

DEVELOPMENT GYMNASTICS PREVENT SENILE UP BRAIN'S GAME TO IMPROVE HEALTH ELDERLY

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Abstract

One these success indicators of nasioanal development is the increasing life expectancy of the population. With the increasing life expectancy of the population, causing the number of elderly people continues to increase from year to year. The prediction results showed that the percentage of the elderly population will reach 9.77 percent of the total population in 2010 and to 11.34 percent in 2020. The problems that arise in the elderly one form of cognitive impairment or dementia. Dementia is a clinical syndrome that includes loss of intellectual function and memory so serious that it causes dysfunction of everyday life.

The purpose of this research is to develop a model form of gymnastics prevent senile Up Brain's Games and analyze their effects on memory enhancement elderly.

Research methods such as experimental dementia by comparing the control group with the given group exercises. The entire population of elderly who stay in Panti Wreda Dharma Bhakti Surakarta by taking a random sample of 30 in each group. The research instrument using the Short Portable Mental Status Questionnaire (SPMSQ) to measure dementia elderly and audiovisual media gymnastics Up Brain's Games. Gymnastic exercise performed three times a week for a month. Analysis of the data was tested by t test.

The results, the available of a model gymnastics Up Brain's Game with 5 core movements and there is a positive effect of exercise training on elderly memory loss becomes better with $p=0.000$.

Keywords: Gymnastics prevent dementia, Up Brain's Game, Senility, Elderly

Introduction

Indonesia ministry of Health limit the classification of old age as Period virilitas (towards the elderly): 45-55 years, Period Pre senium (elderly): 55-64 years, Senium Period: > 65 years.

The aging process of the population would have an impact on various aspects of life, at social, economic, and especially health. The impact, in the health the elderly decline of body functions either due to natural factors as well as disease. Some terms in the Java language is known in terms of a decrease in the function of the elderly body is 6 B, ie: Blawur (eyes do not clearly see), deaf (ears can not hear clearly, Chatty (nag), Besar (not able to hold a bowel movement or waste small water), Buyutan (tremors occur / rhythmic movement in particular locomotor hand), Confused (senile). Just as in the Qur'an Surah Yasin (36) verse 68, "And whoever we undoubtedly long life he refunded the circumstance), then if they do not think of ?. Spliced also in Surah Ar-Rum (30) verse 54, "God, He Who created you from a position of weakness, then He makes (you) weakened state after it becomes powerful, then He makes (you) after the strong become weak again and gray. He creates what He pleases, and He is the All-Knowing, Almighty".

The success of development has many indicators. One is the increasing life expectancy of the population. With the increasing life expectancy of the population, causing the number of elderly people continues to increase from year to year. Elderly population in the worldwide aged 60 or older grew

very quickly even the fastest compared to other age groups. It is estimated that begin in 2010 will be an explosion of the number of elderly people. The prediction results showed that the percentage of the elderly population will reach 9.77 percent of the total population in 2010 and to 11.34 percent in 2020 (Central Bureau of Statistics: 2010).

These data concern by all parties, including government, public institutions or the community itself so that the process of development in Indonesia is not an obstacle. So the mindset that assumes that the elderly population is a vulnerable group that is only dependent families, communities and countries, must be changed. We have to make the elderly as a national asset that must continue to be empowered.

Another issue that arises in the elderly is consciousness and cognitive disorders such as dementia (Kane et al, 1994; Folstein, 1990; Whaley, 1997; Mc Keitch, 1997; Hecker, 1997). Dementia is a clinical syndrome that includes loss of intellectual function and memory / memory so serious that it causes dysfunction of daily living (Darmojo, 2000). Another definition, dementia is cognitive decline such severity that it interferes with activities of daily living and social activities (Nugroho, 2008). Other definitions as well, or senile dementia is a condition in which the ability of intellectual / cognitive decline at a rate that is heavy enough without any disturbance of consciousness that interfere with social and occupational functioning (Linden, et al: 2008).

Components at impaired intellectual abilities: include memory and thinking skills, numeracy, language and geographical Orientation.

Dementia, commonly experienced by persons over the age of 60 years, though dementia is not a normal process of aging. There are many elderly people who do not have dementia. The cause of dementia is damage to brain cells that regulate human cognitive.

Various kinds of dementia include: 1) Alzheimer's dementia, 2) vascular dementia, 3) Lewy body dementia, 4) dementia syphilis / HIV, 5) dementia hypothyroidism, 6) neurologic brain dementia, 7) dementia deficiency vitamins, 8) dementia post head trauma, 9) dementia toxicity, 10) dementia infection (Alicia et al, 2013).

Dementia can be prevented by: 1) stop smoking, 2) treat the disease being suffered, 3) eat a balanced diet, 4) do not drink alcohol, 5) regular exercise (Untari, 2012).

The results of other studies, the human brain is just used by 20%, 80% of them have not been used optimally. Various methods are used to slow down and fix dementia. One of them is brain gym. Gymnastics is an activity of the brain to improve brain function. Other terms of brain exercise is a series of exercises based on simple body movements (Cahyo, 2011). Various models are used to give different effects on memory enhancement is not just limited to the elderly, but can also be used all ages. The objective of stimulating brain exercises are the left and right brain (lateral dimension), relieve and relax the back of the brain and the front of the brain (focusing dimension), stimulates the system associated with the feeling / emotional, namely midbrain (limbic) and cerebrum (dimensions concentration).

The results of the study by Anton et al (2010) One of the benefits of cognitive therapy and brain gym in the elderly is lower levels of depression, so it recommends cognitive therapy and exercise to train the brain into the work program of the elderly in health centers and homes.

The purpose of this study was to develop a model of gymnastics prevent senile Brains Up Games as well as to determine their effects on memory loss or dementia in the elderly in order to improve the health of the elderly.

Methods Research

Design of this research is experimental research (Arif, 2011). Design comparing the results of measuring dementia in the elderly group were given treatment with the control group. (Sugiyono, 2007). The research are conducted from June to August 2014 at the Panti Wredha Darma Bakti Surakarta with address Jl. Dr. Rajiman No. Surakarta Ph 620, (0271) 714 223

The population in this study were all approximately 90 elderly people, with a random sampling technique that samples taken at random by 30 people at each group. (Sugiyono, 2007).

The research instrument is a questionnaire to measure the short portable mental status (SPMSQ). Short Portable Mental Status Questionnaire (SPMSQ), the following model:

Table 1. Short Portable Mental Status Questionnaire (SPMSQ)

No	Question
1	What's the date today?
2	What day is today?
3	What is the name of this place?
4	What is your home phone number?
5	How old are you?
6	When you were born (date / month / year)?
7	What is the name the president now?
8	What is the name the previous president?
9	What is the name of your mother?
10	5 + 6 is?
11	Compute backward rate 100 minus 7 : 100, 93, 86 79, 72, 65, 58, 51, 44, 37, 30, 23, 16, 7, 2.
12	spell the words "ORPHAN" on back order

How to use: centhang mark on the right column, or one of each answer given to the elderly and calculate the correct value, then put in the category:

- Mild senile = true value between 10-12
- Senile is = true value between 7-9
- Senile Weight = true value between 1-6

In addition to the questionnaire, the other instrument is a model gymnastics Up Brain's Games. The data used for analysis is the T Test at the 5% significance.

Results And Discussion Research

Results

Gymnastics model prevent dementia or Up Brain's Games.

Gymnastics prevent senile compiled include hand movements that coordinate with each other in performing different movements and in the same time. The movement includes 5 movements:

Movement I: The fingers clenched right hand except the thumb, while the left hand clenched fingers except the little finger. Movements alternates between the right hand with the little finger of the left hand not clenched and the thumb is not clenched. Repeat the movement as much as 8 times. The following motion picture 1:



Figure 1. Movement-1

Movement II: The fingers of his right hand clenched except the index finger and middle finger, left hand clenched fingers except the index finger and thumb to form a gun. Moving the left hand right hand gun-shaped pursue existing index finger alone,

alternating between right hand and left hand. Repeat the movement 8 x 2 The following movement:

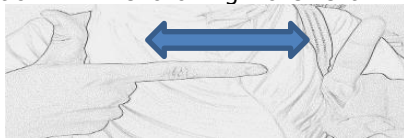


Figure 2. Movement-2

Movement III: The left hand flat on the head with a patting motion light head and his right hand was on her stomach with a belly rubbing motion to the left and to the right. Perform movement together between right hand and left hand. Repeat the movement 8 x 2 3 Next image motion:

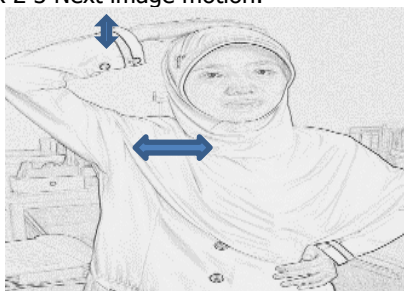


Figure 3. Movement-3

Movement IV: The right hand and left hand clenched and face each other. The right hand doing the twist out while the left hand into the rotating motion. Repeat the movement 8 x 2 following motion picture 4:

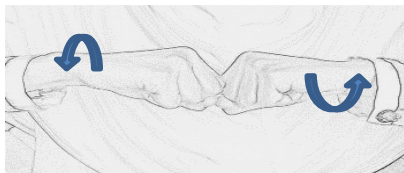


Figure 4. Movement-4

Movement V: Both hands folded forward with arms at shoulder level. The right hand clenched to make a move as attractive gas motorcycles, the left hand and fingers straight rubbing movement left and right. Perform together for 1 minute and replace the movement in both hands. Repeat the movement 8 x 2 5 following motion pictures:



Figure 5. Movement-5

To perform all movements to the accompaniment of music developed lasted approximately 5 minutes and repeated 3 times, so the total time spent 5 minutes x 3 = 15 minutes.

Univariate Analysis.

Memory elderly (dementia) before treatment gymnastics models elderly prevent dementia in the control group average: 5.20. Category senility before gymnastics as follows:

Table 2. Elderly Senility before exercise prevent dementia in the control group

No	Category Senility Elderly	Frequency (f)	Percentage (%)
1	Lightweight	2	6.7
2	Medium	7	23.3
3	Severe	21	70.0
Total		30	100

The table shows the elderly who are in the majority in the state of the control group decreased memory / dementia weight by 21 people (70%).

Memory elderly (dementia) after treatment of the elderly prevent dementia gymnastics models in the control group on average: 5:03, elderly dementia category as follows:

Table 3. Senility Elderly in control group after exercise prevent senile

No	Category Senility Elderly	Frequency (f)	Percentage (%)
1	Lightweight	2	6.7
2	Medium	5	16.7
3	Severe	23	76.7
Total		30	100

The table shows the elderly who are in the control group over a period of approximately one month, after repeated measurements of his memory, weight gain becomes a state of dementia by 23 people (76.7%).

Memory elderly (dementia) before treatment models elderly exercise prevent dementia in the treatment group average: 8.17. Category senility as follows:

Table 4. Senility senile elderly before exercise prevented the treatment group

No	Category Senility Elderly	Frequency (f)	Percentage (%)
1	Lightweight	9	30
2	Medium	14	46.7
3	Severe	7	23.3
Total		30	100

The table shows the elderly who are in the treatment group, the majority in a state of decreased memory / dementia are at 14 people (46.7%).

Elderly memory (dementia) after treatment of the elderly prevent dementia models gymnastics in the treatment group on average: 10 Category elderly posttest memory as follows:

Table 5. Classification of Measurement Senility gymnastics prevent senile elderly after the treatment group

No	Category Senility Elderly	Frequency (f)	Percentage (%)
1	Lightweight	20	66.7
2	Medium	7	23.3
3	Severe	3	10.0
Total		30	100

The table shows that the elderly who are in the treatment group, dementia experience changes conditions in which the elderly with dementia are being reduced from 14 (46.7%) of people to 7

people (23.3%), the condition of the elderly with severe dementia by 7 people (23.3%) was reduced to 3 people (10%) and with mild dementia 9 people (30%) increased to 20 people (66.7%).

Effect of Brain's Up Gymnastics Games to memory / dementia at elderly

Table 6. Hypothesis test results

No	Effect Type	Value	
		t	Probability (p)
1	Paired t test in the control group	1.306	0.20
2	Paired t test in the treatment group	-5.514	0.00

$P = 0.20$ in the control group > critical value of 0.05, indicating no effect of the condition of the elderly in nursing homes. While the treatment group with $p = 0.00 < 0.005$ no significant effect of exercise prevent senile Up Brain's Game of the memory where the condition of the elderly elderly with memory decline / dementia weight reduced to decreased memory / mild dementia.

The difference in memory of elderly in the 2 groups before treatment models gymnastics prevent senile

Table 7. Differential test before treatment

Type Testing	Value		
	t	Probability (p)	critical
<i>Independent t test memory before treatment</i>	4.606	0.000	0,05

$P\text{-value} = 0.000 < 0.05$ was no significant difference in the condition of decreased memory (dementia) between the 2 groups after treatment gymnastics prevent senile (*Up Brain's Game*).

Differences in memory of elderly after treatment models gymnastics prevent senile

Table 8. Different test after treatment

Type Testing	Value		
	t	Probability (p)	critical
<i>Independent t test recall after treatment</i>	8.028	0.000	0.05

$P\text{-value} = 0.000 < 0.05$ meaningful critical value there is no difference between the control group and the condition of the treatment group after treatment gymnastics prevent senile (*Up Brain's Game*).

Discussion of Research

Memory/dementia of elderly before treatment models exercisers.

In different test groups, there is no distinction has to be avoided because of the condition of the elderly in nursing homes varies widely, ranging from independence, psychology changes, physiology changes. Actually grow old is a natural process which means that someone has gone through three stages of life ie childhood, adulthood and old age. The three stages different, in both biologically and

psychologically. Another change is the change of cognitive one of then is dementia. Cognitive changes in the elderly (dementia) is part of the component impaired intellectual abilities: include memory and thinking skills, numeracy, language and geographical Oriental.

Dementia, commonly experienced by persons over the age of 60 years, though dementia is not a normal process of aging. The cause of dementia is damage to brain cells that regulate human cognitive. Data elderly in panti wreda in the month of May 2014 a total of 97 people showed almost all of the elderly aged over 60 years.

The selection of respondents in the treatment group of elderly who have taken part independence and full independence especially capable of movement in the hand. While respondents in the control group there elderly more varied, with full independence, self-reliance and depend partly on others. This makes the limitations of the study, especially in sampling.

In addition to the different initial state, the elderly who are in the majority in the state of the control group are also decreased memory / dementia weight are 21 people (70%). While the condition of dementia are 7 people (23.3%) and the other 2 mild dementia (6.7%). Memory loss (dementia) had average elderly: 5:20 by weight category.

In the treatment group the initial conditions of the elderly with dementia are dominated by 14 people (46.7%). While with severe senile conditions was 7 people (23.3%) and the other mild senile was 9 people (30%). Elderly memory loss (dementia) before treatment models elderly exercise prevent dementia in the treatment group on average: 8:17 with medium category.

Memory/dementia (dementia) after treatment of elderly gymnastics models.

The results of measurements made between treatment groups and control group after treatment showed that there are differences in the condition of memory loss (dementia) with $p = 0.000$ and the value of $t = 8,028$. These data could mean that an intervention will provide a change to a condition. Gymnastics prevent senile (*Up Brain's Game*) is a series of exercises based on simple body movements to stimulate the left and right brain (dimensions lateralis), relieve and relax the back of the brain and the front of the brain (focusing dimension), stimulates the system associated with the feeling / emotional, namely midbrain (limbis) and cerebrum (dimensions concentration). Brains Up Game is easy to do when it is accustomed. Initially this movement requires concentration and familiar. At the beginning of training, the elderly are still fraught with difficulties, especially the first movement, the second and fourth movements. The third and fifth movements are relatively easy to do by the respondent.

Difficulty doing this exercise, one of which is caused by the elderly themselves physically decline of the musculoskeletal system-where happen joint stiffness. Joints are needed for this exercise is the

joints of the fingers and wrists. Aside from the causes of joint stiffness, gymnastic movements require concentration to coordinate with each other doing different movements in the same time.

Conditions train elderly to do gymnastics routine, and the gymnastic movements that train the brain to make the concentration of the elderly may be thinking or intellectual activity. In seventh training of the plan 12 times, a lot of elderly people who have started to memorize the movements of gymnastics and eventually become accustomed to and memorized. In fact, this exercise can be done at any time when relaxing or no other activity.

In the routine activities except in the month of Ramadan outside the Wredha Panti, there are activities such as: spiritual cleansing on Tuesday for Christian, Thursday for check up, , Friday for elderly gymnastic and on Saturday for spiritual cleansing for moslem. But during the month of Ramadan, all the activities were closed except Thursday continued to be used for medical examinations for the elderly. Activities were closed with diverted for activities to improve the form of worship in Ramadan tarawih prayer and others.

Giving gymnastics prevent dementia (Up Brain's Game) is very proper done in Ramadan because there are no other activities that match the form of gymnastics. In addition, this exercise training does not require a lot of energy to perform. Implementation of this exercise is done by sitting upright and in a relaxed atmosphere and first-round gymnastic movement only takes about 5 minutes and can accompaniment by music.

If this exercise becomes a habit, the human brain will continue to work so that the intellectuals will continuously honed. At the function, the human brain is the center of the human body regulation system. The brain is responsible for a wide variety of experiences sensation or stimulation of the human ability to perform movements which follow the will (conscious), and the ability to implement a wide variety of mental processes, such as memory or memory, emotional feelings, intelligence, communication, nature or personality and forecasts. The ability of humans to think require assistive devices or media that constantly sharpen.

Effect of exercise models to prevent senile elderly memory

The result of the calculation in the control group showed the value of $t = 1.306$ and $p = 0.202$ greater than the critical value of 0.05, this result bemakna no influence on the conditions of elderly nursing Panti. While the treatment group, t values of -5514 and $p = 0.000$ with less than the critical value of 0.005 means no influence gymnastics prevent senile Up Brain's Game of the memory where the condition of the elderly elderly with memory decline / dementia weight was reduced to memory decreased / mild dementia. Indicator of the success of this study, an increase in the number of elderly who suffered senile dementia becomes severe or mild after being given training models Brains Up Games over a period of 1 month. These results can be

concluded that H_0 is rejected and H_a accepted meaning gymnastics prevent dementia (Up Brains Game) may improve memory in the elderly.

Conclusions and Recommendations

Conclusion:

There is the influence of gymnastics prevent dementia (Up Brain's Game) to increase the memory of elderly with $p = 0:00$ at the 5% significance .

Model gymnastics prevent dementia (Up Brains' Game) can improve the health and rights filed in a simple incompetent.

Recommendations

Institutions are expected to conduct business activities prevent dementia gymnastics Up Brain's Game routinely.

Gymnastics prevent dementia (Up Brain's Game) can as a pastime in daily activities

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