

Effect of Deep Stretching Minimizing the Incident of Low Back Pain on Rice Farmers in Pudak Village Muaro Jambi District Year 2024

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ABSTRAK

Low back pain (LBP) is a musculoskeletal disease that can be disturbing and the main cause is physical disorders. World Health Organization estimates that industrialized countries experience low back pain disorders with a prevalence of 5% per year and Indonesia with a prevalence rate of 49%. In Jambi, the prevalence of disease among farmers has the highest prevalence of 12.79%. This research aims to determine the effect of stretching in minimizing LBP in rice farmers in Pudak Village. This research uses quantitative research methods with a quasi-experimental type. The research sample consisted of 20 farmers who were divided into 2 groups, the treatment and the control group. In the treatment group experienced a decrease in the average level of pain after being given stretching. The results show that there is an effect of stretching with LBP.

INTRODUCTION

Occupational safety and health began to become known along with the development of the industrial revolution. This development has brought changes and has had quite a big impact, especially on relationships between people in the workplace (Hidayati et al., 2023). Occupational diseases caused by non-ergonomic conditions are musculoskeletal disorders. Musculoskeletal Disorders (MSDs) are diseases or work posture disorders in the form of muscles, joints, tendons and cartilage in the nervous system that occur when the worker's physical abilities do not match the worker's physical needs and are exposed to ergonomic risks for a long time. factor and is one of the occupational diseases in musculoletal disorders, namely Low Back Pain. Low Back Pain (LBP) is a musculoskeletal disease that can be disturbing and the main causes are physical disorders and incorrect mobilization (Sp.Ok, 2022).

The World Health Organization (WHO) estimates that 60-70% of industrialized countries experience low back pain disorders with a prevalence of 5% per year (Simanjuntak et al., 2020). In Indonesia, LBP is the most common complaint with a prevalence rate of 49%. However, only around 10-20% of them seek treatment from health services (Kreshnanda, 2016). Based on 2018 Basic Health Research data, the prevalence of musculoskeletal diseases in Indonesia was 7.30% and the highest prevalence rate was in agricultural work at 9.86%. In Jambi Province, the prevalence of joint diseases (Musculoskeletal Disorders) based on a doctor's diagnosis is 8.67% and according to the occupation of agricultural laborers/farmers the highest prevalence is 12.79% (Balitbangkes RI, 2018).

Stretching is useful for stretching muscles that have been used for a certain period of time. Lack of stretching before doing heavy work can reduce the supply of oxygen to the muscles, which can cause muscle complaints⁶. Farmers' high physical activity and frequent use of muscles over long periods of time and repetitively, even monotonously, will increase the risk of farmers experiencing low back pain. For farmers, stretching is useful for stretching muscles before farming work begins (Nurazizah et al., 2015).

According to the Muaro Jambi Central Statistics Agency, in 2022 the population of Muaro Jambi Regency will have the most dominant income from the agricultural sector such as plantation farming and lowland rice farming. Rice production in the Muaro Jambi Regency area is mainly found in several sub-districts, one of which is in Kumpeh Ulu District, Pudak Village. Workers in the agricultural sector cannot yet be monitored for work safety and health issues, so farmers are at risk of experiencing work-related health problems, one of the work-related health problems often found in farmers is low back pain (Rini et al., 2021).

In Pudak Village, Kumpeh Ulu District, Muaro Jambi Regency, farmers spend approximately 9-10 hours in the work process every day, often in hot weather conditions. Due to unstable working hours, changes in work attitudes and heavy workloads, this can increase the risk of low back pain in farmers. For this reason, efforts need to be made that can reduce the risk of complaints of low back pain in rice farmers considering that complaints of low back pain cannot be taken lightly because they can interfere with farmers' health problems and reduce their productivity levels.

Based on the description above, this research aims to determine the effect of stretching in minimizing the incidence of Low Back Pain in rice farmers in Pudak Village, Kumpeh Ulu District, Muaro Jambi Regency.

LITERATURE REVIEW

Low Back Pain Theory

Low Back Pain (LBP) is a condition of discomfort or pain in the lower back area or the fifth lumbar and sacral areas (L5-S1). LBP is often related to or caused by work and can be made worse by work activities (Ushuluddin, 2022). Badriah in Chenny (2012) LBP has mild symptoms, such as sudden pain in the spine, aches and feels hot, painful when moved both when bending forward and backward, or when turning left and right, these symptoms will increasingly heavier, especially when lifting heavy loads. The pain will spread to the back muscles, the back of the thigh muscles, and can sometimes cause numbness. At severe levels it can cause complaints such as paralysis from the waist to the legs. This occurs due to pinched nerves in the spine. Tarwaka (2016) explained that there are 3 factors that influence LBP complaints, namely individual factors, work factors and environmental factors. The LBP examination in this study was at the anamnesis stage, namely the first stage in diagnosing an abnormality by asking the patient about complaints (Kusumo, 2020) (Pertwi et al., 2019).

Stretching Theory

According to Thacker (2004), a Randomized Controlling Trial (RCT) study stated that static stretching increases muscle flexibility and performance and improves innervation if done for approximately 4 weeks, and within 10 seconds for each movement. Stretching is a form of stretching or stretching the muscles in each body so that before starting work there is readiness to reduce the impact of injuries that are prone to occur (Rusdystina, 2021). There are 4 types of stretching, namely dynamic, static, passive stretching and Proprioceptive Neuromuscular Facilitation (PNF). KEMKES (2019) Stretching is useful for avoiding injury, improving body metabolism, improving body posture and helping reduce stress.

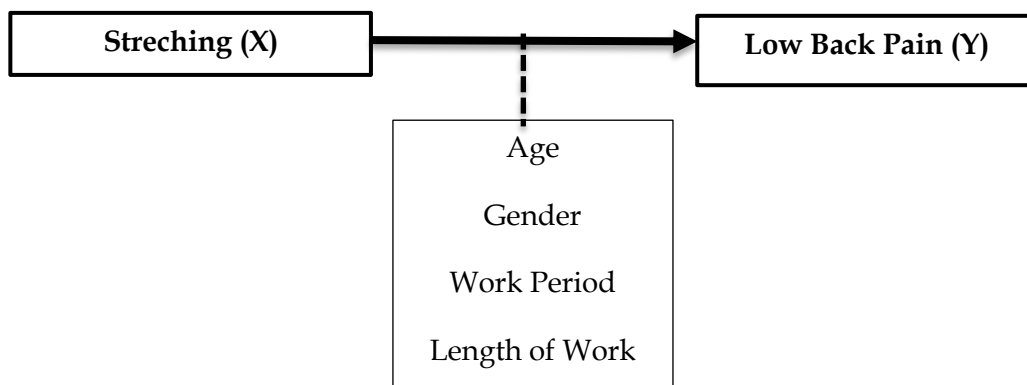


Figure 1. Conceptual Framework

METHODOLOGY

This research uses quantitative research methods with a quasi-experimental intervention study type with a Non-Equivalent Control Group design. This research design involved two groups. Where the intervention group was given static stretching in the form of exercises with a duration of 3 minutes for one week before work started, while the control group was not given stretching. The two groups were given a pre-test, then the intervention group was given treatment in the form of stretching for a period of seven days routinely every day and the control group was not given stretching, finally the two groups were given a post-test. The research was conducted in Pudak Village, Kumpeh Ulu District, Muaro Jambi Regency, Jambi Province.

The population in this study were all farmers in Pudak Village, Kumpeh Ulu District, Muaro Jambi Regency, totaling 238 farmers aged over 25 years. This research sample uses the formula for the average difference between two unpaired groups with a power ($1-\beta$) of 90%, a significance level (α) of 5%, the combined standard deviation of the two groups = 0.45 and the average difference between the two groups = 1, 21 with the results of a sample calculation of 7 people in each group, considering drop out, it was decided to increase the sample size by 10% to 10 people for each group or a total of 20 research subjects (Afrian et al., 2021). Subjects were determined using Purposive Sampling techniques. Subjects were divided into two groups randomly using a lottery from the 20 subjects obtained, namely the group that did static stretching and the group that did not stretch.

This study used an instrument in the form of the Pain Distress Scale questionnaire with measuring results <20: No pain, 20 - 24: Mild pain, 25 - 29: Moderate pain, 30 and 30>: Severe pain. This questionnaire has been tested for validity with an r table value of 0.3610 and a reliability test with an α value of 0.890. This questionnaire was translated into Indonesian by Yan Rikhard in 2014.

Data collection was carried out through field observations in rice fields in Pudak Village, Kumpeh Ulu District, Muaro Jambi Regency and required filling out The Pain Distress Scale questionnaire and giving stretches to the intervention group. Secondary data includes the number of farmers in Pudak Village obtained from the Pudak Village Government, Kumpeh Ulu District, Muaro Jambi Regency as well as joint disease prevalence data obtained from Basic Health Research. Data analysis used frequency distribution, Unpaired T test and Wilcoxon.

RESEARCH RESULT

Respondent Characteristics

The characteristics of respondents in this study include age, length of service, length of work, and gender which are divided into two groups, namely the intervention group and the control group. With a total of 10 respondents in the intervention group and 10 respondents in the control group.

Table 1. Frequency Distribution of Respondent

Characteristics of Intervention Respondents	Characteristics of Control Respondents	
	Frequency	Percentage(%)
Gender		
Man	3	30,0
Woman	7	70,0
Age		
36 - 45 Years (late adulthood)	3	30,0
46 - 55 Years (early elderly)	1	10,0
56 - 65 Years (late elderly)	1	10,0
65 - and above (seniors)	5	50,0
Work Period		
10 - 20 Years	4	40,0
21 - 40 Years	6	60,0
Length of Work		
<8 Hours	4	40,0
>8 Hours	6	60,0

Based on table 1, it was found that farmers in Pudak Village, Kumpeh Ulu District, Muaro Jambi Regency, in the intervention and control group, were generally 7 respondents (70.0%) women, then the number of male respondents was 3 respondents (30.0%). In the intervention group respondents in the age 36 - 45 years (late adulthood) were 3 respondents (30.0%), 46 - 55 years (early elderly) were 1 respondent (10.0%), 56 - 65 years (late elderly) were 1 respondents (10.0%) and most were aged 65 - and above (seniors), namely 5 respondents (50.0%) while in the control group respondents in the age group 36 - 45 years (late adulthood) were 3 respondents (30.0%), 46 - 55 years (early elderly) were 6 respondents (60.0%), 56 - 65 years (late elderly) were 0 respondents (00.0%) and most were aged 65 - and above (seniors), namely 1 respondent (10.0%). In the category of work experience and length of work in the intervention group with a work period of 10 - 20 years were 4 respondents (40.0%) and 6 respondents (60.0%) with a work period of 21 - 40 years old. Respondents with a working time < 8 hours were 4 respondents (40.0%) and 6 (60.0%) respondents with a working time > 8 hours while in the control group

with a work period of 10 - 20 years were 2 respondents (20.0%) and 8 respondents (80.0%) with a work period of 21 - 40 years old. Respondents with a working time < 8 hours were 2 respondents (20.0%) and 8 (80.0%) respondents with a working time > 8 hours.

The Effect of Stretching on the Incident of Low Back Pain

In this research, hypothesis testing was carried out to determine the effect of stretching in minimizing the incidence of low back pain in rice farmers in Pudak Village, Kumpeh Ulu District, Muaro Jambi Regency. The statistical test used is the statistical analysis of the unpaired T-test (independent T-test). The following are the results of the analysis using the unpaired T-test according to the intervention and control group.

Table 2. Unpaired T-test Analysis Result

Intervention	Mean	SD	P-value	N
Pre - Test	4,5	7,53	0,011	10
Post - Test	0	10,49		
Control				
Pre - Test	0	0	1,000	10
Post - Test	0	0		

Based on the results of the analysis in table 2, the results for the pre-test intervention group were obtained with a mean of 4.5 and a standard deviation of 7.53, then the post-test results with a mean of 0 and a standard deviation of 10.49. T-test results obtained p-value = 0.011 (p<0.05). This means that statistically there is a significant effect between before and after stretching. In the control group, the pre-test had a mean of 0 and a standard deviation of 0, then the post-test results had a mean of 0 and a standard deviation of 0. The T-test results obtained p-value = 1,000. This means that statistically there is no significant effect between the pre-test and post-test because the control group was not given stretching.

DISCUSSION

Respondent Characteristics

The results from 20 respondents in the control group and intervention group showed that most of the respondents were female, 14 respondents and 6 respondents were male. Then in the age group, most of the respondents were in the 46 - 55-year age group (early elderly).

This is in line with research conducted by Siti Damawiyah (et al) showing that elderly respondents have a higher risk of low back pain due to decreased bone elasticity(Damawiyah et al., 2021). This research is also in line with research conducted by Budi Aswin et al with the results that the majority of respondents were in the female gender group with a percentage of 80%. This shows that women are more susceptible to LBP due to the hormone estrogen(Aswin et al., 2022).

The research results showed that all respondents had long working periods (> 5 years). Working period of more than 5 years is at higher risk than workers with working period of less than 5 years, this is related to exposure to workload

that occurs every day for 5 years which accumulates and ultimately causes complaints of LBP. The results of this research are in line with research conducted by Shinta Bonita (2019) which found that workers with a working period of > 5 years had a greater risk of low back pain compared to workers with a working period of < 5 years (Amalia, 2019). The results of this research are in line with research conducted by Betty Prastuti et al which found that there was a significant relationship between length of work and the incidence of low back pain. Where the results of this study show that workers with a working time of > 8 hours are 14 times more likely to experience low back pain than workers with a working time of < 8 hours (Prastuti et al., 2020).

The Effect of Stretching on the Incident of Low Back Pain

Overall, respondents in the intervention group experienced a decrease in pain levels after being given stretching, while those in the control group did not experience a decrease in pain levels because they were not given stretches. In the intervention group there were 2 respondents who did not experience a decrease in pain because the respondents had degenerative diseases.

The results of this research are in line with research conducted by Abrar on farmers with a sample size of 16 samples, the result was $p=0.012$ (Muchlas, 2018). This research is in line with research conducted by Ni Luh Made Dwi Padma Sari et al which showed significant differences in the post-test pain scale between the treatment group that was given William Flexion Exercises ($p=0.000$) and the control group that was not given exercise ($p=0.499$). Stretching exercise is a form of exercise that stimulates the work of skeletal muscles by producing heat and when the muscles contract, the contraction energy is obtained from the breakdown of ATP, calcium and oxygen so that it can facilitate blood circulation and the mechanism for transporting substances contained in the muscles (Barbara C Long 1998) in (Sari et al., 2019).

CONCLUSIONS AND RECOMMENDATIONS

The results of the research conducted showed the effect of stretching in minimizing the incidence of Low Back Pain in rice farmers in Puduk Village, Kumpeh Ulu District, Muaro Jambi Regency with (p -value= 0.011 and SD 10.49) after being given statistical stretching intervention for 7 days before work done. So, it is hoped that the village government will pay more attention to the health and safety of workers in the informal sector, especially farmers, which is the work of the majority of residents in Puduk Village, Kumpeh Ulu District, Muaro Jambi Regency. Farmers are also expected to continue expanding regularly and have regular health checks at the nearest health service.

ADVANCED RESEARCH

In this study, there are research limitations, namely that the LBP data only consists of risk complaints which are not a diagnosis supported by further medical examination.

It is hoped that future researchers are expected to carry out further medical examinations in collaboration with specialist doctors and accompanied by medication consumption in respondents who are detected as having Low

Back Pain in order to prevent and treat Low Back Pain optimally and future researchers will use different research instruments and develop other variables and use other methods/types of stretching that can minimize the incidence of Low Back Pain.

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