

SURAT KETERANGAN

Nomor: 037/UNUSA-LPPM/Adm-I/I/2023

Lembaga Penelitian dan Pengabdian Kepada Masyarakat (LPPM) Universitas Nahdlatul Ulama Surabaya menerangkan telah selesai melakukan pemeriksaan duplikasi dengan membandingkan artikel-artikel lain menggunakan perangkat lunak **Turnitin** pada tanggal 03 Januari 2023.

Judul : Physical Fitness Is Correlated with Quality of Life among Elderly
Gymnastics Club from Haji General Hospital Surabaya, Indonesia

Penulis : Hasan, Rita Vivera Pane

No. Pemeriksaan : 2023.01.11.022

Dengan Hasil sebagai Berikut:

Tingkat Kesamaan diseluruh artikel (*Similarity Index*) yaitu 13%

Demikian surat keterangan ini dibuat untuk digunakan sebagaimana mestinya.

Surabaya, 11 Januari 2023

Ketua LPPM



UNUSA
LPPM

Achmad Syafiuddin, Ph.D

NPP: 20071300

LPPM Universitas Nahdlatul Ulama Surabaya

Website : lppm.unusa.ac.id

Email : lppm@unusa.ac.id

Hotline : 0838.5706.3867

Physical Fitness Is Correlated with Quality of Life among Elderly Gymnastics Club from Haji General Hospital Surabaya, Indonesia

by PaneRita Vivera

Submission date: 03-Jan-2023 02:43PM (UTC+0700)

Submission ID: 1988150515

File name: Art_Physical.pdf (538.63K)

Word count: 3134

Character count: 16157

Physical Fitness Is Correlated with Quality of Life among Elderly Gymnastics Club from Haji General Hospital Surabaya, Indonesia

Hasan Hasan,¹ Rita Vivera Pane^{2,3}

¹Faculty of Medicine, Airlangga University, Surabaya, Indonesia, ²Faculty of Medicine, Nahdlatul Ulama University of Surabaya, Indonesia, ³Department of Physical and Rehabilitation Medicine, Haji General Hospital Surabaya, Indonesia

Abstract

Background: Indonesia is the fourth most populated country, of whom 10.8% are elderly people. The quality of life (QOL), which includes physical health, psychological health, social relationships, and the environment, is crucial as physical fitness may reflect the ability to perform daily activities without significant fatigue. The objective of this study was to explore the correlation of physical fitness with the QOL among the elderly.

Methods: This was an analytic observational study with a cross-sectional approach, including members of the elderly gymnastics club of the Haji General Hospital Surabaya. The physical fitness value was measured based on VO_2 max using a 6-minute walk test (6MWT). The VO_2 max ($0.03 \times \text{mileage(m)} + 3.98 \text{ cc/kilogram body weight/minute}$) was categorized into poor, moderate, and good. The QOL was assessed with WHOQOL-100 and grouped into poor, moderate, and good QOL. Data were analyzed by the Spearman correlation test.

Results: In total, 33 elderly were recruited, with an average age was 67.85 ± 6.11 years (range 60–78), mean height was 1.49 ± 0.09 m, mean weight was 57.65 ± 10.53 kg, and mean BMI was 24.92 ± 3.69 . The mean VO_2 max was 16.96 ± 2.37 , and the QOL was 64.61 ± 6.82 mL/kg/minute. The 6MWT resulted in the physical fitness of poor (15%; n=5), moderate (36%; n12), and good (48%; n16). The WHOQOL assessment showed moderate (30%; n=10) and good (61%; n=23) QOL. Spearman correlation test results showed a correlation between physical fitness and the QOL (coefficient 0.356 and $p = 0.042$).

Conclusions: There is a correlation between physical fitness and QOL among the elderly, suggesting that increasing physical fitness among the elderly, adjusted to their physical health condition, is important to get a good quality of life.

Keywords: Elderly, physical fitness, QOL, gymnastics club, WHOQOL

Introduction

The aging process occurs progressive and irreversible, often impacting the quality of life (QOL).¹ The Indonesian elderly population in 2021 was 29.3 million people, or equal to 10.8% of its population.² The number of elderly people worldwide in 2019 was 703 million, more than children under five years old.^{3,4} The aging process affects the body functions, including a decrease in muscle strength and exercise capacity. The elderly often use the limited capacity of their body function to fulfill the activities of daily life (ADL).⁵ The elderly are generally physically less active than younger adults. However, the elderly

can increase their physical activity, which prevents mortality and increases functional independence.⁶ Regular physical activity (PA) improves physiological parameters such as VO_2 max and muscle strength. Moreover, it also affects mental health, emotional and psychological function, social well-being, and cognitive function improvement.⁷

Physical fitness is the ability of a body to carry out physical activities or to perform daily tasks productively without any limitations or causes excessive fatigue.⁸ Physical fitness is strongly related to physical conditions. A good level of physical fitness is that the person can carry out activities for a long time.⁹ Physical fitness is one of the important

Correspondence: Dr. dr. Rita Vivera Pane, Sp.KFR-K, FIPP, CIPS, Department of Physical Medicine and Rehabilitation Medicine, Haji General Hospital Surabaya, Jalan Manyar Kertoadi Surabaya, Indonesia, E-mail: dr.rita@unusa.ac.id

8

Althea Medical Journal. 2022;9(4)

8

<https://doi.org/10.15850/amj.v9n4.2791>

factors for carrying out physical activities and sports, which positively impacts cognitive, psychomotor, and affective development.¹⁰ Physical activity and physical fitness are positively related to physical function,¹¹ and related to the prevention and management of several health-related conditions faced by the elderly.¹² The most commonly used method to evaluate functional capacity is the 6-minute walking test (6MWT).¹³ The maximum oxygen (O_2) consumption or VO_2 max has been defined as the maximum capacity to transport and use oxygen. VO_2 max is often used to measure an individual's aerobic capacity. Normally, VO_2 max level decreases gradually with aging, about a 10% decrease rate per decade after 25 years¹¹ and 15% over 50 years.¹⁴

The most important indicators of the health and well-being² of the elderly are the quality of life (QOL).³ According to the World Health Organization (WHO), the QOL³ could be assessed by person's perception of their position in life, in the context of culture and values in their surrounding environment, as well as with the goals, expectations, standards, and attention of each individu.¹⁵

There are several instruments of QOL assessment, such as World Health Organization Quality of Life (WHOQOL)-100, WHOQOL-BREF, and WHOQOL-OLD.¹⁵ The WHOQOL is a simple instrument and can be evaluated in all ages. The study of the QOL of the elderly using the WHOQOL-BREF conducted in Indonesia showed that most of the elderly had low quality of life scores on several aspects of each domain, consisting¹⁴ energy adequacy, ability to carry out ADL, satisfaction with physical capacity, ability to work, ability to concentrate, acceptance of physical appearance, satisfaction with sex life, financially sufficient, information availability, recreational activities, and transportation.¹⁴⁵

The objective of this study was to determine the correlation of physical fitness with quality of life using WHOQOL-BREF among members of the elderly gymnastics club at Haji General Hospital of Surabaya.

Methods

This study was an analytical observational study design with a cross-sectional approach. The sampling technique used simple random sampling with a minimum of 33 samples. The elderly aged 60 until 80 years who were members of the elderly gymnastics club of Haji Hospital Surabaya for at least six months and routinely exercised two times a week were

included in this study. Elderly people with heart disease and lung disease were excluded from the study. Demographic data such as age, gender, height, and weight were recorded.

VO_2 max was an indicator of physical fitness. In this study, we used the 6-minute walk submaximal test to measure VO_2 max with the formula= $(0.03 \times \text{mileage(m)}) + 3.98$ cc/kilogram body weight/minute. In brief, participants walked on a 30 meters track for 6 minutes. After 6 minutes, the distance traveled by the participants was calculated. The result was categorized into poor, moderate, and good, with scores <13.98, 13.98–16.98, and >16.98, respectively.

Whereas the quality-of-life value was obtained using the WHOQOL-BREF assessment instrument questionnaire with 24 items, including four domains physical, psychological, social, and environmental health. WHOQOL-BREF questionnaire was asked to all participants separately before or after the 6-minute walking test was performed. The WHOQOL-BREF questionnaire in this study was performed by interviewing each respondent with the same interviewer to minimize confounding factors.

All respondents in this study were members of routine gymnastics. They voluntarily came to Haji General Hospital of Surabaya with the assumption that their cognitive function was good, so there was no need to evaluate the MMSE before the WHOQOL-BREF evaluation was carried out.

The quality of life was divided¹⁰ into five categories include very poor (0–20), poor (21–40), moderate (41–60), good (60–80), and very good (80–100).⁷ Ethical approval of this study was obtained from the Research Ethics Committee of the Faculty of Medicine, Airlangga University, Surabaya number 142/EC/KEPK/FKUA/2017.

All data was collected using Microsoft Excel, while the statistical analysis was performed using IBM SPSS 24 version. When the data were not distributed normally, the normality test had been employed, so the non-parametric test was performed.¹⁷ We performed the Spearman correlation test to analyze the correlation between physical fitness and QOL.

Results

In total, 33 elderly people, and members of the elderly gymnastics club at Haji General Hospital Surabaya, were included. The average age was 67.85 ± 6.11 years, ranging from 60 to 78 years. The average height was 1.49 ± 0.09

Table 1 Characteristics of the Elderly Members of the Gymnastics Club of Haji Hospital Surabaya based on Physical Fitness and Quality of Life

	Min	Max	Median	Mean ± SD
Age (year)	60.00	78.00	67	67.85 ± 6.11
Body height (m)	1.35	1.71	1.52	1.55 ± 0.09
Weight (kg)	36.00	89.00	59	59.53 ± 10.53
BMI	16.65	32.87	23.82	24.92 ± 3.69
VO ₂ max (mL/kg/minute)	11.63	20.18	17.48	16.96 ± 2.37
Quality of Life	54.50	78.00	62.75	64.61 ± 6.82

Note: VO₂max was an indicator of physical fitness

Table 2 Physical Fitness Life of the Elderly Members of the Gymnastics Club of Haji Hospital Surabaya based on Age and Gender

	Physical Fitness		
	Poor	Moderate	Good
Age (mean)	71	70.8	64.6
Male (n)	2	5	4
Female (n)	3	7	12

Note: VO₂max was an indicator of physical fitness. VO₂max formula=(0.03 x mileage(m))+3.98 cc/Kilogram body weight/minute with poor, moderate, and good with score <13.98, 13.98-16.98, and >16.98, respectively

m, weight was 57.65±10.53 kg, and BMI was 24.92±3.69. The average Vo₂max was 16.96 ± 2.37, and QOL was 64.61±6.82 ml/kg/minute (Table 1).

There was no poor QOL in this study. Of five elderly people with poor physical fitness were 80%; with moderate QOL and 20% with good QOL.

Twelve elderly people with moderate physical fitness were 25% with moderate QOL

and 75% with good QOL. While sixteen elderly people had good physical fitness, they were 19% with moderate QOL and 81% had good QOL (Table 2).

The result showed there was a correlation between physical fitness with QOL among the elderly in the elderly gymnastics club of Haji General Hospital Surabaya (p=0.042). However, the correlation coefficient result was 0.356, representing a weak correlation.

Table 3 Quality of Life of the Elderly Members of Gymnastics Club of Haji Hospital Surabaya, based on Age and Gender

	Quality of Life		
	Poor	Moderate	Good
Age (mean)	-	68.9	67.3
Male (n)	-	3	8
Female (n)	-	7	15

Table 4 Correlation between Physical Fitness with Quality of Life

Physical Fitness	Quality of Life			Total	P-value*
	Poor	Moderate	Good		
Poor	-	4	1	5	0.042
Moderate	-	3	9	12	
Good	-	3	13	16	
Total	-	10	23	33	

Note: *Statistical analysis using the Spearman correlation test with a significant value of p (<0.05)

Discussions

VO₂max components used in this study are age, gender, weight, height, and distance in the 6MWT. The 6MWT is commonly used to evaluate functional capacity because of its simplicity, ease of interpretation, and ADL representativeness.⁵ The average VO₂max obtained in this study was 64.6 mL/kg/minute.

A population-based study in China showed the average VO₂max among people above 50 years was 36.8±9.2 mL/kg/minute.¹⁷ Similarly, the VO₂max among people in another study above 60 years was 39.2 mL/kg/minute in man and 31.1 mL/kg/minute in women.¹⁸ The results of VO₂max in this study were higher than other studies. Since they are members of the elderly gymnastics club of Haji General Hospital of Surabaya, who routinely do gymnastics three times a week, leading to a higher VO₂max compared to other populations of the same age.

The QOL results show that about one-third had moderate QOL, and two third were good. Interestingly, the elderly in community-dwelling aged from 80 until 93 years in Poland presents a good level of QOL.¹ It is worth noting that the elderly's physical and mental health are the result of their life experiences and the current situation, which is determined by many psychosocial and spiritual factors. Therefore, emotional, spiritual, and cognitive domains need to be included in addition to physical and social health in quality-of-life criteria, indicating that there is a relationship between physical activity and various aspects of QOL.¹⁹

This study has a significant correlation between Physical Fitness and WHOQOL-BREF. Another study has shown that the superior 6MWT performance participant may be affected by their good QOL in several domains.¹³ Interestingly, there is a significant correlation between 6MWT distance and QOL in the elderly.⁵ There is a positive assessment of the elderly in QOL domains associated with their physical fitness level, mobility endurance, upper and lower body strength, balance, coordination, and speed.¹ Furthermore, there is a relationship between physical fitness and physical health. Those with poor physical health may not be able to perform tasks productively without fatigue, which also affects the quality of life.¹⁵ A study has identified differences between functional fitness and quality of life among elderly women based on their physical activity levels, which were measured using the Global Recommendations

on Physical Activity for Health, showed that older adults who met these physical activity recommendations achieved slightly good in all QOL domains.²⁰ Quality of life impacts a person's satisfaction in living his/her daily life. The religious or spiritual experience, as well as the cognitive ability, could accept the physical condition and age, or chronic illness suffered, thus allowing them to understand their condition. Our respondents in this study have routinely received knowledge about health and how to maintain physical conditions and improve them whenever it is still possible to improve.

This study shows a weak correlation between QOL and physical fitness; respondents with poor physical fitness have more moderate than good QOL. On the other hand, respondents who have good physical fitness have more good QOL. Interestingly, there is a respondent who has a poor fitness category but with good QOL. By deeper investigation, we found that this respondent is always satisfied with his current condition. He told us that his culture or religion teaches him to always be grateful to God in all circumstances and to always compare with people with worse QOL than himself. Therefore, it is necessary to include spiritual and cognitive elements in the QOL domain.¹⁹

The limitation of the study is that other domains, such as spirituality, have not been evaluated, which may be affected the quality of life, especially among the elderly. Further study may need to consider this domain.

In conclusion, physical fitness among the elderly is correlated with quality of life, suggesting that physical fitness among the elderly needs to be enhanced, albeit it must be monitored by a physician and adjusted to their physical health conditions to achieve a good quality of life.

References

1. Lepsey E, Radwańska E, Żurek G, Żurek A, Kaczorowska A, Radajewska A, et al. Association of physical fitness with quality of life in community-dwelling older adults aged 80 and over in Poland: a cross-sectional study. *BMC Geriatr*. 2021;21(1):491.
2. Badan Pusat Statistik. Statistik penduduk lanjut usia 2021 [Internet]. 2021. [cited 2022 Apr 17]. Available from: <https://www.bps.go.id/publication/2021/12/21/c3fd9f27372f6ddcf7462006/statistik-penduduk-lanjut-usia-2021.html>.

3. Parsuraman G, Vijayakumar P, Anantha Eashwar V, Dutta R, Mohan Y, Jain T, et al. An epidemiological study on quality of life among elderly in an urban area of Thirumazhisai, Tamilnadu. *J Family Med Prim Care*. 2021;10(6):2293-8.
4. United Nations, Department of Economic and Social Affairs, Population Division. *World population ageing 2019: highlight*. New York: United Nations; 2019.
5. Mohanan H, Kutty RK, Kamaraj B. Impact of six minute walk distance with quality of life in geriatrics population. *Int J Appl Res*. 2018;4(6):37-47.
6. Taylor D. Physical activity is medicine for older adults. *Postgrad Med J*. 2014;90(1059):26-32.
7. Langhammer B, Bergland A, Rydwick E. The importance of physical activity exercise among older people. *Biomed Res Int*. 2018;2018:7856823.
8. Rohmah L, Muhammad HN. Tingkat kebugaran jasmani dan aktivitas fisik siswa sekolah. *JPOK*. 2021;09(01):511-9.
9. Sinuraya JF, Barus JBNB. Tingkat kebugaran jasmani mahasiswa pendidikan olahraga tahun akademik 2019/2020 Universitas Quality Berastagi. *Kinestetik*. 2020;4(1):23-32.
10. Rozi F, Safitri SR, Syukriadi A. Evaluasi Tingkat Kebugaran Jasmani Mahasiswa pada Perkuliahan Pendidikan Jasmani IAIN Salatiga. *J Edutrained*. 2021;5(1):13-8.
11. Gu X, Chang M, Solmon MA. Physical activity, physical fitness, and health-related quality of life in school-aged children. *J Teach Phys Educ*. 2016;35(2):117-26.
12. Ayenigbara IO. The contributions of physical activity and fitness for the optimal health and wellness of the elderly people. *J Gerontol Geriatr*. 2020;68(1):40-6.
13. Serra AJ, De Carvalho PDTC, Lanza F, De Amorim Flandes C, Silva SC, Suzuki FS, et al. Correlation of six-minute walking performance with quality of life is domain- and gender-specific in healthy older adults. *PLoS One*. 2015;10(2):e0117359.
14. Kim CH, Wheatley CM, Behnia M, Johnson BD. The effect of aging on relationships between lean body mass and VO2max in rowers. *PLoS One*. 2016;11(8):e0160275.
15. Bangun BCK, Gondodiputro S, Andayani S. Insomnia and quality of life in the elderly: WHOQOL-BREF and WHOQOL-OLD Indonesian Version. *KEMAS*. 2020;16(2):249-55.
16. Hidayati AR, Gondodiputro S, Rahmiati L. Elderly profile of quality of life using WHOQOL-BREF Indonesian Version: a community-dwelling. *Althea Med J*. 2018;5(2):105-10.
17. Xiang L, Deng K, Mei Q, Gao Z, Yang T, Wang A, et al. Population and age-based cardiorespiratory fitness level investigation and automatic prediction. *Front Cardiovasc Med*. 2022;8:758589.
18. Loe H, Rognmo Ø, Saltin B, Wisløff U. Aerobic capacity reference data in 3816 healthy men and women 20-90 years. *PLoS One*. 2013;8(5):e64319.
19. Gill DL, Hammond CC, Reifsteck EJ, Jehu CM, Williams RA, Adams MM, et al. Physical activity and quality of life. *J Prev Med Public Health*. 2013;46 Suppl 1(Suppl 1):S28-34.
20. Nawrocka A, Polechoński J, Garbaciak W, Mynarski W. Functional fitness and quality of life among women over 60 years of age depending on their level of objectively measured physical activity. *Int J Environ Res Public Health*. 2019 Mar 18;16(6):972.

Physical Fitness Is Correlated with Quality of Life among Elderly Gymnastics Club from Haji General Hospital Surabaya, Indonesia

ORIGINALITY REPORT

13%

SIMILARITY INDEX

12%

INTERNET SOURCES

10%

PUBLICATIONS

6%

STUDENT PAPERS

PRIMARY SOURCES

1 bmcgeriatr.biomedcentral.com 2%
Internet Source

2 www.clinmedkaz.org 1%
Internet Source

3 repository.stikim.ac.id 1%
Internet Source

4 journal.um-surabaya.ac.id 1%
Internet Source

5 www2.mdpi.com 1%
Internet Source

6 Submitted to Southern Cross University 1%
Student Paper

7 indonesianjournalofclinicalpathology.org 1%
Internet Source

8 journal.fk.unpad.ac.id 1%
Internet Source

ojs2.kesdammedan.ac.id

9	Internet Source	1 %
10	www.wrrl-info.de Internet Source	1 %
11	journals.lww.com Internet Source	1 %
12	scifes.fkm.ui.ac.id Internet Source	1 %
13	www.ncbi.nlm.nih.gov Internet Source	1 %
14	Submitted to University of Moratuwa Student Paper	1 %
15	Submitted to Pennsylvania State System of Higher Education Student Paper	1 %
16	Susisusanti Daely, Tuti Nuraini, Dewi Gayatri, Hening Pujasari. "Impacts of Age and Marital Status on the Elderly's Quality of Life in An Elderly Social Institution", Journal of Public Health Research, 2022 Publication	1 %

Exclude quotes On

Exclude matches < 1%

Exclude bibliography On