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Science Midwifery

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Effect of Balancing Exercises on Decreasing Risk of Fall in the Elderly in Desa Baru Kec. Stone Crusher 2019

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ARTICLEINFO

Keywords:
Balance, Elderly, Decreased risk.

ABSTRACT

Elderly is the last phase in life. Disorders of physical mobility limit the independence of the elderly in fulfilling their daily activities, musculoskeletal disorders are the cause of slowness of movement, and slow response causes the risk of falling in the elderly, so the need for balance exercises. The reduction in the risk of falling can be overcome with balance exercises, namely the berg balance scale. In particular, this study aims to determine the intervention, namely education and balance training given to the elderly against the risk of falling owned by the elderly. This type of research used in this research is to use quantitative, pre-experimental research design with one group pretest - postest design. The sampling technique was purposive sampling, there were 20 elderly people by giving balance training which was measured before and after which was done 2 days a week for 3 weeks using the observation sheet. And analyzed by univariate, bivariate, normality test with Paired sample t-test. The results showed that the majority of the risk of falling was high in the elderly before being given balance training, namely the risk of falling as much as 9 (45.0%), after being given balance training in the elderly, the risk of falling was low as many as 11 people (55.0%), the result of the t test was p = 0.002 (0.005) then Ho is rejected. Ha is accepted, meaning that there is an effect of balance training on reducing the risk of falling with a value of t = 3.621, so there is an effect of balance training on reducing the risk of falling in the elderly as much as 3,621 times. The conclusion is that the effect of balance training on reducing the risk of falling for the elderly in the new village, so that the new village is expected to consider giving balance training to the elderly as an alternative in reducing the risk level of falling in the elderly.

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1. Introduction

Elderly is a period where the productivity of thinking, remembering, capturing and responding to something has decreased periodically [1]. Physiological changes that occur, such as: cardiovascular, neurosensory, musculoskletal and other changes, physiological changes will affect decreased muscle strength, decreased flexibility, decreased elasticity and decreased joint range of motion [2].

Globally, according to the WHO (Whorld Health Organization) the growth rate of the elderly is increasing every day. The prevalence of elderly people between 2015 and 2050 in Indonesia increases from 12% to 22% or around 900 million to 2 billion at the age of over 60 years (WHO, 2015 Things that contribute to the balance disorders of the central nervous system disorders and musculoskeletal system disorders, elderly aged 45-54 years experienced balance disorders by 37.11%, ages 55-64 years by 63.8% and ages 65-74 years 68.7% (Achmanagara, 2012).

The prevalence of falls appears to be increasing with increasing age in the United States, where about 30% of the elderly are over 65 years of age, falling each year. About 1/4 in 50 elderly people require hospital treatment. The incidence of falls in the elderly both in institutions and at home the incidence rate reaches 50% and 40% of them experience recurrent falls [3] - [5].

In Indonesia, the prevalence of injury falls to the population of 8.2% over the age of 55 years reaching 49.4%, aged over 65 years and over 67.1%. The incidence of falls among the elderly who live in the community increases from 25% at the age of 70 years to 35% over the age of 75 years (Stanley & Beare, 2012). At the Medan Johor Health Center, the factors associated with the risk of falling in the elderly show the prevalence of the risk of falling in the elderly. It is found that 46% are high risk, 36% are low risk and 18% are not at risk of falling [3], [6], [7]].

Balance training in the elderly is very useful to empower the elderly to optimize their abilities [1], [8]. To improve dynamic balance or stability walking balance exercises are often used [9], [10]. The brain, muscles, and bones work together to maintain balance and prevent falls [11], [12].

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The results of research conducted by Astriyana (2012) on the effect of balance training on reducing the risk of falling in the elderly showed high risk (6.67%), moderate risk (80,%), low risk (13.33%). means that there is an effect of balance training on reducing the risk of falling in the elderly. The results of research conducted by Nurkuncoro & Suratini (2015) on the effect of balance training on the risk of falling in the elderly at the Budi Luhur Kasongan Yogyakarta unit Budi Luhur Kasongan Bantul elderly have the risk of falling (10%), who no longer experience the risk of falling (90%). This means that there is an effect of balance training on the risk of falling in the elderly.

2. Method

This type of research used in this research is to use quantitative, pre-experimental research design with one group pretest - postest design. The sampling technique is purposive sampling, there are 20 elderly from 103 elderly, by providing balance training which is measured before and after which is done 2 days a week for 3 weeks using the observation sheet. And analyzed by univariate, bivariate, normality test with Paired sample t-test.

3. Results&Analysis

3.1 Results

a) Univariate Analysis

Table 1.
Demographic Data Frequency Distribution

Data Demografi	F	%
Usia		
45-50	6	30.0
51-55	3	15.0
56-60	11	55.0
Total	20	100
Jenis Kelamin		
Laki-laki	9	40.0
Perempuan	11	60.0
Total	20	100
Pendidikan		
SD	11	55.0
SMP	4	20.0
SMA	5	25.0
Total	20	100
Status Pekerjaan		
Bekerja	5	25.0
Tidak Bekerja	15	75.0
Total	20	100

Based on table 1 above, it is found that the majority of respondents are 56-60 with a total of 11 respondents with 55.0% of the total respondents 20, while in Gender, it is found that the majority of women are 11 or 55.0%, while in education the majority are SD with 11 respondents or 33.3 %. And while the majority of job status do not work with a total of 15 respondents or 75.0%.

Bivariate Analysis

Table 2.
The Level of Risk of Fall in the Elderly Before Given a Balance Exercise

Tingkat Resiko Jatuh	F	%	Mean	Standar Desviasi
Resiko jatuh tinggi	9	45.0		
Resiko jatuh sedang	8	40.0	1.70	7.33
Resiko jatuh rendah	3	15.0		
Total	20	100		

Based on table 2, the data shows that the level of risk of falling in the elderly before being given balance training, the majority of the risk of falling is high as many as 9 people (45.0%) with an average (mean) of 1.70.

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Table 3.
The Level of Risk of Falling in the Elderly After Being Given a Balance Exercise

Tingkat Resiko Jatuh	F	%	Mean	Standar Desviasi
Resiko jatuh tinggi	3	15.0		
Resiko jatuh sedang	6	30.0	2.40	7.54
Resiko jatuh rendah	11	55.0		
Total	20	100		

Based on table 3 above, the data shows that the level of risk of falling in the elderly after being given balance training, the majority of the low risk of falling is 11 people (55.0%) with an average (mean) of 2.40%.

Table 4.
The Effect of Balance Exercise on the Decrease in the Risk of Falling in the Elderly

	Mean	Mean Rata-rata	CI 95% Lower	CI 95% Upper	*t*	*p*
Pre	1.70	0,7	1.106	295	3.621	0,002
Post	2.40					

Based on table 4 above, the average value (mean) before and after balance training to reduce the risk of falling is 0.7 with a 95% CI, and there is a difference between Lower 1.106 and Upper 295 with p value = 0.002 (<0.005). Ho is rejected. Ha is accepted, meaning that there is an effect of balance training on reducing the risk of falling in the elderly in Baru Village, Pancur Batu District, Deli Serdang Regency with a value of t = 3,621, therefore there is an effect of balance training on reducing the risk of falling in the elderly as much as 3,621 times.

3.2. Discussion

In this study, there were 9 male respondents and while the majority of women were 11 respondents, the prevalence of falling in women was higher than that of men. In table 4.2 before being given a balance exercise, the majority of respondents had a fall risk, of the 20 respondents there were 3 who had a low risk of falling, 8 had a moderate risk of falling, and 9 had a high risk of falling, this shows that the high risk of falling for the elderly before doing balance training in the village Baru Kec. Stone Crusher.

Based on the assumptions of researchers, the degenerative process occurs because the aging process occurs, especially in the musculoskeletal system, where a decrease in muscle strength if not trained can cause a high risk of falling in the elderly.

Before being given balance training, there were 9 elderly people with a high risk of falling. After being given balance training, the risk of falling was high to 3 elderly people, the risk of falling was moderate from 8 to 6, the risk of falling was low from 3 to 11. This is one of the effects of exercise. balance in which joints and areas of the body that are rarely moved begin to exercise and are not stiff which can lead to muscle weakness.

This is in line with the theory put forward by Mehta et al, 2015 that disturbance of body balance is a problem that often occurs in the elderly, decreased function and muscle strength will result in a decrease in the ability to maintain postural balance or body balance in the elderly, if this balance disorder is not controlled it will increases the risk of falling in the elderly.

Based on related researchers (Rohayani & Zaidah, 2016). With the title the difference between the effect of balance exercise and elderly exercise on improving the balance of the elderly, it has an average value of 24.32, before being given balance training, after being given balance training the average value is 3.42. The results of the average balance exercise are better in improving balance than elderly exercise.

Based on the assumption of researchers that the body must be trained, especially muscles, the strength of a muscle that is produced can fight resistance with maximum effort to remain strong and swift in maintaining the balance of the body to stay healthy in old days. Muscle strength is an important thing for everyone, because muscle strength is the carrying capacity of movement in completing daily activities.

Based on the results of research on the pretest and posttest which have a significant difference, when before being given balance training to the elderly, the majority of the elderly have a high risk of falling, dominating as many as 9 respondents, and when after being given balance exercises to the elderly, the majority of respondents have a low risk of falling, namely 11 , this condition can indicate a change or decrease in the number of elderly people who have a high risk of falling, so it can be explained that balance training in the elderly has or affects the condition of the elderly who have a high risk of falling.

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The t value is positive, therefore the post-action (after) balance exercise is lower than (pre) before the balance exercise is carried out, and vice versa if the t-count is negative, it means that the post-action is higher than pre, the difference in p = 0.002 (< 0.005) then Ho is rejected Ha is accepted, meaning that there is an effect of balance training on reducing the risk of falling in the elderly in Baru Village, Pancur Batu District, Deli Serdang Regency with a value of t = 3,621, therefore there is an effect of balance training on reducing the risk of falling in the elderly as much as 3,621 time.

This is in line with the concept put forward by Dharmojo, 2015. That the decrease in body muscle function and strength is due to lack of movement or activities carried out by the elderly. Most of the risk of falls occurs when the elderly perform daily activities such as walking, climbing stairs, and changing positions. Fatigue also causes the risk of falling for the elderly, falls also occur in the elderly who rarely move (immobile) when they want to move places or take something without help.

This result is supported by research conducted by Sutisna (2016). With the title the effect of balance training on reducing the risk of falling in the elderly, it has an average value of 46.3, before being given balance training, after being given balance training the average value is 18.1. The results of the average reduction in the risk level of falling before and after the balance exercise was given showed a significant reduction value of 28.13%. The paried sample T test results showed p vaule <0.05 (p = 0.001).

According to the assumptions of researchers, the risk of falling is low, the risk of falling is moderate, the risk of falling is high, it is influenced by how much or at least a person does daily activities or does balance exercises in order to maintain body balance and reduce the risk of falling in the elderly.

4. Conclusions

From the results of research on the effect of balance training on reducing the risk of falling in the elderly in Desa Baru Kec. Pancur Batu 2019 The level of risk of falling in the elderly before being given balance training, data was obtained that the majority of respondents experienced a high level of risk of falling, the level of risk of falling in the elderly after being given balance training, data was obtained that the majority of respondents experienced a low level of risk of falling and the effect of providing balance training can reduce the level of risk of falling in the elderly. The results of the paired test show that there is an effect of balance training on the level of risk of falling in the elderly in Baru village, kec. Pancur Batu with a p vaule value of 0.02 (p <0.05).

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