

The Effectiveness of Manurak Massage on Shoulder Injuries Among Archery Athletes of the Sleman Porda Team 2025

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ABSTRACT: Shoulder injury is tissue damage to the shoulder area caused by both intrinsic and extrinsic factors. Shoulder injuries can occur in archery athletes caused by training activities. This study aims to test the effectiveness of Manurak Massage on shoulder injuries of Sleman 2025 Porda Team archery athletes with indicators of recovery being a decrease in pain and an increase in function. This study uses a research design using *one group pretets posttest design* where in this study did not use a control group. The number of samples in this study were 24 athletes who were experiencing shoulder injuries, the instruments used in this study were *Visual analogue scale* (VAS) used to measure pain levels and *Shoulder Pain and Disability Index* (SPADI) to measure shoulder function. The results of this study are the average Pretest pain variable data is 5.5 ± 2.2 , the average posttest pain variable data is 2.4 ± 1.8 with a significant level of $p=0.000$ (Significant). The average pretest function data is 37.4 ± 15.4 and the average posttest function variable data is 5.5 ± 8.7 with a significant level of $p=0.000$ (Significant). Based on the results of this study it can be concluded that Manurak Massage can reduce pain levels and improve shoulder function significantly so that Manurak Massage can be used to treat shoulder injuries, especially archery athletes.

KEYWORDS: manurak massage, pain, function

INTRODUCTION

The shoulder joint has an important role in performing all daily activities such as wearing clothes, picking up wallets, lifting items, bathing, writing and other physical activities (1). The shoulder joint is an origo joint that has very high mobility, so the shoulder is prone to injury (2). The shoulder joint is formed from the ends of the *scapula*, *humerus*, and *clavicula* bones. In the shoulder joint there are two main joints in the shoulder between these three bones, namely the acromioclavicular joint and the glenohumeral joint (3). Shoulder injury is damage to the tissue in the shoulder region caused by both intrinsic and extrinsic factors. Shoulder injuries often occur in flexion, abduction, and rotation movements often occur in sports such as swimming, archery, badminton, basketball, and others. According to data from the *American Academy of Orthopaedics*, nearly 4 million people in the US require rehabilitation each year to treat cases of dislocation, *strain*, *sprain*, and other injuries. Annually, about 1.5 million cases of shoulder injuries are reported (4). Based on the facts, shoulder injury cases are a common problem, which occurs in the group of mainly adults and men (5).

Symptoms that appear when someone has a shoulder injury are pain, bruising, pain, limited shoulder function and swelling. Injuries to the shoulder occur as a result of local pathology or can result from other structures such as the neck (6). Shoulder injuries are in third place after back and knee injuries with the percentage of shoulder injuries ranging from 20%-30%(7). Similarly, shoulder pain is in the third position in musculoskeletal complaints that bring patients to see a doctor or physiotherapy (8). Shoulder injuries occur due to several factors such as physically demanding work and even some sports that require physical strength. The physical strength such as heavy lifting, movement, repetitive motion and even poor posture can also cause shoulder injuries (9).

Shoulder injury conditions can occur to everyone without exception, it can even occur in someone who does static work in the long term. shoulder pain due to static posture results in the head leaning forward which puts pressure on the upper trapezius muscle and levator scapula. In this case the pain can extend to the neck (10). Shoulder injuries are often associated with *rotator cuff* problems or *shoulder impingement syndrome* (SIS). Some sports that require maximum shoulder performance such as archery, javelin throwing, badminton, and shot put are very risky for shoulder injuries. Archery, an athlete is required to have good strength because in practice it will pull a heavy bow and be done repeatedly. In this process, athletes are very risky to experience shoulder

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injuries (11). These disorders have an impact on athlete performance, therefore the importance of various efforts in handling shoulder injuries, especially in athletes.

Treatment of shoulder injuries can be carried out pharmacologically and non-pharmacologically. pharmacological treatment is the treatment of injuries by consuming drugs, while non-pharmacology is the treatment of injuries without consuming drugs, for example, exercising, massage therapy, music therapy, and hot / cold compresses (12). One type of masage that can be used for the treatment of shoulder injuries is Manurak Massage. Manurak Massage is the development of a type of massage that has existed before. The word "Manurak" is an abbreviation of the words manual and motion. Manual in Manurak Massage consists of *Effleurage*, *Friction*, and *Tapotement* manipulations with the aim of increasing muscle relaxation, while motion consists of passive and dynamic Stretching movements with the aim of increasing muscle flexibility and repositioning joints (13).

Effleurage technique is a massage technique with a sequence of soft, slow, long and not intermittent. This massage is done by utilizing the palm of the hand to increase circulation in the pain area. This technique provides relaxation to the muscles, improves blood circulation, stimulates the central nervous system. This *effluerage* technique does not have any side effects and can be done independently by anyone (14). *Tapoment* manipulation is a movement by lightly and rhythmically striking the hand which is mostly done on the fleshy part of the body. With the aim of accelerating blood flow and encouraging the remnants of combustion that is in the body also stimulates fibers nerves edge and stimulates the organs of the body inside (15). *Friction* manipulation is a manipulation with grinding techniques using fingertips and palms. The purpose of this Friction manipulation is to break up myoglosis, stimulate nerve fibers and muscles that are on the surface of the body. *The* movements in Manurak Massage consist of *loosening*, *stretching*, and *proprioceptive neuromuscular facilitation (PNF)*. In *loosening* (stretching) relaxation has an approach to stretching the muscles of the body that experience tension so that by becoming relaxed and tense muscles can return to normal (16). *Streching* that is done regularly between activities will be useful for reducing muscle tension (relaxation), improving blood circulation and reducing fatigue. In addition, stretching exercises can increase cell oxygenation and improve blood circulation (15). PNF stretching techniques are commonly used in athletic and clinical environments. *Proprioceptive Neuromuscular Facilitation* (PNF) is a stretching technique utilized to increase muscle elasticity and of course this technique has a positive effect on active and passive stretching movements (17). The aim is to increase both active and passive range of motion with a view to optimizing motor performance and rehabilitation.

Based on the above background, this study aims to test the effectiveness of Manurak Massage on shoulder injuries of Archery Athletes of the Sleman 2025 Porda Team with the criteria for healing shoulder injuries, namely pain and function. It is hoped that by giving Manurak massage can reduce pain levels and improve shoulder function.

MATERIALS AND METHODS

Study design

This research is a quasi-experimental with a research design using a *one group pretest posttest design*. This research design has only one group of research subjects that will be given treatment, without a control group as a comparison. Before the treatment is carried out, an initial measurement will be carried out first to obtain pretest data with the aim of knowing the initial condition of the sample. Measurements will be carried out again after treatment is given to obtain posttest data. The pretest and posttest data that have been obtained are then compared to assess changes and effectiveness that occur after treatment.

Participants

The sample of this research is the Sleman 2025 Porda Team Archery Athlete who is experiencing shoulder injuries. The sampling technique uses purposive sampling, namely the research sample is determined with certain considerations, namely inclusion and exclusion criteria. The inclusion criteria in this study are (a) Experiencing pain in the shoulalder, (b) experiencing limited shoulder motion, (c) Aged 15-60 years, and (d) Willing to be a research subject. Exclusion criteria include (a) having a frozen shoulder, (b) having a history of degenerative disease, (c) having a history of fracture in the shoulder region , and (d) no cancer in the shoulder and surrounding area. The calculation of the sample size was calculated using a sample size calculator, the results of the sample calculation were 24 people.

The broad scope of the problem, limited time, and cost of this research, this research will narrow the focus of the research, namely to examine the effectiveness of Manurak Massage on reducing pain levels and shoulder function.

Instruments

The instrument used in this study is *Visual analogue scale* (VAS) used to measure pain levels and *Shoulder Pain and Disability Index* (SPADI) to measure shoulder function. *Visual analogue scale* (VAS) is an instrument in the form of a pain rating scale that was first used by Hayes and Petterson in 1921. *The Visual analogue scale* (VAS) application can be downloaded on a

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smartphone. Respondents are asked to assess the intensity of pain felt by drawing a mark on the horizontal line displayed on the *Visual analogue scale* (VAS) application screen. The pain score on the *Visual analogue scale* (VAS) application is in the range 0-10, where 0 indicates no pain at all and 100 indicates very severe pain. reliability between measurement methods was assessed using Intraclass Correlation Coefficient (ICC) type 3.1 and the result was 0.86. This value falls within the 95% confidence interval between 0.81 and 0.90, which means that the measurement results are consistent (18).

The *Shoulder Pain and Disability Index* (SPADI) is an instrument developed to assess the level of pain and impaired function in the shoulder joint. It consists of 13 questions which are divided into two domains, namely 5 items for pain and 8 items to measure the level of disability. Based on a recent systematic review, the SPADI shows high reliability with an ICC coefficient of 0.89 and Cronbach's Alpha greater than 0.90 indicating good consistency. The instrument also has strong construct validation and good compatibility with other shoulder assessment instruments. The scoring is done by calculating the total score of the respondents' answers with a predetermined formula. A lower score means better shoulder function.

The collected data were analyzed using SPSS software to evaluate the treatment given. The analysis process begins with a normality test to determine the distribution of data which is a prerequisite test in determining the type of statistical test. If the data is normally distributed, the paired t-test will be used, while if the data is not normally distributed, the Wilcoxon non-parametric test will be used.

RESULTS

This study aims to test the effectiveness of the Manurak method of massage in healing shoulder injuries with the research sample being archery athletes of the Sleman 2025 Porda team. Indicators of shoulder injury healing are pain and shoulder function. The sample of this study amounted to 24 archery athletes from the 2025 Porda Sleman team who had shoulder injuries. The following is a description of this research sample based on age.

Table 1. Samples grouped by age

Treatment	Age Range (Year)	Number	Presentation
Manurak Massage	10-20	12	50%
	21-30	0	0%
	31-40	4	16,66%
	41-50	4	16,67%
	51-60	4	16,67%
Total		24	100%

Based on the table above, it can be explained that in the 10-20 age group there are 12 people (50%), the 31-40 age group is 4 people (16.66%). 41-50 age group is 4 people (16.67%), and the 51-60 age group is 4 people (16.67%). The data shows that the 10-20 group is the group of athletes who have the most shoulder injuries.

Table 2. Pain and Function Data

Variable	Data	Minimum	Maximum	Average
Pain	Pretest	0,8	8,9	5.5 $\pm$ 2.2
	Pottest	0	6,9	2,4 $\pm$ 1,8
Function	Pretest	17,6	80	37.4 $\pm$ 15.4
	Pottest	2	39	5.5 $\pm$ 8.7

Based on the table above, it can be explained that the average Pretest pain variable data is 5.5 $\pm$ 2.2, the average posttest pain variable data is 2.4 $\pm$ 1.8, comparison of the two data can be concluded that there is a decrease in the average pain level before and after treatment. The average pretest function data is 37.4 $\pm$ 15.4 and the average posttest function variable data is 5.5 $\pm$ 8.7, based on these data it can be concluded that there is a decrease in shoulder function disability before and after treatment.

Table 3. Normality Test Results Self massage data Manurak method

Shapiro Wilk			
Treatment	Variables	Sig.	Description
Manurak Massage	Pretest Pain	0,604	Normal
	Pottest Pain	0,023	Not normal
	Pretest Function	0,095	Normal
	Posttest Function	0,000	Not normal

Based on the table above, Pretest Pain and Pretest Function variable data have a significance of $p > 0.05$ so it can be concluded that the data is normally distributed. Posttest Pain and Posttest Function variable data has a significance of $p < 0.05$ so it can be concluded that the data is not normally distributed, so it can be concluded that the difference test for pain and function data uses a different test using the Wilcoxon T Test non-parametric test.

Table 4. Pain and Function Data

T Test	Variable	Sigt. 2 Tailed	Description
Wilcoxon T Test	Pain	0,000	Significant
Wilcoxon T Test	Function	0,000	Significant

Based on the results of the Wilcoxon T Test on the pain and function variables, the same significance value is obtained, namely $p = 0.000$. Based on these results, it can be concluded that there is a significant difference in the results of pain and function data between before and after being given Manurak Massage treatment for healing shoulder injuries in archery athletes.

DISCUSSION

Based on the research findings, each variable measured at *pretest* and *posttest* on the entire sample to determine the level of pain and the level of functional impairment of shoulder injury. The results of this study are the average Pretest pain variable data is 5.5 ± 2.2 , the average posttest pain variable data is 2.4 ± 1.8 and the average pretest function data is 37.4 ± 15.4 and the average Posttest function variable data is 5.5 ± 8.7 . The results of the significance test on the variable pain and function obtained a significance value of $p = 0.000$ which can be interpreted that Manurak Massage can reduce pain levels and improve function in archery athletes who have shoulder injuries significantly.

Another study found that *manual therapy* with physiotherapy not only decreased pain but effectively improved shoulder joint function (20). Sports injuries are common in athletes. In archery, injuries are generally *overuse* (repetitive use) caused by repeated mechanical stress on certain *musculoskeletal* structures, especially in the upper extremities (21). Muscle imbalance, improper technique, and high training volume without proper recovery are the main factors. Rapid growth during adolescence is believed to be associated with an increased risk of acute sports injuries. It is not surprising that this age of growth has seen an increase in the incidence of injury.

Manurak Massage is a massage technique that combines manipulative consisting of (*efflurage*, *friction* and *tapotement*) and motion (*stretching* and PNF)(22) . Physiologically, massage can improve local blood circulation, reduce muscle spasm, and stimulate the release of endorphin hormone which acts as a natural analgesic (23). The presence of massage that involves *effleurage* can provide variety and stimulation of healing. Furthermore, studies have found that massage therapy can trigger a neuroplastic response in the somatosensory cortex, which facilitates injury healing and peripheral nerve repair (24). In addition, mechanical stimulation through massage can also improve soft tissue elasticity and reduce fascial adhesions, which can directly

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improve *Range of Motion*.

The purpose of using manual techniques in the form of *effleurage*, *friction*, and *tapotement* movements has its own purpose. Manipulation *effleurage* takni manipulation by rubbing or stroking aims to facilitate blood circulation (25). *Friction* manipulation, namely manipulation by grinding, aims to destroy myogilosis or deposits of combustion residues contained in the muscles and cause hardening of muscle fibers (26). As well as *tapotement* manipulation, namely manipulation by hitting aims to reduce muscle tension and improve blood circulation in the skin(27). Movement in Manurak Massage is done to help relax and optimize muscle relaxation. Active and passive motion exercises support the restoration of joint function through increased stability, proprioception, and neuromuscular coordination (28). In archery athletes, heavily reliant on shoulder and upper arm stability and flexibility, this combinative approach is particularly relevant. Studies show that these interventions can accelerate recovery, prevent re-injury and improve functional performance through the maintenance of biomechanics (29).

The results of this study are in accordance with research conducted by Saraswati et. all. with the research title "The effectiveness of manipulative therapy in reducing pain and improving range of motion in patients with shoulder injuries". This study aims to examine the effectiveness of manipulative therapy on reducing pain levels and increasing range of motion in patients with shoulder injuries. This study has a number of samples. The results of this study are manipulative therapy has a positive effect on reducing pain by 65.61% and increasing the ROM of the shoulder joint flexion by 26.67%, extension by 34.52%, adduction by 13.30%, abduction by 20.03%, lateral rotation by 16.56%, and medial rotation by 33.16% (19).

After undergoing massage for shoulder injuries, archery athletes need to pay attention to several important things to support the healing process. Things to do include maintaining body hydration to help the process of tissue secsification, doing light movement or passive stretching to maintain flexibility, and following a functional rehabilitation program such as strengthening exercises tailored to the condition of the injury.

CONCLUSION

Based on the results of this study, it can be concluded that Manurak Massage can reduce pain levels and significantly improve shoulder function in archery athletes.

ACKNOWLEDGMENTS

The author would like to thank the Perpani Sleman and the 2025 Sleman Porda Archery Team for allowing research on their archery athletes.

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