

The Effect of Tai Chi Gymnastic on Decreasing Low Back Pain of Elderly Farmers

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ABSTRACT

Low back pain is one of health problems that disturb a daily comfort and activities. Low back pain increasing along with the increase of age and bent forward position which was applied in daily working by elderly farmers. The aim of this study was to analyze the effect of tai chi gymnastic on decreasing low back pain of elderly farmers. The research design of this study was one group of pre test-post test design. The population objects in this study were all of elderly farmers with low back pain complaints which were recorder in the elderly medical center, which contained of 32 samples in total and were determined using simple random sampling technique. The independent variable in this study was Tai Chi gymnastic and low back pain of elderly farmers as dependent variable. Verbal descriptor scale was used as the data collection method. This study was using editing, coding, scoring and tabulating as data processing techniques, and Wilcoxon signed rank test on testing the statistics. The result of this study showed the percentages of each low back pain phases, which contained of 41% mild low back pain, 50% moderate low back pain and 9% hard low back pain before tai chi gymnastics. Besides, the percentages of low back pain phases after tai chi gymnastic were 69% for mild low back pain, 31% moderate low back pain and 0% hard low back pain. The result of Wilcoxon signed rank test showed that the p-value = 0.001 < 0.05, so that H₀ was rejected. The conclusion there was an effect of Tai chi gymnastic on decreasing low back pain of elderly farmers.

Keywords: low back pain; elderly farmers; Tai chi gymnastic

INTRODUCTION

Low back pain appears in elderly farmers caused by various musculoskeletal diseases, improper body posture, psychological disorders, and wrong mobilization that must be overcome because it can cause stress or strain on muscles, tendons and ligaments.⁽¹⁾ The things that can affect the onset of low back pain are the habit of sitting, working bent in a relatively long time, lifting and transporting the load in a manner that is not ergonomic.⁽²⁾

Research from the pain study group according to the Indonesian Neuroscientists Association (PERDOSSI) found that the number of low back pain sufferers was 35.86% of the total visits of patients with lower back pain 45% of patients with low back pain were women, and the highest percentage of patients in the age range 41 up to 60 years.⁽³⁾ Data from the Agriculture Service 2018 in Jombang, the number of farmers is 88,445 people from the total population in Jombang, while in Banjardowo there are 468 rice farmers, the highest number of villages in Jombang. Data of Elderly *Posyandu* (Integrated Service Post) in February 2018, 35 residents of Banjardowo Village reported low back pain and from a preliminary study of researchers in March 2018 by interviewing 8 farmers in 5 farmers who experienced low back pain and 3 farmers did not experience low back pain.

The farmers, especially the elderly, are very at risk of experiencing low back pain, because in doing their work includes heavy activities with frequent and long body positions or other body positions that are not natural at work which is done for >8 hours / day causing muscle fatigue. Someone who does less ergonomic work can experience low back pain musculoskeletal disorders in the body, especially for the elderly who work in agriculture.⁽⁴⁾ The impact of low back pain on elderly farmers can reduce comfort in working depression so that it can disrupt the quality of life and reduce the level of activity of its workers.⁽¹⁾

Low back pain events can be reduced one of them with gymnastics. One of the most popular gymnastics sports today is tai chi gymnastics from China. Tai chi gymnastic movement helps reduce low back pain which has an impact on work discomfort and depression which interferes with the quality of life and lowers the level of work activity by exercising deep breathing and slow motion combined with light muscle training so as to make elderly farmers fresh and relaxed to return to work.⁽⁵⁾

Based on the description of the background above can be formulated the problem is there any effect of tai chi gymnastics on the reduction of low back pain in elderly farmers in the Elderly Posyandu Banjardowo, Jombang District, Jombang Regency? The aim of the study was to analyze the effect of tai chi gymnastics on the reduction of low back pain in elderly rice farmers in the Elderly Posyandu, Banjardowo, Jombang District,

Jombang Regency. The results of this study can be used as a useful activity that can reduce low back pain in the elderly.

METHODS

This study used analytical research design with pre-experimental approach. The population in this study were all elderly farmers in the Elderly Posyandu in Banjardowo Village, Jombang District, Jombang Regency, who experienced low back pain with the number of 35 elderly farmers and the sample size were 32 elderly farmers were taken using simple random sampling technique. The independent variable was Tai chi gymnastics and the dependent variable was a decrease in low back pain in elderly farmers. Data collection used a verbal descriptor scale. Data processing using editing, coding, scoring and tabulating followed by data analysis with Wilcoxon Signed Rank Test statistical test.

RESULTS

General data

Table 1. Distribution of respondents by gender

No	Gender	Frequency	Percentage
1	Male	7	22
2	Female	25	78
	Total	32	100

Based on table 1 shows that almost all respondents were female, there were 25 elderly farmers (78%).

Table 2. Distribution of respondents by age

No	Age	Frequency	Percentage
1	60 - 70 years	24	75
2	> 70 years	8	25
	Total	32	100

Based on table 2 shows that most of the elderly farmers aged 60-70 years (75%).

Specific Data

Table 3. Characteristics of respondents based on the level of low back pain in elderly farmers before doing tai chi gymnastics

No	Before Gymnastic Tai chi	Frequency	Percentage
1	No pain	0	0
2	Mild pain	13	41
3	Moderate pain	16	50
4	Controlled Severe Pain	3	9
5	Severe Pain Not Controlled	0	0
	Total	32	100

Based on table 3 shows that before doing tai chi gymnastics half the respondents experienced moderate pain 16 (50%).

Table 4. Characteristics of respondents based on the level of low back pain in elderly rice farmers after doing Tai chi gymnastics

No	After tai chi gymnastics	Frequency	Percentage
1	No pain	0	0
2	Mild pain	22	69
3	Moderate pain	10	31
4	Controlled Severe Pain	0	0
5	Severe Pain Not Controlled	0	0
	Total	32	100

Based on table 4 shows that after being given tai chi gymnastics most of the respondents experienced mild pain with a total of 22 respondents (69%).

Table 5. Distribution of respondents based on cross tabulation of the effect of Tai chi gymnastics on decreasing low back pain on elderly farmers in the Elderly Posyandu in Banjardowo Village, Jombang District, Jombang Regency

Low back pain in elderly farmers												
Tai Chi Gymnastics	No Pain		Mild Pain		Moderate Pain		Controlled Severe Pain		Severe Pain Not Controlled		Total	
	Σ	%	Σ	%	Σ	%	Σ	%	Σ	%	Σ	%
Before	0	0	13	41	16	50	3	9	0	0	32	100
After	0	0	22	69	10	31	0	0	0	0	32	100

Wilcoxon Signed Rank Test 0.001 < α = 0,05

Based on Table 5 it was known that of 32 respondents with low back pain who experienced a decrease in pain levels of low back pain as many as 22 respondents (69%) and moderate pain as many as 10 respondents (31%). Statistical test results using the Wilcoxon Signed Rank Test obtained p-value of 0.001 < 0.05, then H0 rejected, which means there is influence of Tai chi gymnastics on the decrease in low back pain in elderly farmers in the Elderly Posyandu Banjardowo Village Jombang District Jombang Regency.

DISCUSSION

Low Back Pain before being Given Tai Chi Exercise

Low back pain in elderly farmers before doing tai chi gymnastics based on research conducted at elderly Posyandu in Banjardowo Village, Jombang District, Jombang Regency, found that half of the respondents experienced moderate pain, 16 elderly farmers (50%).

According to researchers, farmers every day do a lot of activities in the fields. The activities of farmers in the fields are one type of work that has a high risk for the workers and on average farmers do activities in a bent body position. In the rice growing season, almost all farmers plant rice in a bent position which can cause work discomfort. Bending is the position of the body where the spine curves forward beyond the normal limit of > 40%. Working position bent on farmers will cause musculoskeletal system abnormalities one of which is low back pain. Low back pain arises because farmers do not do physical exercise to relax stiff muscles, increase flexibility of muscles and joints and improve body balance. Back pain is felt when the farmer must work in a bent position, and the head is facing downward which is carried out for ± 8 hours / day.

Body posture in the workforce in a bent position with a body position where the spine curves forward exceeds the normal limit > 40 ° body load is more accepted by skeletal muscles in the spine than on the legs.⁽⁶⁾ Body weight, especially standing, sitting and bending can cause pain in the back and can cause complications in other bodies, such as *genu valgum*, *genu varum*, *coxa vagum*.⁽⁷⁾

Based on results, almost all respondents were female, there were 25 elderly farmers (78%). According to researchers, almost every morning until late in the evening, women farmers engaged in farming activities in the rice fields in a bent position. Female farmers plant rice by walking backward, bending position using the back as the main support for the body. Women's farmer activities involve various muscle groups, especially the spine support muscles which function to maintain good posture and balance. While male farmers are more likely to do jobs such as plowing fields using tractors.

Women in dry land farming have a role in productive and reproductive work. Participating in women in productive activities is limited to activities that are light and require patience.⁽⁸⁾ Even more complex besides taking care of women's domestic work is also often seen working as laborers working in the fields.⁽⁹⁾

Based on the results, it was found that most of the respondents aged 60-70 years were 24 elderly farmers (75%). According to researchers, the increasing age of a person, the lower the workings of his organs and the tolerance to pain is increasing, this causes farmers to experience physical deterioration, one of which is stiffness in the spine, decreased flexibility of muscles and joints, reduced bone density resulting in pain. Changes in the musculoskeletal system in the elderly include connective tissue (collagen and elastin), muscle and joint cartilages. Decreases in the elderly body can occur health problems, one of which is low back pain.

Generally, skeletal muscle complaints begin to be felt at the age of 35-70 years. The first complaint is usually felt at the age of 35 years and the level of complaints will continue to increase as you get older. Increasing age will occur in bone degeneration and this situation begins to occur when a person is 35 years old.⁽¹⁰⁾ One part of the body that also experiences degeneration is the spine. As a result of this process scar tissue is formed in the invertebrate disc, the amount of fluid between the joints is reduced and the disc space is

permanently suspended. As a result, the spinal segment will lose its stability. Silting in the disc space will reduce the ability of the spine, especially the lumbar region to withstand the burden of being reduced.⁽¹⁰⁾

Low Back Pain after Doing Tai Chi Gymnastics

Based on the results, the level of low back pain after being given tai chi gymnastics most of the respondents experienced mild pain with a total of 22 respondents (69%). According to researchers giving Tai chi gymnastics has a positive impact on reducing the level of pain low back pain in rice farmers by doing gymnastics 2 times a week for 15 minutes routinely followed by a sequence of upright spine movements, abdominal breathing, slow and gentle movements that are low impact and weight bearing can strengthen bones and slow the reduction of bone mass in farmers combined with meditation aims to calm the mind, breathing in the diaphragm and the stomach which can increase lung capacity, stretch the respiratory muscles and release tension so that it can cause a person to become more relaxed and increase expenditure of noradrenaline in the urine and decrease salivary cortisol so it can relieve lower back pain.

Tai Chi Chuan is a comprehensive exercise that not only fosters the feet, hands and body through various movements, but also strengthens the internal organs and the central nervous system by using deep and slow abdominal breathing, and concentration of mind.⁽¹¹⁾ Tai Chi is an example of dynamic stretching exercises.⁽¹²⁾

Analyzing the Effect of Tai Chi Gymnastics on the Decrease in Low Back Pain

Based on the results, there is effect of Tai chi gymnastics on the decrease of low back pain in elderly farmers in the elderly Posyandu at Banjardowo village, Jombang regency. Researchers argue that before doing tai chi gymnastics respondents feel pain in the lower back, especially the lumbar bone. After being given tai chi gymnastics, respondents experienced a decrease in the level of pain in low back pain to mild and moderate pain. This is because by moving his body can improve balance, strength, flexibility, stamina, muscle tone and coordination which later can strengthen bones and slow bone mass reduction besides the benefits of other tai chi gymnastics can calm the mind, increase concentration, reduce anxiety so that it can reduce blood pressure and heart rate and increase lung capacity, stretch the respiratory muscles and release tension.

The results of this study are in line with the research conducted by Putri⁽¹³⁾ which entitled the effect of tai chi gymnastics on increasing dynamic balance and decreasing risk factors in the elderly, stating that a decrease in body balance is often experienced by the elderly who will have the risk of falling. Tai chi is one exercise that can increase muscle strength with foot posture and movement is the basis of whole body posture, and the concept of the right position and the direction that is always pressing so that it can be associated with the integrity between BOS (Base of Sport) and COG (Center of Gravity) as a stability limit that will reduce the risk of falling in the elderly.

CONCLUSION

Conclusion

1. Low back pain level before doing tai chi gymnastics on elderly farmers in the Elderly Posyandu, Banjardowo Village, Jombang District, Jombang Regency, obtained half of the respondents experiencing moderate pain.
2. Low back pain level after doing tai chi gymnastics on elderly farmers conducted at the Elderly Posyandu in Banjardowo Village, Jombang Subdistrict, Jombang Regency, found that most of the respondents experienced mild pain.
3. There is the effect of tai chi gymnastics on the reduction of low back pain in elderly farmers in the Elderly Posyandu, Banjardowo Village, Jombang District, Jombang Regency.

Recommendations

1. For elderly farmers
Elderly farmers need to apply tai chi gymnastics with good and correct movements periodically to reduce the pain of low back pain.
2. For village midwives
Expected to be able to apply tai chi gymnastics to reduce low back pain in elderly farmers and develop, streamline and optimize the activities of tai chi gymnastics in elderly posyandu Banjardowo Village.

3. For elderly posyandu cadres
 Researchers suggest for elderly posyandu cadres to teach tai chi gymnastic movements, fostering elderly farmers during tai chi gymnastics so that elderly farmers when tai chi gymnastics are able to exercise optimally every 2 times with a duration of 15 minutes in 1 week. More effective exercise activities that are carried out once a week.
4. For the next researcher
 Expected to develop and conduct research on tai chi gymnastics can be done with a larger sample, different types and research designs and the use of control groups. In addition, you can compare tai chi gymnastics with yoga meditation therapy that allows even better in lowering low back pain in elderly rice farmers.

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