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ORIGINAL RESEARCH **E-ISSN:**

THE EFFECT OF COLD COMPRESS ON PAIN IN MUSCLE INJURY AFTER COLLECTION OF LOADS IN THE JM FITNESS CENTER, KAPAS MADYA VILLAGE, KENJERAN SUBDISTRICT, SURABAYA

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ABSTRACT
Background: Sports have become very popular among people today, someone who exercising can experience muscle injuries that will cause pain. Actions to deal with pain in muscle injury is one of them is *cutaneous stimulation* by providing cold compress therapy. The benefits of giving cold compresses are to reduce inflammation, reduce bleeding into the tissue, and reduce muscle spasms and pain.
Objectives: The aim of the study was to determine the effect of giving cold compresses on pain in muscle injury after weight training.
Methods: The research design used was *quasi-experimental* with a sample of 40 respondents divided into two groups, the control group and the intervention group in the JM Fitness Center, Kapas Madya Village, Kenjeran Sub-District, Surabaya, which was taken by *total sampling technique*. Scale measurements use the *Numeric rating scale* (NRS).
Results: The Wilcoxon test results obtained $p = 0.000$, which indicates there is an influence of cold compresses on pain in muscle injury after exercising weight.
Conclusion: The implication of the results of this study is that giving cold compresses on a regular basis can have a significant effect on reducing pain in muscle injury after weight training.

Key words: Pain, muscle injury, cold compress.

INTRODUCTION

Every physical activity, especially exercise, is always faced with the possibility of injury and injury will have an impact on the disruption of physical activity, psychological and achievement. According to LeMone & Burke (2014) *Strains* are injuries stretching the muscles or muscles of the tendon caused by excessive movement. Muscles that are forced past their elasticity will become tense. Lifting heavy loads without bending the knee or sudden acceleration, as in a motor vehicle accident, can cause tension. The area's most often affected by muscle injuries are the spine and cervical area. Manifestations of strains are pain, limited motion, muscle spasms, swelling and possible muscle weakness. Partial or severe heavy strains that tear a muscle or tendon will be painful and disabling. According to Setiawan (2011) the types of injuries that occur in daily activities and exercise are divided into 2, namely: acute trauma and *overuse syndrome* (excessive use). Acute trauma is a severe injury that occurs suddenly, such as a scratch injury, a tear in a ligament or a broken bone. Whereas *overuse syndrome* is a result of protracted injury and often re-arises from the previous injury. Sports injuries must get help and treatment as early as possible, so that

sportsmen do not suffer from disabilities and can immediately practice and compete again.

According to the Ministry of Health of the Republic of Indonesia (2013) the three largest types of injuries suffered by residents were abrasions (70.9%), dislocations (27.5%) and torn wounds (23.2%). In East Java blisters (68.0%), torn wounds (22.7%), dislocations (27.3%). According to the place where the injury occurred. East Java has a percentage (3.5%) in the event of injury at a sports venue. At JM most injuries were experienced in chest muscles as much as 20% from 15 members there, shoulder 45% from 15 people, back 40% from 15 people, triceps 40% from 15 people, biceps 30% from 15 people, leg 10% from 15 people.

The occurrence of pain at the site of injury is that the blood vessels at the site of the injury will widen (vasodilation) with the intention of sending more nutrients and oxygen in order to support healing. This dilation of blood vessels results in the location of the injury appearing redder (rubor). Many blood fluids sent at the site of the injury will seep out of the capillary into the intercellular space and cause swelling (tumor). With the support of lots of nutrients and oxygen, metabolism at the site of injury will increase with residual metabolism in the form of heat. This condition causes the location of the injury to be hotter (heat) compared to other locations. Stacks of metabolic waste and other chemicals will stimulate nerve endings at the site of injury and cause pain (dolor). Pain is also triggered by depressed nerve endings due to swelling that occurs at the site of the injury. Both rubor, tumor, heat and color will reduce the function of organs or joints at the site of the injury known as functiolesa (Setiawan, 2011).

The first treatment for acute injuries that is well done is the RICE formula (*Rest, Ice, Compression, Elevation*) for the first 24 to 48 hours. Therapy *(cold therapy)* is a physiotherapy modality that are widely used in the acute phase of sports injuries. Ice therapy is usually carried out for 15-20 minutes. Ice therapy is usually continued for up to 48-72 hours, as a form of physical improvement (Smith, 2013). So, this study took the topic "the effect of cold compresses on pain in muscle injury after exercising weight in the fitness center JM fitness" so that research can find out and convey information about good handling in *prevention* (prevention) and *curative* (treatment) to add insight to students and researchers who suffered muscle injuries.

METHODS

Study Design

The research design used was *quasi-experimental*. This design seeks to reveal a causal relationship by involving a control group in addition to the experimental group.

Setting

This research was conducted at JM Fitness Center, Kapas Madya Village, Kenjeran Sub-District, Surabaya.

Research Subject

The population in this study were all JM Fitness Center members as many as 40 respondents, and taking samples in this study using the total sampling method.

Instruments

The sample was divided into 2 groups, namely the intervention group of 20 respondents and the control group of 20 respondents. In the intervention group an ice compress was given at the site of injury for 15-20 minutes within 72 hours while the control group was not treated. Pain measurement instruments use the sheet *Numeric Rating Scale* (NSR).

Data Analysis

The data analysis process in this study used SPSS through the Wilcoxon signed rank test with a significance level of α < 0.05.

Ethical Consideration

This research has gone through an ethical test from the Adi Husada Nursing Academy and obtained permission from the Owner of JM Fitness Center, Kapas Madya Village, Kenjeran Sub-District, Surabaya.

RESULTS

Characteristics of Respondents by Age

Table 1. Distribution of Frequency of Respondents by Age in the JM Fitness Center, Kapas Madya Village, Kenjeran Sub-District, Surabaya (n = 40).

No	Age	TREATMENT		CONTROL	
		N	%	N	%
1	Teenagers 12-25	8	40	7	35
2	Adults 26-45	8	40	10	50
3	Early Elderly ≥46	4	20	3	15
Total		**20**	**100**	**20**	**100**

Based on table 1 shows that the highest number of respondents at the age of Adult 26-45 years as many as 18 respondents.

Characteristics of Respondents by Gender

Table 2. Distribution of Frequency of Respondents by Gender in the JM Fitness Center, Kapas Madya Village, Kenjeran Sub-District, Surabaya (n = 40).

No	Age	TREATMENT		CONTROL	
		N	%	N	%
1	Male	18	90	18	90
2	Female	2	10	2	10
Total		**20**	**100**	**20**	**100**

Based on table 2 shows that the majority of respondent's sexes are male as much as 36 respondents.

Characteristics of Respondents by Pain Intensity in Muscle Injury before being given Cold Compresses

Table 3. Distribution of Frequency of Respondents by Pain Intensity in Muscle Injury before being given Cold Compresses in the JM Fitness Center, Kapas Madya Village, Kenjeran Sub-District, Surabaya (n = 40).

No	Quality Pain	Intervention		Control	
		Pre		Pre	
		N	%	N	%
1	No pain	-	-	-	-
2	Mild pain	14	70	13	65
3	Moderate pain	6	30	7	35
4	Severe pain	-	-	-	-
5	Unbearable pain	-	-	-	-
Amount		**20**	**100**	**20**	**100**

Based on table 3, it found that the pain scale is mostly found in mild pain in the intervention group as many as 14 respondents (70%) and in the control group 13 respondents (65%).

Characteristics of Respondents by Pain Intensity in Muscle Injury after being given Cold Compresses

Table 4. Distribution of Frequency of Respondents by Pain Intensity in Muscle Injury after being given Cold Compresses in the JM Fitness Center, Kapas Madya Village, Kenjeran Sub-District, Surabaya (n = 40).

No	Pain Quality	Intervention		Control	
		Post		Post	
		N	%	N	%
1	No Pain	8	40	-	-
2	Mild pain	12	60	17	85
3	Moderate pain	-	-	3	15
4	Severe pain	-	-	-	-
5	Unbearable pain	-	-	-	-
Total		**20**	**100**	**20**	**100**

Based on table 4, it found that the no pain scale in the intervention group there were 8 respondents (40%) and in the control group there was no decrease in the no pain score.

Examination of the Effect of Cold Compress on Pain in Muscle Injury after Collection of Loads in the JM Fitness Center, Kapas Madya Village, Kenjeran Sub-District, Surabaya

Table 5. Examination of the Effect of Cold Compress on Pain in Muscle Injury after Collection of Loads in the JM Fitness Center, Kapas Madya Village, Kenjeran Sub-District, Surabaya.

Test *Wilcoxon*	
	Intervention Group
Asymp. Sig. (2-tailed)	0.000

Based on Table 5, it found that the results of the intervention group Wilcoxon Test obtained a value of $p = 0.000$ ($\alpha < 0.05$) indicating there was an effect of cold compresses on pain in muscle injury after exercise.

DISCUSSION

Based on table 5, the results of statistical tests with Wilcoxon obtained a value of *p* value 0.000 ($\alpha < 0.05$).

According to Zakiyah (2015) cold compresses are to give a cold feeling to the local area by using a cloth dipped in plain water or ice water so that it gives an effect of coldness in the area. According to Smith (2013) ice therapy is carried out for 15-20 minutes. The first treatment for acute injuries that is well done is the RICE formula (*Rest, Ice, Compression, Elevation*) for the first 24 to 48 hours. Ice therapy continues for 48-72 hours, as a form of physical improvement. The reduction in pain goes according to healing injury. According to LeMone & Burke (2014) ice compresses in the area of injury for 20 minutes, 4-8 times a day can reduce pain.

The healing process will be fast when given cold compresses that are done regularly. The purpose of cold compresses is to relieve pain due to edema or trauma, slow the pulse of the heart, narrow the blood vessels, and reduce local blood flow.

CONCLUSION

1. The intensity of pain before a second compress is 70% for those who experience mild pain and 30% for moderate pain.
2. Pain intensity after cold compress was given as much as 40% of respondents stated painless and 60% of respondents experienced mild pain.
3. The results of statistical tests with Wilcoxon obtained a significance value of $p = 0.000$ ($\alpha < 0.05$), this indicates

that there is an effect of giving cold compresses to pain in muscle injury.

SUGGESTION

1. For Respondents
   It is expected that the results of this study can motivate respondents to use cold compresses when experiencing injuries.
2. For Research Sites
   It is hoped that JM Fitness Center can work with local health personnel to conduct counseling on good and correct handling of pain.
3. For Researchers Next
   The results of the study can be used as a reference source for future researchers by developing interventions in the management of pain.

REFERENCES

Ministry of Health of Republic Indonesia (2013). *2013 Basic Health Research*. Jakarta: Research Agency and Health Development of the Ministry of Health of Republic Indonesia.

LeMone, P., Burke, K., Levett-Jones, T., Dwyer, T., Moxham, L., Reid-Searl, K., ... & Luxford, Y. (2014). Medical-surgical nursing: Critical thinking for person-centred care.

Malanga, G. A., Yan, N., & Stark, J. (2015). Mechanisms and efficacy of heat and cold therapies for musculoskeletal injury. *Postgraduate Medicine*, *127*(1), 57-65.

Setiawan, A. (2011). Factors for the emergence of Sports Injuries No Title. *Indonesian Sports Science Media Journal*, *5*.

Smith, MJ (2013). To Ice or to Heat — That Is the Question. Retrieved from www.stopportsinjuries.com

Taylor, CR, Lillis, C., LeMone, P., & Lynn, P. (2011). *Fundamental of Nursing the Art and Science of Nursing Care* (7th ed.). Philadelphia: JB Lippincott Company.

Zakiyah, A. (2015). *Pain: concepts and management in evidence-based nursing practice*. Jakarta: Salemba Medika.