

# Maintaining Physical Activity of Elderly through Local Wisdom to Improve Quality of Life of Elderly in Yogyakarta, Indonesia

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## Abstract

**Background.** Physical activity has been proven effective in improving and maintaining the health of the elderly. But the participation of the elderly in physical activity is not proportional to the number of elderly in the community. This is due to physical activity only meeting physical health, while other elderly needs such as social, psychological and environmental are not met. Interventions are needed to maintain sustainable physical activity that can improve the quality of life of the elderly.

**Aim.** This study aimed to determine the effects of psychoeducation and physical exercise for the elderly programs with local wisdom approach to quality of life of the elderly in the community.

**Method.** This research method used a Quasi-Experiment Pre-Post Test Design with Control Group. The sample of this study was 132 elderly who lived in rural and urban areas, using Multistage Random Sampling techniques. Data analysis used correlation pearson (*rho*), t test and multivariate analysis (regresi linier).

**Results.** The effect of program can improve the function of physical activity and quality of life of elderly. Meanwhile the factors that affect the quality of life of the elderly are education, mental status, function of physical activity and intentions.

**Conclusion.** This Program affects the function of physical activity and quality of life of the elderly in the community. Determinants of quality of life can be used as a basic for developing health care programs for the elderly.

**Keywords:** *physical activity, psychoeducation, local wisdom, elderly, quality of life.*

## Introduction

The process of aging in human development throughout his life is a physiological process that is dynamic and can not be changed. In this condition the elderly experience biological, psychological, spiritual and social changes, in the form of various declines.<sup>1,2,3</sup>

The condition causes the elderly are more vulnerable to various health problems including decreased cognitive function, emotional, psychomotor, behavioral changes,<sup>4</sup> dementia, sleep disorders, emotional and depressed,<sup>5</sup> loneliness, deprivation, and social roles will be reduced, depression commit suicide.<sup>6,7</sup>

Various attempts have been made to prevent the effects of the aging process, one of which is by conducting a regular physical activity.<sup>8</sup> Activities carried out in groups can motivate promote and maintain adherence to physical training programs.<sup>9</sup>

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Furthermore, the addition of psychoeducation is expected to strengthen the elderly in carrying out physical activities together so that ultimately it will reduce the impact of cognitive impairment to improve the overall quality of life (QoL) of the elderly.<sup>10</sup>

However, the observations of researchers through literature studies show that regular physical activity such as elderly exercise, only improves physical conditions, while other aspects such as psychological, social and environmental are not considered.<sup>11</sup>

Through a local wisdom approach, this aspect can be changed with a psychoeducation program combined with physical exercise for the elderly (this program is called the *Psi-Segar* program) to provide knowledge support in maintaining a better quality of life for elderly.

The form of the approach to local wisdom is the using of Javanese songs as an accompaniment song for elderly exercise, utilizing humor with Javanese cultural style and the participation of elderly people who follow the way Javanese people gathering.

**Materials and Methods**

This study uses a method *quasi-experimental* with a *pre-post test design with control groups design*. The

sampling technique used multistage *random sampling*, where the sample is taken based on the proportion of representation of the elderly in the community. The sample size of this study is 132 elderly divided into 4 groups, those are elderly who live in rural areas (treatment and control) and elderly who live in urban areas (treatment and control). The research location is in the district of Sleman, Yogyakarta, Indonesia.

Data analysis using the SPSS program (version 13.0) with the following details bivariate analysis using the correlation test and t test to assess differences in values between the treatment and control groups. While multivariate analysis is used to determine the determinants that affect the quality of life of elderly in the community.

**Results**

Based on table 1, the demographic characteristics of the elderly in the community indicate that most of the elderly are aged 60-74 years, with female sex and married. Meanwhile, elderly education is the most dominant elementary school, with employment as laborers who earn less than 1.5 million/ month.

**Table 1. Description of general data of the community dwelling older adults in Sleman District, Yogyakarta (n = 132)**

Variable	n	%
Age		
a. 75 years and over	21	15.9
b. 60-74 years	111	84.1
Gender		
a. Male	32	24.2
b. Female	100	75.8
Religion		
a. Catholic	45	34.1
b. Islam	87	65.9
Status		
a. Not Married	3	2.3
b. Widowed	34	25.8
c. Married	95	72.0

**Cont... Table 1. Description of general data of the community dwelling older adults in Sleman District, Yogyakarta (n = 132)**

Education			
a.	Not attending school	18	13.6
b.	Elementary school	75	56.8
c.	Junior high school	21	15.9
d.	Senior high school	13	9.8
e.	University	5	3.8
Employment			
a.	Workers	8	6.1
b.	Farmers	9	6.8
c.	Retired	10	7.6
d.	House wife	46	34.8
e.	Labor	59	44.7
Income			
a.	More than 3 million	8	6.1
b.	1.5 million - 3 million	3	2.3
c.	Less than 1.5 million	121	91.7
Smoking status			
a.	Smoking	12	9.1
b.	Not smoking	120	90.9
Disease currently complained of			
a.	Diabetes mellitus (DM)	2	1.5
b.	Hypertension and DM	3	2.3
c.	Vertigo	8	6.1
d.	Pain	25	18.9
e.	Hypertension	35	26.5
f.	No complaints	59	44.7

**Table 2. Description of health conditions of the community dwelling older adults in Sleman District, Yogyakarta**

Variable	n	%
Person that means		
a. None	6	4.5
b. Extended family	24	18.2
c. Children	51	38.6
d. Spouse: husband/wife	51	38.6
Live with whom		
a. Live alone	15	11.4
b. Spouse : husband/wife	33	25.0
c. Nuclear Family	39	29.5
d. Extended family	45	34.1
Habits Sport		
a. Cycling	5	3.8
b. Walking	27	20.5
c. Physical exercise	29	22.0
d. No Exercise regularly	71	53.8
The duration of the physical activity		
a. more than 150 minutes in a week	15	11.4
b. 60-149 minutes in a week	46	34.8
c. within a week, less than 60 minutes	71	53.8
BMI Status (Body Mass Index)		
a. Less	18	13.6
b. Normal	71	53.8
c. Obesity	18	13.6
d. Excess	25	18.9
Status MMSE ( <i>Mini Mental Status Examination</i> )		
a. Normal	114	86.4
b. Cognitive impairment	18	13.6
Planned behavior to physical exercise		
a. Intention	55	25.7
b. Attitude	52	24.3
c. Perceived behavior control	41	19.2
d. Behavior	40	18.7
e. Subjective norm	26	12.1

The most dominant data in table 2 consists of couples who are significant people for the elderly, not doing regular activities, and doing physical activity for less than 60 minutes / week.

The BMI status of the elderly is more dominant in the normal category, however there are still elderly people who are in an abnormal condition (less, over and obese).

Mental status (MMSE) for the elderly is mostly normal, but only a small proportion of the elderly have cognitive impairment. Data on planned behavior for the elderly doing exercise is largely dominated by intentions and attitudes.

**Table 3. Correlation of predictor variables with the quality of life of the elderly in Sleman District, Yogyakarta**

Variables	n	Pearson correlation	Sig, (2-tailed)
Demographic status			
a. Sex	132	.149	.132
b. Age	132	-.070	.428
c. Education	132	-.213*	.014
d. Works	132	-.210*	.016
e. Income	132	-.161	.066
Social support family			
a. Man who means	132	.211*	.015
b. Live with whom	132	.031	.724
Healthy status			
a. BMI status	132	.236**	.006
b. MMSE status	132	.313**	.000
c. Current illness	132	-.120	.172
Physical activity status			
a. Physical activity (physical activity scale for the elderly)	132	.461**	.000
b. Sports Habits	132	-.121	.166
c. Duration of physical activity	132	-.006	.948
Planned behaviour to exercise	132	.279**	.001

\*Sig  $\alpha < 0.05$ ; \*\* sig  $\alpha < 0.001$

Predictor variables that are predicted to affect the quality of life of the elderly can be seen in table 3. The demographic status of the elderly that affects the quality of life is education, employment and social support from

people who are meaningful for the elderly. Health status variables related to the quality of life of the elderly are BMI and MMSE, while the variable for physical activity status of the elderly is PASE and plan behavior.

**Table 4. The comparison results of the effect of *Psi-Segar* program intervention on the quality of life of elderly between the treatment and control groups**

Variable	Mean ± SD		t	Sig α	95% CI	
	Interventions	Control			Lower	Upper
Physical activity	13.98 ± 11.78	1.57 ± 8.27	7.004	.001	8.89	15.91
Quality of life						
a. General	2.53 ± 1.79	-.40 ± 1.67	9.729	.001	2.339	3.534
b. Physical	2.48 ± 3.78	-2.46 ± 3.27	8.009	.001	3.701	6.141
c. Psychological	4.17 ± 4.15	.38 ± 3.27	5.826	.001	2.501	5.075
d. Social	2.56 ± 4.90	-.47 ± 2.95	4.299	.000	1.536	4.428
e. Environmental	7.95 ± 3.73	3.60 ± 5.49	5.335	.000	2.741	5.971

\* sig α <0.01

T-test results on the effect of the intervention of the *Psi-Segar* program in table 4, show that there is a statistically significant difference in physical activity of the elderly between before and after the intervention. This is indicated by the t value of 7.004, 95% CI: 8.89-15.91 with a sig α <0.05, meaning that this intervention gives a difference in the physical activity of the elderly by 7 times greater than the elderly who do not participate in the *Psi-Segar* program.

**Table 5. Results of multivariate analysis on variables related to the quality of life of the elderly in the community in Sleman District, Yogyakarta**

Variable	Model 1 (R2 (R Square) = 38.3%)						Model 2 (R2 (RSquare) = 34.5%)					
	Mean square	F	t	Sig	95% Confidence interval		Mean square	F	t	Sig	95% Confidence interval	
					Lower bound	Upper bound					Lower bound	Upper bound
a. Education	28.29	10.97	-2.881	.005	-.724	-.134	44.64	16.71	-2.951	.004	-.733	-.144
b. MMSE			2.690	.008	.041	.269			2.534	.012	.032	.262
c. PASE			3.962	.000	.026	.078			5.028	.000	.038	.088
d. Plan behavior			3.180	.002	.025	.109			3.262	.001	.027	.112
e. Employment			-1.447	.150	-.447	.069						
f. Man who means			1.324	.188	-.116	.583						
g. BMI			1.476	.137	.082	.589						

The results of multivariate analysis in model 2 show that the variables of the elderly education, mental status, physical activity and plan behavior simultaneously correlate with the quality of life of the elderly (table 5).

### Discussion

This research also shows that education is a factor that affects the cognitive of the elderly associated with quality of life. This is consistent with previous research which states that education,<sup>12</sup> gender is significantly related to the quality of life of the elderly.<sup>13</sup> Changes that occur in older men are greater than women because the better cognitive status of elderly men is related to work conditions and income.<sup>14</sup>

The research provides the result that there is a significant influence of the *Psi-Segar* program on the quality of life of the elderly. The combination of exercise with counseling can have a positive effect on the quality of life of the elderly.<sup>11</sup> Improve health status, emotional, mental function is good in achieving the process of healthy aging.<sup>15</sup> This indicates that physical activity that is consistent and routine can improve the quality of life of the elderly.<sup>16</sup>

Continuation of *Psi-Segar* program activities will provide longer life expectancies<sup>17</sup> and improve better welfare.<sup>18</sup> This activity also provides protection from degenerative processes and chronic diseases such as cancer.<sup>19</sup>

The results showed that the elderly who participated in the *Psi-Segar* program had an impact in the form of the continuation of regular exercise activities for the elderly. This sustainability will affect the quality of life of the elderly in the future. Studies that support this state that the sustainability of physical activity interventions in the elderly is determined by the form of the intervention itself so that there is an interest in these activities.<sup>20</sup>

The results of multivariate analysis in model 2 (table 5) show that BMI is related to the quality of life of the elderly, as evidenced by the existence of a significant correlation. These results indicate that BMI status determines the quality of life-related to the health of the elderly, women and men with decreased body weight also have a decreased quality of life of health. Conversely, if obese, the satisfaction of his health has decreased which causes the quality of life to decline.<sup>21,22</sup> Obesity is the worst predictor of health related to the quality of life of the elderly.<sup>23,24</sup>

### Conclusion

The *Psi-Segar* program affects the function of physical activity, and the quality of life of the elderly on physical, social, psychological and environmental aspects. Determinants that affect the quality of life can be used as a basic for stakeholders in developing health programs for the elderly.

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### References

1. Lipsky M.S and King M. Biological Theories of Aging. *journal homepage: www.elsevier.com/locate/disamonth Biological*. 2015; 13(2):1–7. Retrieved (<http://dx.doi.org/10.1016/j.disamonth.2015.09.005>).
2. Fung, LCW Lam. Spiritual Activity Is Associated with Better Cognitive Function in Old Age. *East Asian Arch Psychiatry*. 2013; 23(April):102–10.
3. Dziechciaż M and Filip R. Biological psychological and social determinants of old age: Bio-psycho-social aspects of human aging. *Ann Agric Environ Med*. 2014; 21(4): 835–838. doi: 10.5604/12321966.1129943.
4. Wernher I, Lipsky MS. Psychological theories of aging. *Disease-a-Month*. 2015; 11(61), 480-488.
5. Huang CY, Hsu MC, Chen TJ. An exploratory study of religious involvement as a moderator between anxiety, depressive symptoms and quality of life outcomes of older adults. *Journal of Clinical Nursing*. 2012; 21(5-6), 609-619.
6. Hasworth, Bree S, Cannon ML. Social Theories of Aging: A Review. *Disease-a-Month*. 2015; 61(11):475–79.
7. Sakashita, Tomoe and Oyama H. Overview of Community-Based Studies of Depression Screening Interventions among the Elderly Population in Japan. *Aging & Mental Health* 2016; 20(2):231–39.

8. De Labra C, Guimaraes-Pinheiro C, Maseda A, Lorenzo T, Millán-Calenti JC. Effects of physical exercise interventions in frail older adults: A systematic review of randomized controlled trials Physical functioning, physical health and activity. *BMC Geriatrics*. (2015); 15(1). <http://doi.org/10.1186/s12877-015-0155-4>.
9. Phillips, Siobhan M, Thomas R Wójcicki, and McAuley E. Physical Activity and Quality of Life in Older Adults: An 18- Month Panel Analysis. *Qual Life Res*. 2013; 22(7): 1647–54.
10. Burton E, Farrier K, Hill KD, Codde J, Airey P, & Hill AM. Effectiveness of peers in delivering programs or motivating older people to increase their participation in physical activity: Systematic review and meta-analysis. *Journal of Sports Sciences*. 2017. DOI:10.1080/02640414.2017.1329549.
11. Olanrewaju O, Kely S, Cowan A, Brayne CA, Lafortune L. Physical activity in community-dwelling older people: a review of systematic reviews of interventions and context. *PLoS ONE*. 2016; 12(11), 1–19. [http://doi.org/10.1016/S0140-6736\(16\)32319-4](http://doi.org/10.1016/S0140-6736(16)32319-4).
12. Ko H, Park YH, Cho B, Lim KC, Chang SJ, Yi YM, & Ryu SI. Gender differences in health status, quality of life, and community service needs of older adults living alone. *Archives of gerontology and geriatrics*. 2019; 83, 239-245.
13. Zhang J, Xu L, Li J, Sun L, Qin W, Ding G, Zhou C. Gender differences in the association between body mass index and health-related quality of life among adults: a cross-sectional study in Shandong, China. *BMC public health*. 2019; 19(1), 1021.
14. Harithasan D, Mukari SZ-MS, Ishak WS, Shahar S, & Yeong WL. The impact of sensory impairment on cognitive performance, quality of life, depression, and loneliness in older adults. *International journal of geriatric psychiatry*. 2020; 35(4), 358-364. doi: 10.1002/gps.5237.
15. Waldman-levi A, Erez AB, Katz N. Healthy aging is reflected in well-being, participation, playfulness, and cognitive-emotional functioning. *Healthy Aging Research*. 2015; pp.1–7. Available at: <http://www.har-journal.com/archives/1154>.
16. Jessen JD, Lund HH. Study protocol: effect of playful training on functional abilities of older adults—a randomized controlled trial. *BMC geriatrics*. 2017; 17(1), 27.
17. Lee IM, Shiroma EJ, Lobelo F, Puska P, Blair SN, Katzmarzyk PT, Lancet Physical Activity Series Working Group. Effect of physical inactivity on major non-communicable diseases worldwide: an analysis of burden of disease and life expectancy. *The lancet*. 2012. 380(9838), 219-229.
18. Netz Y, Wu MJ, Becker BJ, Tenenbaum G. Physical activity and psychological well-being in advanced age: A meta-analysis of intervention studies. *Psychology and Aging*. 2005; 20, 272–284. doi:10.1037/0882-7974.20.2.272.
19. Wu Y, Zhang D, Kang S. Physical activity and risk of breast cancer: A meta-analysis of prospective studies. *Breast Cancer Research and Treatment*. 2013; 137, 869–882. doi:10.1007/s10549-012-2396-7.
20. Gourlan M, Bernard P, Bortolon C, Romain AJ, Lareyre O, Carayol M, & Boiché J. Efficacy of theory-based interventions to promote physical activity. A meta-analysis of randomised controlled trials. *Health psychology review*. 2016; 10(1), 50-66.
21. You H, Li XL, Jing KZ, Li ZG, Cao HM, Wang J, & Gu H. Association between body mass index and health-related quality of life among Chinese elderly-evidence from a community-based study. *BMC public health*. 2018; 18(1), 1174.
22. Lluesma Vidal M, Murgui Pérez S, & Carmona Simarro JV. Nutritional status regarding the quality of life and sleep pattern in community-dwelling older adults with cognitive dysfunction. *Nutricion hospitalaria*. 2019; 36(2), 303-308. doi: 10.20960/nh.2361.
23. Kusumaratna RK, Hidayat A. Body mass index and quality of life among the elderly. *Universa Medicina*. 2016; 28(1), 34-41.
24. Wang L, Crawford JD, Reppermund S, Trollor J, Campbell L, Baune BT, & Smith E. Body mass index and waist circumference predict health-related quality of life, but not satisfaction with life, in the elderly. *Quality of Life Research*. 2018; 27(10), 2653-2665.