

The Effect of Physical Activities and Strength Exercise to Proprioceptive Stimulation on Life Quality Improvement in Elderly

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ABSTRACT

Background: The increase of life expectancy is one indicator of public health, especially in Indonesia. The elderly in Indonesia in 2020 is predicted to increase to 28.8 million, and in 2025 it is predicted to increase to 36 million (BAPENNAS). The increase number of elderly people and changes in quality their life certainly have an impact on life. Changes in life processes and quality of life is closely related to physical activity carried out by an elderly person.

Objective: This study aims to identify changes in quality of life in the elderly after being given physical activity interventions and strength exercise with proprioceptive stimulation.

Methods: This research is an experimental quasy study with randomized pre and post test group design. Determination of samples based on inclusion criteria until the minimum number of samples was fulfilled. The sample was in one group. Determination of groups using randomize tables then was carried out pre-test in both groups using the WHOQOL-BREF questionnaire The group is given an intervention physical activity strength exercise with proprioceptive stimulation. Physical activity interventions and strength exercise with proprioceptive stimulation were given for 1 month then post-test. Data were analyzed by using paired sample t-test.

Result: The data of the study showed the mean value of the Mean \pm SD of the quality of life of the respondents in the group before being given physical activity and strength exercise with proprioceptive stimulation of $53.61 \pm 3,952$, and after being given physical activity and strength exercise with proprioceptive stimulation was equal to $62.00 \pm 3,992$, with p value (value) that is $0,000 < 0,05$.

Conclusion: Based on the data above shows that there is an increase in quality of life after physical activity intervention and strength exercise with proprioceptive stimulation

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I. Introduction

The increase of life expectancy is one indicator of public health, especially in Indonesia. The increase number of lifespan means an increase number of elderly people. Elderly is an individual over the age of 60 who experiences a life process characterized by a decrease in physical, psychological, and adaptive abilities to the environment [1].

The population of the elderly in 2012 reached 18.55 million people or 7.78% of the total population of Indonesia [2]. The elderly in Indonesia in 2020 is predicted to increase to 28.8 million, and in 2025 it is predicted to increase to 36 million (BAPENNAS). Therefore, changes in health status in the elderly will affect the quality of their life, especially in the domain of psychological health. Domains in the quality of life can be measured by using WHOQOL which consists of the domains of physical health, psychological health, social relations, and environmental aspects [3].

The increase number of elderly people and changes in quality their life certainly have an impact on life. Changes that can occur in the elderly are life dependency. Life dependence is caused by physical, psychological, social, and environmental deterioration of the elderly which can be described through weaknesses, functional limitations, disability, and inhibition that occur together with the aging process [4].

Changes in life processes and quality of life is closely related to physical activity carried out by an elderly person. A systematic review of research articles on physical activity in the elderly throughout the world from 2000-2012 shows that physical activity is consistently related to functional capacity, overall quality of life, autonomy, past, present, and future activities. death, intimacy relationships, mental health, vitality, and psychological conditions. [5] The results of this study are supported by previous research namely [6]. The study concluded that there was a significant relationship between physical activity and quality of life and there were significant differences in terms of domain role limitation due to physical health problems, bodily pain, and vitality role limitation due to emotional problems.

Based on the foregoing, it is deemed necessary to conduct research on "The Effect of Physical Activity on changes in the quality of life of the psychological health domain in the elderly on the Tresna Wredha Nirwana Puri Samarinda Social Home in 2018. This study aims to identify the effect of Physical Activity on improving the life quality of the psychological health domain in the elderly.

II. Method

This research is an experimental quasy study using a randomized design of pre and post test group design. This research was conducted at the Tresna Werda Nirwana Puri Samarinda Social Home in August until November 2018. The sample size was determined by taking all members of the population into a sample. according to the inclusion criteria there were 33 people then simple random sampling was done.

The group was given a physical activity intervention for 3 times a week 15 minutes in The instrument used is the WHOQOL-BREF questionnaire instrument from WHO. Data were analyzed using Bivariate analysis. In this research, all data of the research result are analyzed by using SPSS program. Data analysis in this study using Paired T-Test statistic.

This research has been through ethical consideration in the Polytechnic Research Commission of Poltekkes Kemenkes East Kalimantan Province and has been declared eligible and ethical on July 2017 with number LB.02.01 / I. 14 / 3705/2017.

III. Results

Table 1. Characteristics of Respondents

No	Characteristics	Group		
		Mean±SD	N	%
1.	Age	68.09±3.876		
2.	Gender			
	Man		15	45,5
	Woman		18	54,5
3.	Last education			
	Not complete SD		8	24,2
	Elementary School		11	33,3
	Junior high School		5	15,2
	Senior high		8	24,2
	College		1	3,0

Source: Primary data analysis, 2018

Table 1 above shows the characteristics of respondents in groups based on age, that is, the average age of respondents is 68.09 ± 3.876 , and most of them are female, that is equal to 54.5%, and almost most of them are educated in elementary school at 33.3%.

Table 2. Test for normality and homogeneity

Life quality	Group	
	<i>Saphiro Wilk Test</i>	<i>Levene Test</i>
	P Value	P Value
<i>Pre Test</i>	0,124	0,977
<i>Post Test</i>	0,073	

Source: Primary data analysis, 2018

Table 2 above shows the results of the normality test (Saphiro Wilk Test) of the psychological health of respondents in the group before physical activity, namely $p = 0.124$, and after physical activity is given $p = 0.073$, meaning the above data is normally distributed. Table 2 above shows the results of the homogeneity test (Levene Test) of respondents' psychological health, namely $p = 0.977$, meaning the data above is homogeneous.

Table 3 Mean Difference Tests for quality of life improvement

	Quality of Life		P Value
	Before	After	
Group	53.61±3.952	62.00±3.992	0,000

Source: Primary data analysis, 2018

Table 3 The results of the paired sample t-test above show the mean value Mean \pm SD of the quality of life of the respondents in the group before given physical activity and strength exercise with proprioceptive stimulation of 53.61 ± 3.952 and after physical activity and strength exercise with proprioceptive stimulation is given at 62.00 ± 3.992 , with the value p (value) $0,000 < 0,05$. Based on the data above shows that there is an increase in quality of life after physical activity intervention and strength exercise with proprioceptive stimulation.

IV. Discussion

The health of individual psychology is a unitary state of psychology that can support the quality of life in the elderly. The quality of life of the elderly is a complex component, ranging from life expectancy, psychological health, cognitive, self-satisfaction, physical health, social support and social networks [7]

The quality of life of individuals can be seen and measured by using the WHOQOL-BREF (Quality of Life) questionnaire consisting of 26 items, with 24 items grouped into four domains or subscale namely physical health domain (seven items), psychological domain (six items), domain social relations (three items), environmental domains (eight items), and includes one overall quality of life item and one general health item [8].

Data distribution in this research table shows the characteristics of respondents in groups based on age, namely the average age of respondents by 68.09 ± 3.876 , and most of them are female, that is equal to 54.5%, and most of them had educated in elementary school is 33.3 %. The psychological domain does not have a significant difference to the variables of gender, age, marital status, nutritional status, and health status, both in the elderly in the community and in PSLU Jember [9]. According to the psychological domain, men are not too sensitive to emotional control and sensitivity compared to feelings of elderly women, because the nature of women tends to be more patient and able to control emotions and maturity in dealing with problems than men [10]

According to Erickson's theory, the elderly are at a stage that has reached an adjustment to various successes and failures in their lives [11]. In general, older women suffer from acute illness and chronic illness that is higher than men, complaints of chronic pain and acute illness are more experienced by married couples in the elderly compared to elderly who are not married [12].

Increasing age shows a significant decrease in quality of life. Many changes that occur in the body along with increasing age. The increased age can also affect physical activity carried out by the elderly, this is due to changes in body functions such as physical deterioration, decreased musculoskeletal function, non-communicable diseases, stress [13]. The results of the preliminary study on January 25, 2018, only 2 out of 7 elderly carried out physical activities in the form of gymnastics and group sports.

The results of this study conducted by using the paired t-test showed mean SD values of respondents' quality of life in the group before being given physical activity and strength exercise with proprioceptive stimulation was $53.61 \pm 3,952$, and after physical activity and strength exercise with proprioceptive stimulation was equal to $62.00 \pm 3,992$, with a value of p (value) that is $0,000 < 0,05$, it means that there is an increase in quality of life after the intervention of physical activity and strength exercise with proprioceptive stimulation. This is supported by the research conducted by [14] who states that high levels of physical activity and the absence of hypertension were the dominant factors associated with good quality of life health. These results are supported by previous studies which showed that economic status was capable (aPR = 6.38; 95% CI = 2.62-15.53), active participation in sports activities (aPR = 3.97; 95% CI = 1, 83-8,64), and the absence of hypertension (aPR = 3.08; 95% CI = 1.39-6.82) are dominant factors related to good quality psychological health (Dwi, 2017). The same thing is also supported by research who states that by doing physical activity, a person's endofrin beta will increase and can bring pleasure and relieve stress, and can improve the quality of life for elderly people with hypertension [15] [16] [17] [18] [19].

Physical activity is an activity and movement of the body that can emit energy, such as doing household work, exercising, gardening and shopping [20]. Whereas physical exercise is a regular and patterned physical activity that aims to achieve results in the form of fitness and health [20]. [21] recommends the concept of physical activity which aims to improve muscle fitness, bone health, cardiorespiratory health, reduce the risk of infectious diseases, and stress. First, the age of 18-64 years should do physical activity while at least 150 minutes per week or high physical activity at least 45-75 minutes per week. Second, the recommended duration for physical activity is 10-15 minutes.

This study provides Physical Activity and Strength Exercise with Proprioceptive Stimulation for 15 minutes in 3 times a week to the elderly. It was statistically proven to have changes in the quality of life of the elderly, and the elderly who were given this action made the elderly happier and social relations with fellow elderly people interwoven well and the strength and functional ability of the elderly especially the elderly who were less mobile.

V. Conclusion

1. The respondent were characterized in the group based on age, namely : the average age of the respondents is 68.09 ± 3.876 , and most of them were female, which was 54.5%, and most of them were educated in the elementary school which was 33.3%.
2. There is a change in the quality of life in the elderly before being given Physical Activity and Strength Exercise with Proprioceptive Stimulation of $53.61 \pm 3,952$, and after Physical Activity and Strength Exercise with Proprioceptive Stimulation of $62.00 \pm 3,992$, with p value $(0,000) < 0.05$.

VI.Suggestion

The intervention of physical activity and strength exercise with proprioceptive stimulation is an intervention that can be used to improve the quality of life in the elderly, so it is expected to be used by the Tresna Wredha Samarinda Social Home Nirwana Puri to improve the quality of life for the elderly.

The intervention of physical activity and strength exercise with proprioceptive stimulation is an intervention that can be used to improve the quality of life in the elderly, it is expected that the general public can make this activity to improve the quality of life in the elderly.

The next researcher is expected to develop several other variables to improve the quality of life in the elderly

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