THE EFFECT OF BRAIN GYM ON COGNITIVE FUNCTION OF THE ELDERLY IN SURABAYA

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ABSTRACT

The problem happened at the elderly people are cognitive impairment. Those could be solved by "Brain Gym." This researched is to know-how "Brain Gym" will be effective for the elderly. This researched using Quasi-Experiments with non equivalent control group approach. Simple random sampling is used to the make the accurate elderly population. Mini Mental State Examination (MMSE) is used to collect the population sampling. The 66 people divided into 2 groups: 33 people of control groups, 33 people of of intervention group. Those data were been Analyzed by Wilcoxon signed rank test and the Mann Whitney U-test. Wilcoxon is use to Analyzed MMSE both of before-after-control groups and intervention group. Mann Whitney U-test is use to Analyzed MMSE post-intervention, intervention group and control groups. The result of Wilcoxon test of MMSE intervention group are P = 0.046 <α = 0.05, control group P = 0.480> α = 0.05. Mann Whitney U-test are Z -3591. Asymp.Sig (2-tailed) 0.000> 0.05. The conclusion: the intervention group with Brain Gym acre effect to repair the cognitive function than the control groups without Brain Gym.The writer recommended to solve the problem of elderly's cognitive impairment with Brain Gym Methode, three times a week.
Keywords: Brain Gym, Cognitive, Elderly

A.   Introduction

*Brain gym*is one kind of brain exercise can stimulate the individual's cognitive function. The older the more experienced a progressive decline in cognitive function including that effecting the lives and activities of daily living (Nugroho, 2014). This brings the impact of concern for the family and the people around him.

According to the World Health Organization (WHO) recorded a decline in cognitive function of elderly an estimated 121 million people of which 5.8% of men and 9.5% of women (Djojosugito ahmad 2002 in Pipit, 2011). And in Indonesia prevalensia decline of cognitive function of elderly vulnerable age 65 is 5% of the elderly population and increased to 20% in the elderly aged 85 years and over (Amirullah 2011 in Guslinda 2013). Also according to the chairman of the Association of Indonesian Psikogeriatri, Martina Wiwik's easy to forget to mention common in the elderly and 30% said memory disorders occur at the age of 50-59 years, 35-39% occurred at the age of 65 years and 85% were aged 80 years (Provincial, 2013). The research results Pipit, no 53-year media journal XVIII in February 2011, data obtained before action Brain Gym was found that out of 20 respondents in the treatment and control group, the treatment group experienced an increase in cognitive function 7 respondents (70%) and the control group of respondents (0%), after doing Brain Gym showed that 20 respondents who have received treatment interventions have increased seven respondents (70%) and a third of respondents (30%) konstand, whereas in the control group 10 respondents (100%) konstand. And the data obtained in December 2016 is currently in the Regional field Griya Elderly St. Yosef Surabaya with the number of elderly people today to 130 people and 60 to 80 year age range 73 or

54% in the case of diabetes mellitus, stroke and cognitive impairment, of 73 elderly, 66 people acquired cognitive impairment (orientation, registration, attention,

Increasing age also decreased the work function of the brain will affect the process of information with the loss of orientation, registration, attention, memory, language, making the elderly daily activities become interrupted. If not treated immediately will cause a decline in cognitive function of elderly gradually and affect daily activities (Activities of Daily Living ADL) can decrease the quality of life of the elderly and the independence of the elderly do daily activities (Nugroho, 2014).

To reduce cognitive decline Elderly is to do brain gym. Brain Gym has a beneficial effect on cognitive function and the elderly combines movement of the feet, hands in the optimization of left and right brain functions so as to improve cognitive function that were damaged or decrease. He is also one of the efforts to prevent the disruption of cognitive function. Brain Gym effect on cognitive function are more frequent and the longer someone doing Brain Gym, it can reduce the risk of cognitive decline. Based on the survey and the problems outlined above, researchers are interested in taking the title of "Influence Brain Gym on cognitive function of elderly in Surabaya.

B. Formulation of the problem

Based on the above description of the background research problems can be formulated as follows. "Is the Brain Gym influence on cognitive function in the elderly Surabaya?".

C. Research purposes

Brain Gym analyze the effect on cognitive function of elderly in Surabaya.

D. Research methodology

Design for Effects of Brain Gym research on cognitive function in the elderly Surabaya is to use a quasi-experimental research design (Quasi Exsperimen) method Non equivalent time sample design.

To determine the population that all elderly aged 60-80 years who began to experience cognitive decline in Surabaya as many as 73 people. The sampling technique used is Probability sampling technique sampling Simplerandom. The samples used are from populsai were randomly selected and divided into two groups at the Griya Elderly St. Yosef Surabaya as many as 33 elderly treatment group and 33 elderly control group. Data collection techniques in pre intervention by measuring the ability of two groups of elderly people with MMSE, the interventions are elderly as the treatment group performed Brain Gymatau brain exercise, while the elderly as a control group did not do Brain Gymatau brain exercise, the post intervention 2 elderly group to evaluate the ability of elderly by using the MMSE. Further data processing performed on data obtained Editing, Coding, Processing and Cleaning. Statistical tests performed by the data analysis: Wilcoxon-test Mann Whitney U test.

In this study, which is the independent variable is the provision of Brain Gym elderly, while its dependent variable is the cognitive function of the elderly.

Data normality test is used to determine the distribution of the data in variables that will be used in research that is by using the Wilcoxon-test Mann Whitney U test when tested with the provisions of significant $p > \alpha = 0.05$ then the normal distribution of data.

E. Results and Discussion
Custom Data Pre and Post Group Intervention

Table 5:29 Respondents characteristics prior to Brain Gym in Surabaya.

Based on Table 5:29 Data obtained pre Brain Gym score of 17-23 (probable cognitive impairment) amounted to 4 elderly (12.1%), score 24-30 (Normal) amounted to 29 elderly (87.9%).

Table 5:30 Respondents Characteristics after Brain gymdi Surabaya.

Score	frequency	Percent
24-30 (Normal)	33	100
Total	33	100

Based on Table 5:30 Data obtained after Brain Gym score of 24-30 (Normal) of 33 elderly people (100%).

Pre and Post Custom Data Control Group

Table 5:31 Characteristic Brain control group before gymdi Surabaya.

Score	frequency	Percent
0-16 (Definitive cognitive impairment)	5	15.2
17-23 (Probable Cognitive disorders) 24-30 (Normal)	9	27.3
	19	57.6
Total	33	100.0

Based on Table 5:31 Data obtained pre Brain Gym score 0-16 (definiti cognitive impairment) totaled 5 seniors (15.2%), score 17-23 (probable cognitive impairment) amounted to 9 elderly (27.3%), score 24-30 (Normal) totaled 19 elderly (57.6%).

Score	frequency	Percent
17-23 (Probable Cognitive disorders)	4	12.1
24-30 (Normal)	29	87.9
Total	33	100.0

Tabel.5.32 characteristics of the control group after Brain Gym in Surabaya

Score	frequency	Percent
0-16 (Definitive cognitive impairment)	5	18.2
17-23 (Probable Cognitive disorders)		
24-30 (Normal)	3	15.2
	25	66.7
Total	33	100.0

Based on Table 5:32 post data obtained Brain Gym score 0-16 (definiti cognitive impairment) totaled 5 seniors (18.2%), score 17-23 (probable cognitive impairment) totaled 3 elderly (15.2%), score 24-30 (Normal) totaled 22 elderly (66.7%).

Brain Gym influence on cognitive function of elderly

Effects of Brain Gym Tabel.5.33 on cognitive function of elderly in Surabaya

Data	Control		Intervention	
	Pre (%)	Post (%)	Pre (%)	Post (%)
Cognitive disorders Defintf (0-16)	5 (15.2)	5 (18.2)	-	-
Probable Ggg Kognf (17-23)	9 (27.3)	3 (15.2)	4 (12.1)	-
Normal (24-30)	19 (57.6)	25 (66.7)	29 (87.9)	33 (100)
Total	33	33	33	33

n = 66 (the control group and the intervention group = 33 = 33) Mann Whitney U-Test = 0.000

Based on Table 5:33 Brain Gym influence data obtained control group score 0-16 (definitife cognitive impairment) pre 5 elderly (15.2) and post 5 elderly (15.2), a score of 17-23 (probable cognitive impairment) pre 9 elderly (27.3) and post three elderly (15.2) and a score of 24-30 (Normal) pre 19 elderly (57.6) and post 25 elderly (66.7) and the intervention group score of 17-23 (probable cognitive impairment) 4 pre elderly (12.1) and a score of 24-30 (Normal) pre 29 elderly (87.9) and post 33 elderly (100.0).

Tabulate the data analysis and data processing withneyU rated Mann-Test, Value Z -3591 with Asymp. Sig (2-tailed) 0.000atau smaller than 0.05 then H1 accepted, which means there is the influence of the Brain Gym against dibandingdengan Intervention group Control group

On the 3rd respondent control group cognitive impairment this case we can know about the stages of cognitive decline. Cognitive function includes the process of learning, perception, comprehension, attention, causing the reaction and behavior of the elderly becomes increasingly slow. It is that in accordance with the passage of age, the elderly experience cognitive decline and willingness decreased as well. Willingness decreased in the elderly is influenced by previous experience where elderly men more difficult to accept old age than elderly women. Due to the previous experience of elderly men doing more physical activity when compared to women.

In the intervention group megalami 4 respondents cognitive function increase in this case we can know the benefits of brain exercise. Brain exercises can improve memory, increase the sharpness of hearing, vision, reduce reading errors, memory and the ability of the comprehensive in the group with a language disorder so as to improve the response to visual stimuli. This happens because there is a stimulus, by looking at the movement of the body to improve blood circulation in the body to the brain. One with the Brain Gym makes the elderly motivated, and increased cognitive, stimulated blood circulation to the brain which makes cognitive elderly increases.

The ability of cognitive function can be influenced by: age, gender, education and socioeconomic status, psychosocial, and environmental factors work factor. Gymnastics brain is a series of

simple movements that can balance all the parts of the brain or simple body movement-based exercises that can be done anywhere and anytime. The benefits of brain exercise, among others: Allows to learn and work without stress, does not require materials or special place, can be used in all situations including at work, increased confidence, show results immediately, can be explained in neurophysiology, is very effective in pengananann someone who is having barriers balance, a person's independence in terms of learning, activate all the potential and skills of a person and one of the most well studied technique by the National Learning Foundation USA. This can be seen in the intervention group and the control group there were differences in cognitive function in the elderly.

Brain Gym influence on cognitive function in the elderly Surabaya based on test results obtained statistical p value = 0.000atau smaller than α (0:05), meaning that statistically H0 is rejected. So there is a difference dapatdisimpulkan Brain Gym influence on group interventions with control group.

F.   Conclusion

Based on research conducted with respondents 66 people on September 16 to October 9, 2015 on the Effects of Brain Gym on cognitive function of elderly in Surabaya. It can be deduced as follows: in the control group before and after Brain Gym MMSE results on average no change in cognitive function or settle on a value that is increased and decreased cognitive function decline in cognitive function

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