

EFFECT OF BALANCE EXERCISE BALANCE AND MUSCLE STRENGTH AGAINST ELDERLY WITH RISK OF FALLING IN PUSKESMAS SUBDISTRICT KOLANG CENTRAL TAPANULI

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Abstract

Total growth of elderly population in the world is increasing, the results of a study published by the United Nations Population Fund - United revealing the number of elderly in the world can reach the amount of 1 billion people within the next 10 years. Predictions for 2020 are approximately 28.8 million people or about 11:34% of the total population (Sutriyanto, 2012). Prasansuk, (2004) also concluded that one advantage or influence balance exercise is to improve postural balance the elderly. Aristo research results Farabi (2007) conducted at Hospital Dr. Kariadi that is not found patient falls with TUG test time of less than 10 seconds. A significant association between TUG test time with the frequency of falls ($p < 0.05$). This research is a quantitative research design is quasi-experimental design with two-group pretest-posttest control group design. Statistical test in this research use test Independent t test to see differences in balance and muscle strength before and after the intervention in the control group and the intervention group. Paired samples test to test the level of significance of the effect of exercise on the balance balance and muscle strength in the elderly with fall risk sub-district Puskesmas Kolang Central Tapanuli and eta squared values to assess the effect size. squared = 0.51), with $p = 0.003$. This indicates a balance effect of exercise on the balance. The decline of the musculoskeletal system of the elderly have a very big role to tetertjadinya falls on or it can be said that the factors decrease musculoskeletal system is purely belongs elderly who have an influence on postural balance. Terjdadi muscle wasting in the elderly causes decreased muscle strength, especially the muscles of the lower extremities. Eksterimitas muscle weakness below can cause postural balance disorders. This may result in inaction move, in short steps, decrease the rhythm, the foot can not tread firmly and tend to look shaky, difficult or delayed mengantisipasi outages like slipping and tripping. Some of these indicators can increase the risk of falls in the elderly (Darmojo 2011).

Background

Total growth of elderly population in the world is increasing, the results of a study published by the United Nations Population Fund - United revealing the number of elderly in the world can reach the amount of 1 billion people within the next 10 years. Predictions for 2020 are approximately 28.8 million people or about 11:34% of the total population (Sutriyanto, 2012).

In the elderly there is a change in body composition in the form of drop in fatfree mass or increased fat mass. In the process of aging the percentage of muscle mass decreases, resulting in decreased muscle strength by 30-40%. Muscle strength muscle strength in the elderly is also associated with problems of balance so that the elderly at risk to fall over (Herman, et al, 2011).

Fall can lead to various kinds of injuries, psychological fisikdan damage. Physical damage is the most feared of the events of the

fall is a hip fracture. Another type of fracture that often occur from falls are fractures of the wrist, arm and pelvis as well as soft tissue damage. The psychological impact is that although physical injury does occur, shock after falling and fear of falling. The Benefits Research Helping the elderly in improving knowledge for improving postural balance so as to avoid instances of falling.

RESEARCH METHODOLOGY

3.1 Research Design

This research is a quantitative research design is quasi-experimental design with two-group pretest-posttest control group design. In this study experimental treatments for the provision of balance exercises to prevent the risk of falls in the elderly.

3.2 Location and Time Research

This research was conducted in the region of Central Tapanuli Kolang health centers. The

timing of this study is planned to start in June-September, 2016.

3.3 Population and Sample

The population in this study were all elderly in Puskesmas Kolang Central Tapanuli as many as 240 people composed of 78 men and 163 women. Samples that meet the inclusion and exclusion criteria are as many as 31 people were divided into two groups: 16 the treatment group and 15 control group, where there are two people in the treatment group drop out because they do not follow the practice of the complete (<9x meetings) and in the control group also No two people drop out because of actively participating in gymnastics lansai, so the number of remaining sample as many as 27 people, 14 intervention and 13 control group.

3.4 Data Collection Methods

Screening and data collection on the research to be conducted using questionnaires / questionnaire and measures that will be used to measure the risk of falling out of the subject using the Fall Risk for Older People - Community setting (FROP-Com), which has been modified and the number of samples in screening 40 respondents. This instrument was originally used for the elderly in the hospital (the Fall Risk for Older People hospitalized - the FRHOP) (Rahayu, 2013).

3.5 Data Analysis Techniques

Statistical test in this research use test Independent t test to see differences in balance and muscle strength before and after the intervention in the control group and the intervention group. Paired samples test to test the level of significance of the effect of exercise on the balance balance and muscle strength in the elderly with fall risk sub-district Puskesmas Kolang Central Tapanuli and eta squared values to assess the effect size.

3.6 Ethical Considerations

Research carried out with an emphasis on ethical issues that refer to The American Association for Public Opinion Research (AAPOR) adapted from Rachman, (2009) which includes:
Approval Sheet Being Respondents (Informed Consent), anonimity (Untitled), Confidentiality (Confidentiality)

RESEARCH RESULT

Table 4.1 Analysis Test Results Mean Paired Samples Test Changes in muscle strength On Intervention Group and Control Group in District Kolang Central Tapanuli

Observatio ns Muscle Strength	<u>Intervention</u> <u>the Mean</u>	p	Eta square	<u>Kontrol</u> <u>Rerata</u> <u>(SD)</u>	p
Pre	26.643(5.440)	0.000	0.63	29.31(9.3 26)	0.467
Post	32.179 (8.898)			28.54(10. 738)	
N	14			13	

Source: Primary Data: 2013 p: probability paired with dample test.

Table 4.1 shows that after a given intervention obtain meaningful results where the value of $p = 0.000 < 0.05$ thus H_a received and the results obtained 0.63 square eta (strong effect). While the control group showed no significant where the value of $p = 0.467 > 0.05$ thus H_a , it indicates that there is a balance the influence of exercise on muscle strength.

DISCUSSION

Effect of exercise balance to the balance with the risk of falling Results of t-test was no difference before and after the change in the balance given the balance exercise regularly in the intervention group there is an increase in the average balance of total -9.429 (eta squared = 0.51), with $p = 0.003$. This indicates a balance effect of exercise on the balance. The decline of the musculoskeletal system of the elderly have a very big role to teterjadinya falls on or it can be said that the factors decrease musculoskeletal system is purely belongs elderly who have an influence on postural balance. Terjdadi muscle wasting in the elderly causes decreased muscle strength, especially the muscles of the lower extremities. Eksterimitas muscle weakness below can cause postural balance disorders. This may result in inaction move, in short steps, decrease the rhythm, the foot can not tread firmly and tend to look shaky, difficult or delayed mengantispasi outages like slipping and tripping. Some of these indicators can increase the risk of falls in the elderly (Darmojo 2011). That must be considered is the monitoring and maintenance of optimal tehadap elderly who naturally already decreasing musculoskeletal system

(Hadhisuyatmana, 2012). This is in accordance with the opinion of the King (2009) that strength training will increase the balance and delay the speed of contraction that leads to the improvement of the balance after strength training. This is in accordance with the opinion expressed by Kaesler (cited in Kloos, 2007) that the balance exercise is a series of movements designed to improve postural balance, both for the balance of static and dynamic balance. At the time of this movement there is a series of processes in the brain, called the central compensation, the brain will attempt to adjust their signal changes as a result of a series of movements to adapt. This study was supported by research conducted Rahayu (2013) which aims to observe the phenomenon of giving balance exercise in improving postural balance of older results showed that 5 respondents elderly women after a given balance exercise exhibit a phenomenon that balance posturalnya experienced an average increase in value berg 32 before being given a balance scale balance exercise to 47.8 after the given balance exercise. From research conducted Dharmika (2007) that exercises improve balance the body's postural stability in patients with lower limb diabetic polyneuropathy.

CONCLUSIONS

1. An overview of the balance of the elderly balance in the intervention group showed more than half of respondents (71.4%) were in the medium risk category falls. In the control group half of respondents (53.8%) are in the low risk category falls.
2. An elderly balance after exercise balance
3. Overview of elderly muscle power before almost all respondents (92.3%) are in the 20-38 kg category.
4. Overview of elderly muscle strength after exercise balance in the intervention group showed all respondents are in the categories of muscle strength scores increased less but that is more than half the respondents (64.3%) are in kategori 22-32. In the control group also showed respondents in the category.
5. There is a balance exercise influence on the balance ($p = 0.003$), which shows the strong effect ($\eta^2 = 0.51$) less muscle strength almost all respondents (92.3%) are in the 20-38 kg category.

6. There is a balance influence of exercise on muscle strength ($p = 0.000$)
7. showed strong effect ($\eta^2 = 0.63$).
8. There is a difference of balance and muscle strength between the intervention group and the control group.

SUGGESTIONS

1. For Elderly
We recommend that the elderly do balance exercise at least three times a week so that the body of the elderly is stable and not easily fall.
2. For Nurses
PHC Kolang provide balance policies do exercise regularly in order to avoid instances of elderly falls.
3. For Educational Institutions
Making balance exercise as a reference for the development of nursing science gerontik.
4. For Further Research
Future studies are recommended to increase the duration of exercise and balance are advised to increase research time for the results obtained more leverage and should be in agreement if there are respondents who exercise outside contracted time to be controlled.

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