



The Effect Of Elderly Gym With Brain Gym To Improvement Of Cognitives In Elderly At The Simalingkar Puskesmas In 2020

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Abstract - Elderly is characterized by a biological decline experienced it can be seen by physical deterioration, one of which is cognitive decline. Cognitive function is related to physical activity that affects its structure and function. Every physical movement that is made by provides an impression to the brain. Elderly gym and brain gym doing regularly have a positive impact on improving organs and brain function. The research objective was to determine the effect of elderly gym with brain gym to improvement of cognitives in elderly at the simalingkar puskesmas in 2020. This kinds of research is a quasi-experimental research and the design used is a pre-test post-test research design with a control group design. The research subjects consisted of 15 elderly in the control group and 15 elderly in the intervention group. The instrument measurement used to assess cognitive function is the Mini Mental State Examination. The bivariate analysis used was the Wilcoxon test and the Mann-witney test. The effect of elderly gym on cognitive improvement with the Wilcoxon test resulted in the value of $p = 0.000$, the effect of brain gym in the intervention group obtained results for a value of $p = 0.000$. Elderly gym and brain gym have an impact on cognitive enhancement. As well as the difference in the effect of elderly gym and brain gym on cognitive enhancement in the elderly with the Mann Witney test, the result is that the value of $p = 0.948$. H_0 is accepted and H_a is rejected so that it can be concluded that it has the same effect of elderly gym and brain gym on cognitive enhancement in the elderly at Simalingkar Health Center.

Keywords: Elderly Gym, Brain Gym, Cognitive

I. INTRODUCTION

The aging process of the population has an impact on various aspects of life, be it social, economic, and especially in health. The function of body organs will decrease both due to natural factors and because disease increasing age. Elderly is a process by increasing individual age which is characterized by decreased cognitive function.

Old age is characterized by experiencing a biological decline, such as physical deterioration, such as sagging skin, wrinkles, reduced vision, fatigue, slow movement, and cognitive decline such as forgetfulness, deterioration of orientation to space, and not easy to accept new ideas / things.

Cognitive function is related to physical activity, every physical movement made provides an impression to the brain, because the brain has properties plasticity where if the stimulus continues to be given its function will be stay awake and vice versa if the stimulation is less orno, the plasticity process does not occur and the brain will

experienced decline in structure and function, therefore the decline in cognitive function can be slowed down and can even be maintained properly by continuing to train the brain (modules). Gymnastic for the elderly and brain gym that is done regularly has a positive impact on improving body organs and increasing cognitive power.

Cognitive function is influenced by changes in the structure and function of brain organs, decreased function of the musculoskeletal system and reproductive system. Atrophy that occurs in the brain due to aging causes a decrease in inter-nerve connections, shrinks the sensory nerves so that response time and reaction time slows down, memory deficits, hearing, sight, smell, and tactile problems. Decreased hearing power in the inner ear, especially in high notes, unclear voices, difficulty understanding words, 50% occurred in people over the age of 65.

A preliminary study survey conducted on 10 elderly people, 8 of them stated that they experienced cognitive decline, one of which was dementia. Based on the background, the authors are interested in knowing the effect of elderly gym and brain gym on the cognitive improvement in public health centers for maximum years.

II. METHODOLOGY

This research is a quasi experimental study and the design used is a pre-test post-test research design with control group design, which is a research design to analyze the effect of elderly exercise with brain gym on the elderly on cognitive improvement between the intervention group and the control group².

The research subjects in this study were the elderly with a total of 30 babies, namely in the control group 15 elderly people will be given elderly gym while for the intervention group 15 elderly are given brain gym intervention, both groups were given intervention every week 2 times for 6 months. The influence of elderly exercise in the control group and the effect of brain gym on the intervention group will be analyzed by the Wilcoxon test. The difference in the effect of elderly gym in the elderly with brain gym on cognitive improvement was analyzed by using the Mann Witney test.

Tabel 4.1
Table of Cognitive Distribution in Elderly Before and After Elderly Gym

Cognitive Criteria	Pre-test		Post-test	
	Frequency	%	Frequency	%
Normal	7	46.7	13	86.7
Cognitive Probable	7	46.7	2	13.3
Cognitive disruption	1	6.7		
Definite Cognitive disruption				

	Value	Value
Mean	1.60	1.13
Median	2.00	1.00
SD	0.63	0.35

Table 4.1 The results showed that elderly exercise in improving cognitive before and after doing elderly exercise in the control group majority experienced normal cognitive 7 (46.7%) as well as probable cognitive impairment as much as 7 (46.7%), while the minority experienced definite cognitive impairment as much as 1 (6.7%).

Tabel 4.2

Table of Cognitive Distribution in Elderly Before and After Brain Gym

Cognitive Criteria	Pre-test		Post-test	
	Frequency	%	Frequency	%
Normal Cognitive	4	26.7	12	80.0
Probable Cognitive disruption	8	53.3	3	20.0
Definite Cognitive disruption	3	20.0		
	Value		Value	
Mean	1.93		1.20	
Median	2.00		1.00	
SD	0.70		0.41	

Table 4.2 The results showed that the Brain gym in improving cognitive before and after doing the Brain gym in the intervention group, the majority experienced probable cognitive impairment as much as 8 (53.3%), while the minority experienced definite cognitive impairment as much as 3 (20.0%). the intervention group will be analyzed by the Wilcoxon test. The difference in the effect of elderly gym in the elderly with brain gym on cognitive improvement was analyzed by using the Mann Withney test.

III. RESULT

This research is about the effect of elderly gym with brain gym on the elderly on cognitive improvement at the Simalingkar Health Center in 2020. This research has been conducted from April to September 2020 for exactly 6 months. This research is in the form of data before (pre) and after (post) elderly exercise as well as data before (pre) and after (post) brain gym.

The assessment of cognitive function in elderly gymnastics is categorized into normal cognitive function, probable cognitive impairment, and definite cognitive impairment. The full research results are presented in the table as follows:

Table 4.3. The Effect Elderly Gym to Improve Cognitive in Elderly Result of Wilcoxon Test

Criteria	Value	Asymp.Sig	Conclusion
Pre-Post Elderly Gym	4.812	0.000	HO Rejected

Table 4.3 the results of the study show that the effect of Elderly Gymnastics in improving cognitive in the elderly and using the Wilcoxon test, the pre-post exercise results for the elderly in the Asimp column were carried out. Sig is equal to 0.000, here it is obtained a probability value below 0.05 (0.000 < 0.05), it can be concluded that there is a difference before (pre) and after (post) implementing elderly exercise in cognitive enhancement.

4.4 The Effect Brain Gym to Improve Cognitive in Elderly Result of Wilcoxon Test

Criteria	Value	Asymp.Sig	Conclusion
Pre-Post Elderly Gym	4.812	0.000	HO Rejected

Table 4.4 of the results of the study shows that the effect of brain gym on improving cognitive in the elderly and the Wilcoxon test was carried out, the pre-post exercise results for the elderly in the Asimp column. Sig is equal to 0.000 here, the probability value is below 0.05 (0.000 < 0.05) so it can be concluded that there is a difference between before (pre) and after (post) doing a brain gym in cognitive enhancement. The difference in the effect of exercise in the elderly and brain gym on cognitive enhancement in the elderly can be solved by the Mann-Witney test further in the following table.

4.5 The Difference Effect of Giving Elderly with Brain Gym to Improving Cognitive in Elderly with Mann-Witney Test

Criteria	Value	Asymp.Sig	Conclusion
Gymnastics for the elderly – Brain Gym	4.802	0.948	HO be accepted

Table 4.5 the results of the study show that the elderly exercise with a brain gym is 0.948, so the probability value is above 0.05 (0.948 > 0.05) so that Ho is accepted, the elderly exercise group has similarities with the brain gym group in improving cognitive function.

IV. DISCUSSION

4.1 Cognitive Distribution in the Elderly Before and After Gymnastics for the Elderly

The results of the cognitive distribution research in the elderly before and after exercise in the control group showed that the majority of cognitive improvements experienced normal cognitive and probable cognitive impairment.

4.2 Distribution of Cognitive Distribution in the Elderly Before and After Brain Gym

The results of the cognitive distribution research in the elderly before and after doing Brain gym in the intervention group showed that the majority experienced probable cognitive impairment.

4.3 The Effect of Gymnastics in the Elderly on Cognitive Improvement Before and After Being Given Treatment to The Elderly

The effect of elderly gym in cognitive improvement before and after The control group that was given elderly exercise showed the results of the value of P = 0.000, meaning p < 0.05, indicating that there was an effect of elderly gym in cognitive improvement.

4.4 The Effect of Brain Gym in Improving Before and After Giving Treatment to The Elderly

The results of the study in the intervention group that were given the brain gym treatment showed the value of P = 0.000, meaning that p < 0.05, stated that there was an effect of the brain gym on cognitive improvement.

Brain gym leads to improved coordination body function, motor, balance, and power of thought or memory someone. Decrease in bodily and cognitive functions as a result aging can be minimized with this therapy.

Based on this research, it is in line with Lutfiana's (2017) research on the elderly, it was found that there was an effect of brain gym on the cognitive function of the elderly. This happens because brain exercise can stimulate all parts of the brain to work so that it can improve cognitive abilities. Brain Gym Movement is a series of simple, fun

movements used to combine all parts of the brain that function to increase learning abilities, build self-esteem and togetherness. According to a brain gym expert from the United States Educational Kinesiology institute Paul E. Denission, Ph.D, brain exercise can facilitate learning activities and adaptation to tension and can optimize brain development and potential, brain exercise can increase blood flow and oxygen to the brain and stimulate both hemispheres into work.

4.5 Differences in the Effect of Gymnastics in the Elderly with Brain Gym on Cognitive Improvement in the Elderly

The results of this study indicate that there is a difference in the effect of gymnastic in the elderly with brain gym on cognitive

enhancement in the elderly at Simalingkar Health Center. These results get the value of $P = 0.05$, meaning $p > 0.05$, so H_0 is accepted, that the elderly exercise group has similarities with the brain gym group in cognitive enhancement in the elderly.

This has similarities with research conducted by Setyawan (2015) which states that elderly exercise and brain gym have similarities in improving cognitive function in the elderly.

V. CONCLUSION

The effect of elderly exercise in cognitive improvement before and after being given elderly gym in the control group with the result of $P = 0.000$, meaning $p < 0.05$, so it can be concluded that there is an effect of elderly gymnastics on cognitive improvement.

The effect of the brain gym on cognitive enhancement before and after being given a brain gym in the intervention group with a value of $P = 0.000$ meaning $p < 0.05$, stating that there is an effect of the brain gym on cognitive improvement.

The results of this study have the same effect of exercise in the elderly with brain gym on cognitive enhancement in the elderly at Simalingkar Health Center. all p values > 0.05 , so that H_0 is accepted and H_a is rejected.

VI. AUTHOR'S CONTRIBUTIONS

1. It is hoped that the elderly are expected to be more active in participating in elderly gym and brain gym which is held in their area so that the problem of cognitive decline can be resolved by the elderly.

2. It is hoped that health workers should provide more counseling and motivate the elderly in increasing the use of elderly gym with a regular and organized brain gym so as to improve cognitive function.

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