

# 48. The role of physical activity in determining

*by Ismi Rajiani*

---

**Submission date:** 10-Apr-2022 09:49PM (UTC-0700)

**Submission ID:** 1807472131

**File name:** 48. The role of physical activity in determining.pdf (795.82K)

**Word count:** 2636

**Character count:** 14102

# The Role of Physical Activity in Determining the Level of Older People's Depression

Arwani<sup>1</sup>, Shohirun<sup>2</sup>, Rodhi Hartono<sup>3</sup>, Sugih Wijayati<sup>4</sup>, Supriyadi<sup>5</sup>, Ismi Rajiani<sup>6</sup>

<sup>1</sup>Associate Professor Health Polytechnic Ministry of Health, Semarang, Indonesia; <sup>3,4</sup>Assistant Professor Health Polytechnic Ministry of Health, Indonesia; <sup>6</sup>Deputy to Chairman, College of Port Administration & Management, Surabaya, Indonesia

## ABSTRACT

**Background:** The prevalence of depression in elderly is high. Globally, the incidence of depression in the elderly varies between 10-20 %, as well as in Indonesia (17.8 %). Depression can increase the amount of disability for almost 12 % of total incapacity. It is important to make efforts to prevent the occurrence of depression in older people by implementing physical activities. The research aimed to determine the effect of different physical activities on depression levels in older people living in the working area of Srandol public health center of Semarang municipality.

**Method:** A nonrandomized controlled trial with pre-posttest design conducted on three intervention groups consisted of 10 elderly in each group using different treatment: free walking, brisk walking, and the combination of comfortable walking and brisk walking.

**Results:** Research results showed that there was no statistically significant effect of different physical activities in the three groups regarding the levels of depression in older people in Srandol Public Health Center of Semarang municipality ( $p > 0.05$ ).

**Conclusion:** The comfortable walking had the highest mean difference in reducing depression level of the older people compared to brisk walking and the combination of strolling and brisk walking. It is suggested that physical activity for elderly can be performed as it still has benefits in reducing depression scores, especially with sauntering.

**Keywords:** physical activity, strolling, brisk walking, depression, older people

## INTRODUCTION

The increasing number of older people is caused by many factors. Factors that contribute to the growing number of the elderly include the improvement of social, economic status, advances in health care, and the increasing level of public knowledge<sup>(1)</sup>. The growing number of elderly population spread in almost all provinces in Indonesia; however, the provinces that have an older population of as much as 7 percent are in Java Island and Bali.

Physical inactivity in older people also has an impact on the psychology of the old. The elderly often feel isolated and loss of close friends. This condition often causes the elderly to be hopeless and will trigger the old to a less physical activity which leads to depression incidence. The overall prevalence of the impact of depression in the elderly in general varies between 10-20%, which also depends on the cultural situation in each region of the world<sup>(2)</sup>. Several studies show that the risk factors for depression in the elderly include psychosocial, biological, personal characteristics, medication and socio-demographic factors<sup>(3)</sup>. Besides, the incidence of depression in the elderly was associated with lack of physical activity undertaken<sup>(4)</sup>.

### Corresponding Author:

Arwani  
Health Polytechnic Ministry of Health,  
Semarang, Indonesia

Depression in older people can lead to problems for the elderly itself. Depression can cause the increasing number of disability, accounted for almost 12% of the

total disability that it is needed to make efforts to prevent the occurrence of depression in the elderly, one of which is physical activity.

Physical activity is significant for the old. It is intended that the elderly can do daily activities optimally without feeling burdened by their physical condition that is declining. Physical activity has positive effects on reducing depression in older people. Physical activity performed by older people both moderate-intensity physical activity and vigorous-intensity physical activity is significantly lower minor and major depression in the elderly. Physical activity in the elderly can be performed in various ways. In general, physical activity in the elderly can be done in three ways: light-intensity physical activity, moderate-intensity physical activity, and vigorous-intensity physical activity<sup>(5)</sup>. The purpose of this study was to determine the effect of different physical activities on the level of depression in the elderly in a public health center of Semarang, Central Java Indonesia.

### METHODOLOGY

This study was a non-randomized controlled trial with pre-posttest design conducted on three intervention groups. Each group was measured the levels of depression using the BDI (Beck Depression Inventory) II before and after being performed the different physical activity. Intervention group I was given treatment in the form of

a combination of physical activity using comfortable walking and brisk walking which was conducted during one week with the duration of time for 23 minutes of the walking slowly and for 21 minutes for the brisk walking. Intervention group II was given regular physical activity (leisurely walking) for one week with the duration of time for approximately 23 minutes daily, and the intervention group III was given brisk walking for a week with the length of time for about 21 minutes daily.

<sup>25</sup> The population in this study was all elderly who live in Srandol Public Health Center of Semarang. Healthy elderly aged ≥ 65 years, had normal BMI (Body Mass Index) and had no health problems on the musculoskeletal and cardiovascular system were included in the study following informed consent. Elderly who suddenly experienced worsening health problems were excluded in the survey. Thirty older people participated in the study and were distributed in three intervention group. The instrument used in this study was the Beck Depression Inventory (BDI) II consisted of a 21-point scale question with four options (0-3). This tool is used as it has a one-week high test-retest reliability (r = 0.93) and also high internal consistency (α = 0.91)<sup>(6)</sup>. Based on the BDI II instrument, it can be categorized as levels of depression (cutoffs) into minimal depression (score 0-13), minor depression (score 14-19), moderate depression (score 20-28), and severe depression (score 29-63).

Paired t-test was performed to examine the mean difference in each intervention group.

### RESULTS

<sup>24</sup> Sample Characteristics is shown in Table 1.

**Table 1: Characteristics of respondents**

Characteristics	Intervention Group I*	Intervention Group I**	Intervention Group I***	P- value
No. of participants	10	10	10	
Age (Mean ± SD)	62.20 ± 8.651	62.90 ± 3.755	62.50 ± 3.824	0.425
<b>Sex</b>				
Male	2 (20)	4 (40)	3 (30)	0.914
Female	8 (80)	6 (60)	7 (70)	
<b>Education</b>				
Elementary School (SD)	5 (50)	2 (20)	4 (40)	0.759
Junior high school (SMP)	2 (20)	5 (50)	3 (30)	
Senior high school (SMA)	2 (20)	3 (30)	2 (20)	
University (PT)	1 (10)		1 (10)	

**Note:**

\*) = combination of physical activity (walking-slowly and brisk walking)

\*\*) = regular physical activity for one week with the duration of time for approximately 23 minutes daily

\*\*\*) = fast walking for a week with the length of time for about 21 minutes daily

The level of depression during pretest is shown in Table 2.

**Table 2: The level of depression**

Intervention Group	Depression level (Mean ± SD)	Depression category
I	11.30 ± 7.846	Minimal depression
II	15.80 ± 6.408	Minor depression
III	19.90 ± 7.738	Minor depression

Table 2 shows that the degree of depression in group I (a combination of leisurely walking and brisk walking) is a minimal depression. Whereas in group II (comfortable walking) and group III (brisk walking) at the level of mild depression. The results showed that all

**Table 4: The Difference level of Depression**

Group Intervention	Depression level (pretest)	Depression level (posttest)	Mean Difference	p-value
I	11.30	10.30	1	0.547
II	15.80	12.10	3.7	0.417
III	19.90	11.96	7.94	0.720

Table 4 shows that both the intervention group I (leisurely walking and brisk walking), group II (brisk walking), and group III (leisurely walking) was no significant difference between the mean score of depression level before and after intervention ( $p > 0.05$ ). However, the decreasing of mean difference of group III (leisurely) was the highest (7.94). The results showed that although the average means score of depression level was decreased, however, this reduction was not statistically significant ( $p > 0.05$ ).

**DISCUSSION**

Research result shows that the level of depression in a group which was given the combination of leisurely walking and brisk walking is categorized as a minimal depression. Whereas in group II that was given

intervention groups experienced a minimal degree of depression to minor depression.

The level of depression during post-test is given in table 2.

**Table 3: Level of depression**

Intervention Group	Depression level (Mean ± SD)	Depression category
I	10.30 ± 8.407	Minimal depression
II	12.10 ± 5.343	Minimal depression
III	11.96 ± 9.701	Minimal depression

Table 3 reveals that after being given treatment in each group, the average score of depression is decreased. In group II and group III, depression levels decreased from mild depression to minimal depression. Whereas in group I remain at a minimal depression. The results showed that in all groups the low rate is in minimal depression.

The difference level of depression before and after the intervention is provided in table 4.

comfortable walking and group III by brisk walking is classified at the level of minor depression. The results showed that all intervention groups experienced a minimal degree of depression to mild depression.

Older people are groups of people that have the risk of suffering from depression. It is often associated with the condition of the elderly, mainly related to the situation of facing retirement, the death of his/her couple, physical function decline, changes in psychology and mental, health issues, and social isolation. The incidence of depression in the elderly in this study can be related to the age of the elderly which is in the range of 60 years old because the highest incidence of depression would occur in the elderly of 60-74 years old (7).

The incidence of depression in the elderly may be contributed by gender. The prevalence of depression is

common in women than men because it is associated with early onset of menopause or post-menopause <sup>(8)</sup>.

After being given treatment in each group, the average score of depression is decreased. Both in group II and group III, the depression levels decreased from minor depression to minimal depression. Whereas in group I remain at the degree of a minimal depression. The results showed that in all groups the low level is in minimal depression.

This occurrence is probably caused by physical activity undertaken by the samples. Physical activity that is conducted either by moderate-intensity physical activity or vigorous-intensity physical activity is very effective in reducing both minor depression and major depression in older people <sup>(9),(10),(11)</sup>.

<sup>12</sup> Research result showed that there was no significant difference between the mean score of depression level before and after intervention in overall groups ( $p > 0.05$ ). However, the decreasing of mean difference of group III (walking slowly) was the highest (7.94). This is likely due to physical activity performed by the elderly still in short period (one week), so that the old may not yet be regarded as a daily routine activity and as a part of the needs of everyday life. Physical activity is aimed more at the day-to-day operations to spend older people spare time such as the walking event that is inseparable from daily life activities of the elderly<sup>(5)</sup>. For comparison, physical activity in the form of gym for old that is usually conducted in Indonesia - namely "Senam Lansia" or The Gymnastic for Older People - will have a positive impact if it is performed 3 times a week and at least 12 times monthly with duration of 60 minutes for each activity <sup>(12)</sup>.

Based on the three forms of intervention given in the study, physical activity of comfortable walking shows the highest mean score (7.94) concerning the decreasing of depression level compared to the brisk walking (moderate-intensity physical activity) and the combination of physical activity (leisurely walking and brisk walking). This is probably related to activity conducted by slow walking is more relaxed, so the elderly do not feel overwhelmed and not require much concentration to perform activities as the brisk walking and the combination of both leisurely walking and brisk walking

### CONCLUSION

Although there is no statistically significant effect of different physical activities on the levels of depression

in older people in this study, however, the slow walking had the highest mean difference in reducing depression level of the older people compared to brisk walking and the combination of walking slowly and brisk walking. It is suggested that physical activity for elderly can be performed as it still has benefits in reducing depression scores, especially with strolling. Further studies are needed to use larger samples and longer duration of the activity, and laboratory examination (e.g., cortisol hormone) to support the levels of depression in elderly.

The limitation of this study is the number of samples that do not meet the sample size (90 elderly) for each group, and the duration of the implementation of physical activity which is only one week. Another limitation of the study is that there is no measurement of depression indicator (e.g., cortisol hormone) by laboratory examination.

<sup>3</sup> **Conflict of Interest:** The author has no conflict of interests related to the conduct and reporting of this research.

**Source of Funding:** Source of the fund for this project was by Politeknik Kesehatan Kementerian Kesehatan Semarang.

<sup>3</sup> **Ethical Clearance:** Before conduct of the study written permission was obtained from Politeknik Kesehatan Kementerian Kesehatan Semarang, Indonesia. Consent and willingness were established from all the subjects who meet inclusion criteria of this study.

### REFERENCES

- <sup>13</sup> 1. Abikusno, N. (2013) Kelanjutusiaan sehat menuju masyarakat sehat untuk segala usia. *Buletin Jendela Data & Informasi Kesehatan*, Semester I.
- <sup>6</sup> 2. Bodhare, T.N., Kaushal, V., Venkatesh, K., & Kumar, M. A. (2013). Prevalence and risk factors of depression among elderly population in rural area. *Perspective in Medical Research*, 1(1): 11-15.
- <sup>9</sup> 3. Onya, O.N., & Stanley, P. C. (2013). Risk factors for depressive illness among elderly good attendees at upth. *IOSR Journal of Dental and Medical Sciences*, 5(2): 77-86.
- <sup>4</sup> 4. Wassink-Vossen, S., Collard, R.M., Voshaar, R.C.O., Comijs, H.C., de Vocht, H.M. & Naarding, P. (2014). Physical (in) activity and depression in older people. *Journal of Affective Disorders*, 161: pp. 65-72.

5. WHO. (2010). *Global recommendations on physical activity for health*. Switzerland.
6. Beck, A. T., Steer, R. A., Ball, R., & Ranieri, W. F. (1996). Comparison of Beck Depression Inventories-IA and-II in psychiatric outpatients. *Journal of personality assessment*, 67(3), 588-597.
7. Kartika, S. (2012). Gambaran Tingkat Depresi Pada Lanjut Usia (Lansia) di Panti Sosial Tresna Wredha Budi Mulia 01 dan 03 Jakarta Timur.
8. Das, J., Farzana, F. D., Ferdous, F., & Ahmed, S. (2014). Factors associated with elderly depression among rural Bangladeshi individuals. *American Journal of Psychiatry and Neuroscience*, 2(1): pp. 1-7.
9. Peterson, D.H. & Warburton, D. (2009). Physical activity and functional limitations in older adults: A systematic review related to Canada's Physical Activity Guidelines. *International Journal of Behavioral Nutrition and Physical Activity*.
10. Lee, H., Lee, J.A., Brar, J.S., Rush, E.B. and Jolley, C.J. (2014). Physical activity and depressive symptoms in older adults. *Geriatr Nurs*, 35(1): pp. 37-41.
11. Hallgren, M., Herring, M.P., Owen, N., Dunstan, D., Ekblom, O., Helgadottir, B., Nakitanda, O. A. & Forsell, Y. (2016). Exercise, physical activity, and sedentary behavior in the treatment of depression: broadening the scientific perspectives and clinical opportunities. *Front Psychiatry*, 7 (36).
12. Sun, F., Norman, I.J. & While, A.E. (2013). Physical activity in older people: a systematic review. *BMC Public Health*, 13: pp. 449

## 48. The role of physical activity in determining

### ORIGINALITY REPORT

24%

SIMILARITY INDEX

19%

INTERNET SOURCES

16%

PUBLICATIONS

17%

STUDENT PAPERS

### PRIMARY SOURCES

1	<a href="http://eprints.stikes-aisyiahbandung.ac.id">eprints.stikes-aisyiahbandung.ac.id</a> Internet Source	2%
2	<a href="http://kclpure.kcl.ac.uk">kclpure.kcl.ac.uk</a> Internet Source	2%
3	Submitted to Purdue University Student Paper	1%
4	Submitted to University of Abertay Dundee Student Paper	1%
5	<a href="http://www.wikidoc.org">www.wikidoc.org</a> Internet Source	1%
6	Submitted to American Public University System Student Paper	1%
7	<a href="http://www.biomedcentral.com">www.biomedcentral.com</a> Internet Source	1%
8	<a href="http://ijbnpa.biomedcentral.com">ijbnpa.biomedcentral.com</a> Internet Source	1%
9	Oluyinka Emmanuel Majekodunmi, Adetunji Obadeji, Lateef Olutoyin Oluwole, Olawoye	1%

Oyelami. "Depression and associated physical co-morbidities in elderly prison inmates",  
International Journal of Mental Health, 2017

Publication

---

10	<a href="http://jmlm.ut.ac.ir">jmlm.ut.ac.ir</a> Internet Source	1 %
11	"Posters accepted (in paper number order) : Abstracts", Nutrition & Dietetics, 2012. Publication	1 %
12	<a href="http://repository.binausadabali.ac.id">repository.binausadabali.ac.id</a> Internet Source	1 %
13	<a href="http://scitepress.org">scitepress.org</a> Internet Source	1 %
14	Submitted to King's College Student Paper	1 %
15	<a href="http://www.cmu.edu">www.cmu.edu</a> Internet Source	1 %
16	<a href="http://scholarworks.waldenu.edu">scholarworks.waldenu.edu</a> Internet Source	1 %
17	<a href="http://ijps.tums.ac.ir">ijps.tums.ac.ir</a> Internet Source	1 %
18	Submitted to Universitas Airlangga Student Paper	1 %
19	<a href="http://eprints.undip.ac.id">eprints.undip.ac.id</a> Internet Source	1 %

---



20	<a href="https://zenodo.org">zenodo.org</a> Internet Source	1 %
21	<a href="https://pdffox.com">pdffox.com</a> Internet Source	<1 %
22	<a href="https://works.bepress.com">works.bepress.com</a> Internet Source	<1 %
23	Tasnim Rahman Disu, Nusrat Jahan Anne, Mark D. Griffiths, Mohammed A. Mamun. "Risk factors of geriatric depression among elderly Bangladeshi people: A pilot interview study", Asian Journal of Psychiatry, 2019 Publication	<1 %
24	<a href="https://cyberleninka.org">cyberleninka.org</a> Internet Source	<1 %
25	<a href="https://jnk.phb.ac.id">jnk.phb.ac.id</a> Internet Source	<1 %
26	<a href="https://jhs.mazums.ac.ir">jhs.mazums.ac.ir</a> Internet Source	<1 %
27	<a href="https://journals.plos.org">journals.plos.org</a> Internet Source	<1 %
28	J Bucksch. "Physical activity of moderate intensity in leisure time and the risk of all cause mortality", British Journal of Sports Medicine, 2005 Publication	<1 %

29

Siti Choirul Dwi Astuti, Suhartono Suhartono, Ngadiyono Ngadiyono, Supriyana Supriyana. "ALOE VERA BARBADENSIS MILLER AS AN ALTERNATIVE TREATMENT FOR CHILDREN WITH FEVER", Belitung Nursing Journal, 2017

Publication

<1 %

30

Yohana Putri Apriyanti, Suhartono Suhartono, Ngadiyono Ngadiyono. "THE IMPACT OF LAVENDER AROMATHERAPY ON PAIN INTENSITY AND BETA-ENDORPHIN LEVELS IN POST-CAESAREAN MOTHERS", Belitung Nursing Journal, 2017

Publication

<1 %

31

journal.wima.ac.id

Internet Source

<1 %

32

Ni Wayan Rahayu Ningtyas, RR Sri Endang Pujiastuti, Nina Indriyawati. "EFFECTIVENESS OF PROGRESSIVE MOBILIZATION LEVEL I AND II ON HEMODYNAMIC STATUS AND DECUBITUS ULCER RISK IN CRITICALLY ILL PATIENTS", Belitung Nursing Journal, 2017

Publication

<1 %

Exclude quotes Off

Exclude matches Off

Exclude bibliography Off