



Influence Difference Workplace Stretching Exercise With Kinesiotapping Against Complaints Musculoskeletal Disorders On Unloading Labor At Makassar City Port

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ABSTRACT

This study aims to determine the effect of workplace stretching exercise with kinesiotapping on reducing Musculoskeletal Disorders complaints in loading and unloading workers at Makassar City Port. This study is a quasi-experimental study with the dependent treatment variable in the form of workplace stretching exercise with Kinesiotapping, while the dependent variable is complaints of Musculoskeletal Disorders, the intervention is given 2 times a week for 2 months. The research design is a quasi experiment with a pretest-post test two group design. The research population is loading and unloading workers at the port of Makassar city. The number of samples is 20 people who are divided into 2 groups, namely the Kinesiotaping group and the workplace exercise group of 10 people each. This study uses VAS to measure Musculoskeletal Disorders pain before and after workplace stretching exercise treatment for treatment group I, and kinesiotapping for treatment group II. giving Workplace Stretching Exercise can reduce pain significantly with a value of <math><0.05</math> from 4.53 to 3.60 (scale 0-10). This shows that H_0 is rejected, meaning that there is an effect of Workplace Stretching Exercise on the complaints of Musculoskeletal Disorders. Kinesiotapping can significantly reduce pain with a value of <math><0.05</math> from 4.73 to 3.93 (scale 0-10). This shows that H_0 is rejected, meaning that there is an effect of kinesiotapping on the complaints of Musculoskeletal Disorders.

Keywords: *Workplace Stretching Exercise; Kinesiotapping; Musculoskeletal Disorders; Makassar Port.*

INTRODUCTION

Unloading Workers are all workers registered at the local port who carry out loading and unloading work at the port. This loading and unloading work is a job that is mostly done by manual handling, done repeatedly and not infrequently using the available tools and equipment. Loading and unloading labor is also one type of work that has a high risk of occupational disease due to: various factors such as individual factors, work and

environmental factors. As for Occupational diseases that are commonly felt by loading and unloading workers are work fatigue and also muscle aches or pains musculoskeletal disorders (Hardiyanti, 2017).

Musculoskeletal Disorders is a complaint that is felt by a person in the parts of the skeletal muscles, nerves, tendons, ligaments, bones and joints. Then for the level of complaints starting from very mild to very heavy. This could be due to the muscles receiving the load continuously and for a long time (Shobur et al., 2019).

World Health Organization mentions that there are about 1.71 billion people who have musculoskeletal conditions worldwide. Condition musculoskeletal is a major contributor to disability worldwide, with low back pain being the leading cause of disability in 160 countries. Condition musculoskeletal significantly limits a person's mobility and dexterity so that it can cause the person to retire early from work, lower levels of well-being and reduce the ability to participate in society (WHO, 2021).

Research conducted (Sekaaram dan Ani, 2017) regarding the prevalence of complaints Musculoskeletal Disorders which is intended for public transport drivers at the Mengwi terminal, Badung-Bali district shows the prevalence Musculoskeletal Disorders by 76.7%, with the most complaints distribution at the waist of 73.91%. Meanwhile, according to (Balitbang Kemenkes RI, 2018) the prevalence of musculoskeletal disease in Indonesia based on doctor's diagnosis is around 7.3%. Aceh became the province with the highest prevalence (13.26%), followed by Bengkulu (12.11%), Bali (10.46%), Papua (10.43%), West Kalimantan (9.57%), and Jambi (8.67%) while for South Sulawesi (6.39%). With the high prevalence Musculoskeletal Disorders then there must be efforts that can be made to prevent and reduce complaints musculoskeletal and work fatigue.

One alternative solution to prevent and reduce complaints Musculoskeletal Disorders and work burnout is to do workplace stretching exercise (WSE) which is designed with the principle of movement stretching (D. M. D. Novitasari, 2018) and also by using kinesiotapping. Efforts to prevent and to minimize the incidence of MSDs (Musculoskeletal Disorders) is indispensable in the work environment. Prevention of MSDs (Musculoskeletal Disorders) will benefit in the form of cost savings, increasing productivity and quality of work, reducing the occurrence of work accidents, as well as improving health, welfare and job satisfaction for employees.

Based on a preliminary study conducted by researchers in January 2022 at the Makassar City Port of Unloading Manpower Office (TKBM), there were workers who

experienced complaints Musculoskeletal Disorders or muscle pain. So this is the reason that underlies researchers to study more deeply related to "Differences in Influence". Workplace Stretching Exercise with kinesiotapping to Complaints Musculoskeletal Disorders on Loading and Unloading Workers at Makassar City Port”

METHOD

This research is a quasi-experimental research that aims to see the effect of workplace stretching exercise with kinesiotapping on reducing complaints of musculoskeletal disorders in loading and unloading workers at Makassar City Port. This research was carried out for 4 months with the research population being loading and unloading workers at the port of Makassar city. The number of samples is 20 people who are divided into 2 groups, namely the Kinesiotaping group and the workplace exercise group, each 10 people. This study uses instrument research in the form of visual analogue scale (VAS) to measure pain

The data that has been obtained will be analyzed computerized using the SPSS program. First, the normality test was conducted to determine the distribution of the data. If the data is normally distributed, it will be tested using a parametric test in the form of a paired t test followed by an independent test, while if the data is not normally distributed, a non-parametric statistical test, namely the Wilcoxon test, will be used.

RESULTS

Table 1.
 Characteristics of Respondents

| Ages Group | <i>Workplace Stretching Exercise</i> | | <i>Kinesiotapping</i> | |
|--------------|--------------------------------------|--------------|-----------------------|--------------|
| | f | % | f | % |
| 17-25 Years | 5 | 33,3 | 4 | 26,7 |
| 26-35 Years | 7 | 46,7 | 5 | 33,3 |
| 36-45 Years | 2 | 13,3 | 3 | 20,0 |
| 46-55 Years | 1 | 6,7 | 3 | 20,0 |
| Total | 15 | 100,0 | 15 | 100,0 |

Source: Primary Data, 2022

Table 1 shows that the age group in the Unloading Workers for the treatment group with Workplace Stretching Exercise are the age group of 17-25 years as many as 5 people (33.3%), 26-35 years as many as 7 people (46.7%), 36-45 years as many as 2 people (13.3%), and 46-55 year as many as 1 person (6.7%). For the treatment group with Stretching, there are 4 people (26.7%), 26-35 years old group (5 people (33.3%), 36-45 years old 3 people (33.3%). , and 46-55 years as many as 3 people (20.0%).

Table 2.
 Location of Affected Body

| Location | Workplace Stretching Exercise | | Kinesiotapping | |
|---------------------------------|-------------------------------|--------------|----------------|--------------|
| | f | % | f | % |
| Trunk | 5 | 33,3 | 3 | 20,0 |
| Upper Extremity Lower Extremity | 6 | 40,0 | 7 | 46,7 |
| | 4 | 26,7 | 5 | 33,3 |
| Total | 15 | 100,0 | 15 | 100,0 |

Source: Primary Data, 2022

Table 2. shows that in the treatment group with stretching based on the affected location, there were 5 people (33.3%) in the trunk area, 6 people (40.0%) in the upper extremity, and 4 people (26.6%) in the lower extremity. In the treatment group with kinesiotapping based on the affected location, there were 3 people (20.0%) in the trunk area, 7 people (46.7%) upper extremities, 5 people (33.3%) lower extremities.

Table 3.
 Categories of pain pre test and post test treatment group with workplace stretching exercise and the treatment group with kinesiotapping

| Pain Category | Workplace Stretching Exercise | | | | Kinesiotapping | | | |
|---------------|-------------------------------|--------------|-----------|--------------|----------------|--------------|-----------|--------------|
| | Pre test | | Post test | | Pre test | | Post test | |
| | n | % | n | % | n | % | n | % |
| Mild Pain | 3 | 20,0 | 8 | 53,3 | 4 | 26,7 | 8 | 53,3 |
| Moderate Pain | 9 | 60,0 | 7 | 46,7 | 7 | 46,7 | 7 | 46,7 |
| Severe Pain | 3 | 20,0 | 0 | 0,0 | 4 | 26,7 | 0 | 0,0 |
| Total | 15 | 100,0 | 15 | 100,0 | 15 | 100,0 | 15 | 100,0 |

Source: Primary Data, 2022

Table 3. shows that for the treatment group with Workplace Stretching Exercise pre test pain there were 3 people (20.0%) mild pain, and 9 people (60.0%) moderate pain, and 3 people (20.0%) severe pain, in the post test it became 8 people (53.3%) mild pain, 7 people (46.7%) moderate pain. For the treatment group with kinesiotapping pain pre test there are 4 people (26.7%) mild pain, and 7 people (46.7%) moderate pain, and 4 people (26.7%) severe pain, in the post test to 8 people (53.3 %) mild pain, 7 people (46.7%) moderate pain.

Table 4.
 Wilcoxon test results on pain variables in each group

| Score pre test and post test | n | mean | SD | α |
|--|----|------|-------|----------|
| Pain before intervention Workplace Stretching Exercise | 15 | 4,53 | 1,727 | 0,000* |
| Pain after intervention Workplace Stretching Exercise | 15 | 3,60 | 1,454 | |

| | | | | |
|---|----|------|------|---------|
| Pain before intervention kinesiotapping | 15 | 4,73 | 1,71 | 0,001** |
| Pain after intervention kinesiotapping | 15 | 3,93 | 1,48 | |

Description: * Paired t test

* * Wilcoxon test

Based on table 4. it can be explained that giving Workplace Stretching Exercise can reduce pain significantly with a value of $p < 0.05$ from 4.53 to 3.60 (scale 0-10). This shows that H_0 is rejected, it means that there is an effect Workplace Stretching Exercise to complaint musculoskeletal Disorders.

Kinesiotapping can reduce pain significantly with a value of $p < 0.05$ of 4.73 to 3.93 (scale 0-10). This shows that H_0 is rejected, it means that there is an effect kinesiotapping to complaint musculoskeletal Disorders.

Table 5.
 Comparative analysis of the patient's pain actuality between groups

| Score <i>pre test</i> and <i>post test</i> | mean | SD | α |
|---|------|-------|----------|
| Difference in pain pre test and Post test Workplace Stretching Exercise | 0,93 | 0,458 | 0,595 |
| Difference in pain pre test and post test kinesiotapping | 0,80 | 0,414 | |

Desc: Mann Whitney Test

Based on table 4.5 shows the results of the Mann Whitney test for testing the hypothesis of the difference in pain between Workplace Stretching Exercise and Kinesiotapping with a p value of 0.595. This shows that H_0 is accepted, meaning that there is no difference in influence Workplace Stretching Exercise and kinesiotapping to complaint musculoskeletal Disorders

Discussion

The mechanism of decreasing the degree of pain that occurs is related to decreased muscle spasm and increased blood circulation in the muscles. This is in line with the theory of gate control theory. MSDs pain occurs due to vasoconstriction of blood vessels in the muscles due to continuous excessive contraction and eventually causes ischemia. Lack of stretching by workers also contributes to complaints of musculoskeletal disorders, so that Workplace Stretching Exercise helps muscles become more flexible and relaxed (Nurindasari et al., 2020).

Workplace Stretching Exercise (WSE) can help to protect the musculoskeletal health of employees and avoid injury. When stretching occurs, muscle proprioceptors or muscle spindles are stimulated, which helps minimize spasm. Signals to the brain associated with

sudden and exaggerated changes in muscle length and tone are controlled by muscle spindles. Muscle spindles will send signals to the brain to cause muscles to contract as a form of defense and prevention of damage if these changes occur. Stretching allows the muscles to return to a resting state, which improves blood circulation (E. Novitasari et al., 2018).

This study is in line with the systematic review research conducted by Tersa-Miralles et al (2022) which stated that the intervention workplace exercise effectively deal with problems musculoskeletal disorders to office workers. This research is also in line with research conducted by Ulfah & Aji (2017) which states that there is an effect of WSE against decline MSDs batik worker.

Loading and unloading workers carry out lifting, pulling, and bending jobs continuously and repeatedly for a long time. This causes continuous and excessive muscle contractions that result in muscle spasms, and poor blood circulation. Further results will lead to a buildup of lactic acid and chemicals such as bradykinin and histamine. These substances will stimulate the nociceptors and will be delivered to the spinal cord then by the ascending nerves delivered to the brain and will be interpreted as pain. Giving kinesiotapping improves blood circulation, reduces the accumulation of lactic acid, provides a relaxing effect and reduces pain. According to Kumbrink (2011), The basic functions and effects of taping are: improvement of muscle function, elimination of circulatory disorders, reduction of pain, support of joint function.

This study is in line with research conducted by Wulandari et al (2016) which states that there is a positive influence kinesiotaping to pain reduction musculoskeletal disorders on porters at Pasar Gede Surakarta based on the results of measuring pain values using visual analog scale (VAS).

CONCLUSIONS AND SUGGESTIONS

Based on the results of the study, it can be concluded that there is an influence kinesiotapping to complaints Musculoskeletal Disorders and there is influence Workplace Stretching Exercise to complaints Musculoskeletal Disorders. However, there is no difference in effect Workplace Stretching Exercise and kinesiotapping to complaints Musculoskeletal Disorders on loading and unloading workers at the port of Makassar City.

Suggestions for physiotherapists to apply workplace stretching exercise and/or kinesiotapping to handle complaints Musculoskeletal Disorders. In addition, it is recommended for further researchers. to conduct research with a larger number of samples

so that the results obtained are better and choose respondents who are more controllable so that the results obtained are more real.

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