of the upper arm (Park et al., 2014).

Shoulder bursitis is an irritation or inflammation that occurs in the bursa or pocket filled with synovial fluid that serves as a cushion between the muscles, tendons and bones that move around the shoulder (Cantarelli Rodrigues et al., 2021).

Shoulder impingement is a condition where the soft tissue between the shoulder bone and the upper arm bone is pinched, causing pain and discomfort in movement (Wang et al., 2019).

Shoulder injuries can occur due to several movements that make the shoulder work more often such as during sports that predominantly use hands or when doing daily activities such as the habit of sleeping on one side and putting your hands on one side for too long which can cause pain in the shoulder (Budiono, 2016).

The development of therapy in injury management has been very significant in the last few decades. Massage therapy is a form of manual therapy carried out as a form of injury management aimed at accelerating the healing process of injuries, increasing flexibility and

muscle strength, and preventing recurrence of injuries (Nova & Wara, 2014). Massage therapy is a health care technique carried out using direct physical touch on the soft tissues of the body (Wijayanto, 2014). Some massage techniques commonly used in injury management include sports massage, frirage massage, trigger point therapy, and deep tissue massage (Pratama et al., 2020).

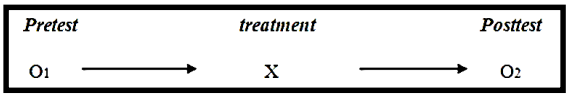
Massage frirage comes from the word massage which means massage and frirage is a combination of friction and efflurage manipulation techniques that are performed simultaneously during the massage. (Satia Graha, 2015). This technique uses four manipulation grips namely scouring (friction), rubbing (efflurage), pulling (traction) and repositioning (to place the joint in its normal place) (Amirudin et al., 2018).

In injury management massage therapy is often used in conjunction with exercise therapy such as stretching or PNF (Proprioceptive Neuromuscular Facilitation) which aims to help improve therapy outcomes and accelerate injury recovery (Anggriawan et al., 2022).

PNF (Proprioceptive Neuromuscular Facilitation) is a form of muscle flexibility training that is assisted by another person when stretching (Gunning & Uszynski, 2019). Stretching is a form of physical movement that aims to tighten and stretch the muscles in the body which is done as part of a warm-up before exercise, as recovery after physical activity, or as a separate exercise to increase flexibility and flexibility (Su et al., 2017). Generally, stretching is done before and after physical activity to increase muscle flexibility, prevent muscle stiffness and damage, and prepare muscles to be ready for work (Susanto, 2017).

METHODS

The type of research method used is quantitative because the data to be obtained is in the form of numbers which will be analysed by statistical calculations. The research design used is Quasi Experiment with one-group pre-test post- test design. The experimental research method aims to determine whether or not there is a relationship between cause and effect. The research plan is as follows :



Picture 1. Research Design

Description:

O1 = The pre-test measured the range of motion value of the shoulder joint using a goniometer in patients with shoulder injuries at MCO Yurigi.

X = The treatment of a combination of frirage massage and stretching for shoulder injuries in MCO Yurigi patients for four times and eight meetings.

O2 = Post-test measuring the range of motion value of the shoulder joint using a goniometer in patients with shoulder injuries at MCO Yurigi.

The independent variable in this study is the combination of frirage massage and stretching. While the dependent variable in this study is the increase in range of motion of the shoulder joint.

The instruments in this study are goniometer and questionnaires.

The population in this study amounted to 20 patients with shoulder injuries. The sample in this study amounted to 12 patients with shoulder injuries with impaired range of motion of the shoulder joint. The sampling technique used purposive sampling. The following are the sample criteria in the study:

(1) Patients of MCO Yurigi Sukabumi, (2) Currently suffering from shoulder injury, (3) The results of measuring the degree of range of motion of the shoulder joint in flexion, extension, abduction, adduction, medial rotation, and lateral rotation movements are less than the normal shoulder joint range of motion value, (4) Male gender, (5) Willing to become a research sample.

The number of samples used in this study totalled 12 people. The data on the

characteristics of patients with shoulder injuries in Table 1 are as follows:

Tabel 1. Sample Characteristics Data

No	Variabel	n= 12	(%)
1.	Age (year)		
	A. 15-25	6	50
	B. 26-35	1	8.3
	C. 36-45	1	8.3
	D. 46-55	3	25
	E. 56-65	1	8.3
2.	Occupation		
	A. Student	4	33.3
	B. Self-employed	4	33.3
	C. Teacher	2	16.7
	D. Entrepreneur	1	8.3
	E. Driver	1	8.3
3.	Sport practised		
	A. Badminton	5	41.7
	B. Basketball	2	16.7
	C. Karate	1	8.3
	D. Tennis	1	8.3
	E. Not Engaging in Sports	3	25

Description:
n = Number of samples
% = Total sample percentage

Based on Table 1 above, it explains that the characteristics of patients who became research samples, out of 12 patients there were patients with an age range of 15-25 years, namely 6 person (50%), 26-35 years as many as 1 person (8.3%), 36-45 years as many as 1 person (8.3%), 46-55 years as many as 3 person (25%), and 56-65 years as many as 1 person (8.3%). The occupation carried out by the patient sample is as a student many as 4 person (33.3%), 4 person (33.3%) are self-employed, 2 person (16.7%) are teachers, 1 person (8.3%) is an entrepreneur, and 1 person (8.3%) is a driver. The sports pursued by the patient sample were badminton as many as 5 person (41.7%), basketball as many as 2 person (16.7%), karate as many as 1 person (8.3%), tennis as many as 1 person (8.3%), and did not pursue any sport as many as 3 person (25%).

Data processing in this study used SPSS version 26. prerequisite test analysis was carried out before the analysis test. Prerequisite tests carried out are normality test, and homogeneity test and analysis test using anova test (one way anova).

RESULTS AND DISCUSSION

Results

The data analysis collected from the research conducted from May 01 - 28, 2023, will be statistically tested using SPSS version 26 software. The data has been processed using the anova test (one way anova) and has passed the tests for normality and homogeneity.

Normality Test

The data analysis used is shapiro wilk. If the $p > 0.05$, it can be concluded that the data is normally distributed. The results of the normality test can be seen in the following table 2:

Table 2. Normality Test

Variabel	P			
n = 12	Pre test	Post Test 1	Post Test 2	Desc
Flexion	0.635	0.838	0.237	Normal
Extension	0.495	0.200	0.118	Normal
Abduction	0.370	0.308	0.200	Normal
Adduction	0.133	0.118	0.137	Normal
Medial Rotation	0.444	0.208	0.174	Normal
Lateral Rotation	0.153	0.165	0.123	Normal

Description:

Variabel = movement in the shoulder joint n = Number of samples

P = significance value

Pretest = Significance value of range of motion of the shoulder joint before treatment

Post Test 1 = Significance value of range of motion of the shoulder joint after being given treatment for four meetings.

Post Test 2 = significance value of the range of motion of the shoulder joint after being given treatment for eight meetings.

Based on the table above, the results of the normality test show that flexion, extention, abduction, adduction, medial rotation, and lateral rotation movements have a p > 0.05 so that all movement data can be declared normal and can use parametric statistics for further statistical testing.

Homogeneity Test

The homogeneity test aims to test whether the sample groups have the same data variation. The homogeneity test of this study uses the Levene test with a p > 0.05 the data is declared homogeneous. The results of the homogeneity test can be seen in the following table 3:

Table 3. Homogeneity Test

Varibel n = 12	P	Desc
Flexion	0.395	Homogen
Extension	0.569	Homogen
Abduction	0.439	Homogen
Adduction	0.705	Homogen
Medial Rotation	0.149	Homogen
Lateral Rotation	0.386	Homogen

Description:

Varibel = movement in the shoulder joint n = Number of Samples

P = significance value

Based on the table above, the results of the homogeneity test show that flexion, extention, abduction, adduction, medial rotation, and lateral rotation movements have a p > 0.05 so that the data for all movements can be declared homogeneous or have the same variant.

Anova Test (One Way Anova)

Based on the results of the normality test and homogeneity test, the data were declared normal and homogeneous because they obtained a p value> 0.05; therefore, the next research data analysis uses the anova test (one way anova) with SPSS version 26 with the aim of testing whether there are significant differences between the averages of three or more groups or treatments. The significance value used is p < 0.05. The hypotheses in this study are: H0 = The combined treatment of frirage massage and stretching by giving treatment four times and eight meetings has no effect on increasing the value of range of motion of the shoulder joint, H1 = The combined treatment of frirage massage and stretching by giving treatment four times and eight meetings has an effect on increasing the value of range of motion of the shoulder joint. If p < 0.05 then H0 is rejected and H1 is accepted, but if p> 0.05 then H0 is accepted and H1 is rejected. For the results of the One Way Anova Test can be seen in table 4 below:

Table 4. Anova Test (One Way Anova)

Variabel	*Mean* (°) ± *SD*			
n = 12	*Pre test*	*Post test 1*	*Post test 2*	*P*
Flexion	127±8.9	151.6±11.3	173.7±6.7	.000
Extension	28.7±6	38.3±6.8	47.9±5.4	.000
Abduction	126.7±9.3	149.5±11.7	173.3±6.8	.000
Adduction	27.9±4.5	37.9±5.4	47±4.9	.000
Medial Rotation	42.5±9.8	61.6±10.7	82.5±6.5	.000
Lateral Rotation	45±7.3	64.1±9.2	83.3±5.3	.000

Description:

n = Number of samples

p = Significance value

Variable = Movement in the shoulder joint Mean = Average value of range of motion SD = Standard Deviation

Pre test = Measurement of the first range of motion value

Post test 1 = Measurement of the Second range of motion value

Post test 2 = Measurement of the Third range of motion value

Based on the results of the one way anova test in Table 4 above, it can be seen that for flexion movements in the pre test has an average value ± Std.Deviation 127° ± 8.9 with a p value (Sig.) 0.000 , in post test 1 has an average value ± Std.Deviation 151.6 ° ± 11.3 with a p value (Sig.) 0.000 , in post test 2 has an average value ± Std. Deviation 173.7°±6.7 with a p value (Sig.) of 0.000 , the extension movement in the pre test has an average value ± Std.Deviation

28.7°±6 with a p value (Sig.) of 0.000 , in post test 1 has an average value ± Std.Deviation 38.3°±6.8 with a p value (Sig.) of 0.000 , in post test 2 has an average value ± Std. Deviation 47.9°±5.4 with a p value (Sig.) of 0.000 , abduction movement in the pre test has a mean value ± Std.Deviation 126.7°±9.3 with a p value (Sig.) of 0.000 , in post test 1 has a mean value ± Std.Deviation 149.5°±11.7 with a p value (Sig.) of 0.000 , in post test 2 has a mean value ± Std.Deviation 173.3°±6.8 with a p value (Sig.) of 0.000 , adduction movement in post test 1 has a mean value ± Std.Deviation 149.5°±11.7 with a p value (Sig.) of 0.000 , adduction movement in pre test had a mean ± Std.Deviation of 27.9°±4.5 with a p value (Sig.) 0.000 , in post test 1 had a mean ± Std.Deviation of 37.9°±5.4 with a p value (Sig.) 0.000 , in post test 2 had a mean ± Std.Deviation of 47°±4.9 with a p value (Sig.) 0.000 , medial rotation movement in the pre test has an average value ± Std.Deviation of 42.5° ± 9.8 with a p value (Sig.) 0.000 , in post test 1 has an average value ± Std.Deviation of 61.6° ± 10.7 with a p value (Sig.) 0.000 , in post test 2 has an average value ± Std.Deviation of 82.5° ± 6.5 with a p value (Sig.) 0.000 , lateral rotation movement in the pre test has an average value ± Std.Deviation of 45° ± 7.3 with a p value (Sig.) 0.000 , in post test 1 has an average value ± Std.) 0.000 , lateral rotation movement in the pre test has an average value ± Std.Deviation 45° ± 7.3 with a p value (Sig.) 0.000 , in post test 1 has an average value ± Std.Deviation 64.1° ± 9.2 with a p value (Sig.) 0.000 , in post test 2 has an average value ± Std.Deviation 83.3° ± 5.3 with a p value (Sig.) 0.000. For all movements in each measurement, the p value (Sig.) 0.000 means the p value (Sig.) <0.05 so that it can be stated that there are changes after being given the treatment of a combination of frirage massage and stretching for four meetings and eight meetings, then a post hoc test is carried out to determine the average difference in improvement. The results of the post hoc test can be seen in Table 5 below:

Tabel 5. Post Hoc Test

Variabel	Mean Δ (°) ± SD		
n = 12	Post test 1	Post test 2	P Sig.)
Flexion	24.5±7.2	46.6±7.4	.000
Extension	9.5±3.3	19.1±5.9	.002
Abduction	22.9±7.5	46.6±8.3	.000
Adduction	10±3	19.1±2.8	.000
Medial Rotation	19.1±5.9	40±6.7	.000
Lateral Rotation	19.1±4.6	38.3±4.9	.000

Description :

n = Number of samples

p = Significance value

Variable = Movement in the shoulder joint Mean Δ = Average difference in improvement

SD = Standard Deviation

Post test 1 = Average range of motion value after treatment for four meetings

Post test 2 = Average range of motion value after treatment eight times meeting

Based on Table 5 it can be seen that the average difference in improvement before and after being given the treatment of a combination of frirage massage and stretching for four meetings, namely in flexion movements by 24.5°±7.2, extension by 9.5°±3.3, abduction by 22.9°±7.5, adduction by 10°±3, medial rotation by 19.1°±5.9; lateral rotation by 19.1°±4.6, with a p value <0.05 in all movements. While the average difference in improvement before and after being given the treatment of a combination of frirage massage and stretching for eight meetings is in the flexion movement of 46.6°±7.4, extension of 19.1°±5.9, abduction of 46.6°±8.3, adduction of 19.1°±2.8, medial rotation of 40°±6.7, lateral rotation of 38.3°±4.9, with a value of p < 0.05 in all movements.

Discussion

Shoulder injury refers to damage or disruption that occurs to the shoulder, which consists of the shoulder joint (glenohumeral joint), bones, ligaments, muscles, and other structures around the shoulder area (Dyrna et

al., 2018). Shoulder injuries can affect various aspects of daily life, including movement, mobility, and pain levels, so the treatment of a shoulder injury depends on the type and severity of the injury, and may involve physical therapy, rest, administration of pain medication, and in severe cases, surgery (Razmjou et al., 2017). Various shoulder injuries that often occur include bursitis, tendinitis, frozen shoulder, shoulder impingement, rotator cuff strain and dislocation of the shoulder joint (Waluyo et al., 2019). Injuries to the upper limb can be caused by a variety of factors, including accidents, physical trauma, sports, repetitive work activities, and ageing, and are characterised by pain, swelling, impaired movement, and discomfort when using the arm, hand, or fingers (Al Attar et al., 2021).

In some injury situations such as shoulder injuries, sometimes the range of motion of the joint can be limited and requires proper treatment and therapy to restore it (Higson et al., 2018). Restoring range of motion (ROM) to normal uses various techniques, such as massage therapy techniques and muscle flexibility exercises using stretching. The use of massage therapy can help reduce pain and improve the function and motion of injured joints (Boonruab et al., 2021). While stretching is a type of physical exercise that involves movement in muscles, tendons, and joints with the aim of stretching or lengthening certain muscles in the body so that the muscles are ready to work (Jankaew et al., 2022).

The combination of frirage massage and stretching is the therapy method used in this study. Massage frirage is a massage technique that combines friction manipulation techniques and efflurage manipulation techniques which aim to reduce muscle contraction so as to allow muscles to return to their original condition without disrupting blood circulation. Furthermore, the traction technique is used to provide a stretch before repositioning the joint by pulling the joint, after that, repositioning to return the shoulder joint back to its position (Satia Graha, 2015).

Previously, research on the same topic was conducted in Ilham Abadi's 2015 thesis on "The effect of frirage masage on changes in range of motion of shoulder injuries in Unnes softball UKM team players", concluding that 1) Frirage massage has a significant effect on increasing the range of motion of good medial rotation in men's team players of UKM softball Unnes by being treated five times for two weeks, 2) Frirage massage has a significant effect on the improvement of the best rotational medial motion on the men's team players of UKM softball Unnes given treatment five times for four weeks.

The use of a combination of frirage massage and stretching techniques in this study can help restore injured muscles back to their

original condition and train the flexibility of the patient's muscles so that they are not easily stiff so that the range of motion of the shoulder joint is not limited and can carry out physical activity normally. So it can be concluded that the user of a combination of frirage massage and stretching by giving treatment for four meetings and eight meetings has an influence to increase the range of motion of the shoulder joint.

CONCLUSION

Based on the research results, the following conclusions can be obtained:

The combined treatment of massage frirage and stretching for four meetings has a good effect on increasing the range of motion of shoulder injuries in MCO Yurigi patients, namely in flexion movements by 14%, extension 21%, abduction 13%, adduction 25%, medial rotation 21%, and lateral rotation 21%.

The combined treatment of massage frirage and stretching for eight meetings has a better effect on increasing the range of motion (ROM) of shoulder injuries in MCO Yurigi patients, namely in flexion movements by 26%, extension 43%, abduction 26%, adduction 48%, medial rotation 44%, and lateral rotation 43%.

The combination method of frirage massage and stretching can be used for healing

shoulder injuries and can increase the range of motion of the shoulder joint.

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