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Article

Providing Ergonomic Exercise Therapy To Reduce Joint Pain In The Elderly In Jember's Nursing Home

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A B S T R A C T

Aging is a biological process where it is unavoidable, irreversible, and complex in nature which can have a negative impact on various organ systems and functions of human organs. One of them is the elderly experiencing a decrease in the musculoskeletal system. This can be marked by pain and stiffness in one or more joints. Therapy that can be done to reduce joint pain in the elderly includes physical sports activities or gymnastics which are the best alternative for dealing with joint pain in the elderly. Ergonomic exercise is one exercise that is recommended for the elderly. This study used a one group prepost test design. The population of this study was the elderly at UPT PSTW (Elderly Nursing Home) Jember. The sampling technique used was total sampling. The sample used in this study was 30 people. The intervention was carried out once a week. Pain scale measurements were carried out before and after the implementation of ergonomic exercises. Measurement of the pain scale using the Numeric Rating Scale (NRS) measuring instrument. Analysis of research data using the Paired Simple T-Test. The results of Group Activity Therapy used the Paired Simple T Test and obtained a significance value of 0.000 where the value of p <0.05 indicated that there was a significant difference in pain scale between pre-intervention and post- intervention.

I. INTRODUCTION

Aging is a natural process determined by God Almighty. Humans will experience a process of change in growth and development until one day, we experience the process of aging. Aging is not a disease but rather a natural process that occurs gradually and is marked by a decline in physical, psychological, and social conditions (Sumardin et al, 2020). An older adult experiences a gradual physical, mental, and social decline. Aging is a biological process that is unavoidable, irreversible, and complex. It can hurt various organ systems and human organ functions. One of them is

that the elderly experience a decline in the musculoskeletal system. This can be characterized by pain and stiffness in one or more joints (Richard and Sari, 2020).

Data from the World Health Organization (WHO) in 2011 showed that worldwide joint pain amounted to 335 million people and is expected to continue to increase in 2050. The prevalence in England alone is 59.4% (Andri et al, 2020). Based on the Riskesdas Report (2018), joint disease in Indonesia based on the diagnosis of health workers is 7.3% with a total of 713,783 people. The highest number is the population of West Java, which is 131,846, followed by the population of East Java, which is 113,045 people.

Physical changes in the elderly vary and occur in various systems, especially the musculoskeletal system. Deterioration of the musculoskeletal system is characterized by pain in the joint area. The body has neuromodulators that can inhibit the transmission of pain impulses, including beta-endorphin. Endorphins play a role in reducing the sensation of pain by blocking the release of substances from sensory neurons. Pain impulse messages in the spinal cord are inhibited, reducing pain sensation. High levels of beta-endorphins also have a direct psychological impact, namely helping to relax, reducing tension, increasing feelings of pleasure, making a person feel more comfortable, and facilitating oxygen delivery to muscles (Ngo, 2022).

Several therapies that can reduce joint pain in the elderly include pharmacotherapy, non-pharmacology, and psychological support. Non-pharmacological therapy, such as physical exercise or gymnastics, is the best alternative for treating joint pain in the elderly. Ergonomic exercise is one of the exercises recommended for the elderly (Gandari et al., 2019).

Movements that optimize body position aim to eliminate or minimize fatigue. Ergonomic exercise is a technique to control or improve the function and flexibility of the nervous system in the bloodstream, maximize oxygen supply to the brain, can open the intelligence system, sweat system, body temperature system, burning system of uric acid, cholesterol, blood sugar, lactic acid, and other systems (Ngo, 2022).

Based on preliminary studies on 28 November 2022 on the elderly at UPT PSTW (elderly nursing home) Jember, the following data was found. As many as 10 out of 13 clients said they often felt pain or pain in the knees, calves, back, and other joints. The average pain score obtained from 10 older adults was 3.3 (NRS), which means there were moderate complaints. Based on the findings above, chronic pain is a problem in the elderly at UPT PSTW Jember. Pain problems can be overcome with exercise; one is ergonomic exercise, which effectively reduces the intensity of joint pain in clients (Fadila and Noviyanti, 2020).

II. METHODS

This research used a one-group pre and post-test design. The population of this study was older people with complaints of joint pain at UPT PSTW (elderly nursing home) Jember in 2023. This research was carried out by providing ergonomic exercise intervention. The sampling technique used was total sampling. The sample used in this research was 30 people with inclusion and exclusion criteria. The inclusion criteria for this research are clients with complete independence who are cooperative and willing to become participants. The exclusion criteria for this research are clients who are not willing to become participants. Intervention is given within one week. Pain scale measurements were carried out before and after implementing ergonomic exercises. The pain scale was measured using the Numeric Rating Scale (NRS) measuring instrument. Data was analysed using the

Paired Simple T-Test. This research has passed the ethical test conducted by the Faculty of Nursing, Jember University with ethical letter number 305/UN25.1.14/KEPK/2023.

III. RESULT

Table 1. Distribution of Respondent Characteristics Based on Age and Gender at UPT PSTW Jember (n=30)

Characteristics	f	Percentage (%)
Age		
Early elderly (60 – 74 Years old)	21	70%
Late elderly (≥ 75 Years old)	9	30%
Gender		
Male	10	34%
Female	20	66%

Table 1 shows that the respondents in this study were based on age, namely early elderly (60-74 years), as many as 7 people (70%), late elderly (≥ 75 years), and as many as 3 people (30%). Based on gender, all respondents were female (100%).

Table 2. Distribution of Pain Scale Before and After Ergonomic Exercises at UPT PSTW Jember (n=30)

Pain level	Before		After	
	f	%	f	%
Mild	21	70%	30	100%
Moderate	6	30%	0	0%

Table 2 shows that before ergonomic exercises 7 older adults (70%) experienced mild pain (NRS scale 3), and 3 older people (30%) experienced moderate pain (NRS scale 4). And after ergonomic exercises all respondents have a mild pain.

IV. DISCUSSION

Ergonomic exercise group activity therapy can reduce joint pain in the elderly. Respondents who took part in group activity therapy were 30 older adults. Respondent characteristics were grouped by age and gender. Group activity therapy using ergonomic exercises is carried out once a week. The results of the data analysis showed that the age range for the elderly at UPT PSTW Jember was 60 to 74 years.

66% of the gender is elderly female. The ergonomic exercise TAK carried out at Wisma Dahlia UPT PSTW Jember was also analyzed using the Paired Simple T-test and showed that the results showed that the pre and post-ergonomic exercise intervention pain assessment had a significance value of 0.000 where the p-value was <0.05, thus indicating a significant difference in pain scale between pre-intervention and post-intervention.

There is a difference between providing Group Activity Therapy (TAK) intervention and ergonomic exercise to the elderly before and after the intervention. This is in line with research conducted by Kholisotin et al. (2021) that there is an influence of ergonomic exercise on the scale of knee joint pain in the elderly Posyandu area in Wonoasih District, Probolinggo City. This research is also in line with the study conducted by Putri et al., 2022, where there is a difference in the average of the ergonomic exercise group between the control group and the warm compress group, with the control group having a p-value of 0.000 <0.05.

Every movement from ergonomic exercise has its benefits. The first movement is open-mindedness, which helps maintain body fitness and reduce the possibility of coronary heart symptoms and stress. The second movement is bowing in gratitude, which helps strengthen the functional anatomical structure of the muscles,

ligaments, and spine. The third movement is sitting and bending down, which is helpful for patients suffering from stroke, leukemia, allergies, inflexibility due to gout, and rheumatism. The fourth movement helps burn uric acid, blood sugar, cholesterol, and toxins in the body (Malo et al., 2019).

The movements in ergonomic exercise can also help loosen stiff joints; this can trigger the emergence of endorphin hormones, inhibiting joint pain in the elderly. TAK Ergonomic exercise can also make older adults more relaxed, and if ergonomic exercise is done regularly, it will reduce joint pain maximally (Gandari, 2019).

Ergonomic exercise group activity therapy can be carried out in open areas with fresh air. This therapy will be more enjoyable for the elderly if the implementation is accompanied by the playing of relaxing music, which is able to create a calming effect for the elderly so that they elderly can enjoy every movement given in peace and comfort.

The purpose of the discussion is to interpret and describe the significance of your findings in light of what was already known about the research problem being investigated, and to explain any new understanding or insights about the problem after you've taken the findings into consideration. The discussion will always connect to the introduction by way of the research questions or hypotheses you posed and the literature you reviewed, but it does not simply repeat or rearrange the introduction; the discussion should always explain how your study has moved the reader's understanding of the research problem forward from where you left them at the end of the introduction.

V. CONCLUSION

Before being given therapy in the form of ergonomic exercises, the average respondent complained of pain in the joints of the feet and hands with a pain scale of 3 on the NRS, which was classified as mild pain. After being given therapy in the form of ergonomic exercises, the respondent's pain level decreased to 2 on the NRS pain scale, which is classified as mild pain. Ergonomic exercise influences the scale of joint pain in the elderly at UPT PSTW Jember.

Ergonomic exercise therapy can continue to be carried out with continued assistance from the UPT PSTW Jember. It can be used as one of the routine activities carried out by the elderly at UPT PSTW Jember to improve health services for the elderly, especially those with joint pain complaints.

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