



Examination of Physical Activity and Health-Related Quality of Life in Adults with Chronic Diseases

Erkan GÜLGÖSTEREN*¹ 

¹Mersin University, Faculty of Sports Science, Mersin / Türkiye

Keywords

Elderly Individuals
Physical Activity
Chronic Disease
HRQoL

ABSTRACT

The aim of this study is to examine the relationship between Physical activity (PA) and health-related quality of life (HRQoL) in adults with chronic diseases. **Methods:** Participants in the study, aged 60 and over (120 men, 70 women), were divided into 3 groups according to their physical activity levels; low physical activity level (<150 minutes/week), moderate physical activity (150/300 minutes/week) and high physical activity level (>300 minutes/week). It was calculated using health-related quality of life (HRQoL). Spearman correlation coefficient was applied to determine the relationship between physical activity level and HRQoL scores in elderly individuals. **Results:** showed that there is a significant relationship between physical activity levels and HRQoL dimensions. Significant differences were detected in HRQoL scores between high, medium and low physical activity groups ($P<0.05$). The moderate and high physical activity groups were found to have significantly higher HRQoL scores in all dimensions than the low physical activity group ($P<0.001$). **Conclusion:** It was determined that the low physical activity group was negatively affected by chronic diseases compared to the high and medium physical activity groups. It is concluded that high and moderate levels of physical activity have a large positive association with HRQoL in individuals with chronic disease.

1. INTRODUCTION

The proportion of elderly people is increasing in both developed and developing countries. Although women's life expectancy is longer than men's, on average 6-8 years [1], older women are more likely to experience functional disability in terms of morbidity and personal self-care than men of similar age [2]. The aging process corresponds to an increased incidence of chronic conditions such as obesity, diabetes, hypertension, cardiovascular diseases, and cancer [3]. All of these chronic conditions impact worsening health-related quality of life (HRQoL), especially in the elderly [4].

Physical activity plays an important role in increasing health-related quality of life (HRQoL) among older adults and improving aging health. Quality of Life (QoL) is defined as the measure adjusted according to the impairments, functional conditions, and intuition determined for the life span [5,6]. HRQoL generally consists of many dimensions, including quality of life, general health, symptoms, biological and functional states, not

only the 5 mentioned dimensions but also environmental and individual dimensions. Each dimension directly affects the next variable. However, environmental and individual variables directly affect the measurement of all dimensions except the biological dimension [7]. Physical activity appears to be associated with improved functional performance and HRQoL [8].

Physical activity can help older adults and aging people lose or maintain their health. Moreover, regulation of physical activity can proportionally help the elderly improve HRQoL and increase their enjoyment of life [9]. Participation in physical activity (PA) supports healthy aging and plays an important role in improving quality of life (QoL) among the elderly [6]. Evidence shows that participating in regular moderate-intensity PA (e.g., walking, cycling, or gentle sports) has significant health benefits, including improved treatment of many diseases [10]. The evidence for the health benefits of PA is stronger for adults aged 65 and over than for any other age group, as the consequences of inactivity are more severe for this age group. Compared to

*Corresponding author

Erkan GÜLGÖSTEREN (egulgosteren@mersin.edu.tr)

less active seniors, active seniors have lower all-cause mortality rates and higher levels of muscle fitness [11].

Therefore, increasing FA among older persons has become an international priority. This priority coincides with the fact that the number of elderly people is increasing worldwide and the proportion of people over 60 is increasing faster than any other age group.

This means that society will need to rethink how to care for the elderly in order to maximize the health and functional capacity of older people. Aging, health status, PA and disability affect independence and QoL in older people. QoL relates to an individual's perception of their position in life in the context of culture and value systems and is complexly influenced by the individual's physical health, psychological state, level of independence, and social relationships [12]. Health-related quality of life (HRQoL) is part of a multidimensional approach that considers physical, mental and social aspects. This research; To examine the relationship between Physical activity (PA) and health-related quality of life (HRQoL) in adults with chronic diseases.

2. MATERIALS AND METHODS

2.1. Participants

This study is a cross-sectional study conducted on patients with chronic diseases in a State Hospital outpatient clinic between March and July 2019. Participants in the study, aged 60 and over (120 men, 70 women), were divided into 3 groups according to their physical activity levels; 1. Low level of physical activity (walking time <150 minutes / week), 2. Moderate physical activity level (walking time 150–300 minutes / week), 3. Divided into 3 groups according to high physical activity level (walking time > 300 minutes/week). Participants were asked to report how many minutes they walked per week. Subjects were excluded from the study if they had orthopedic limitations, cognitive impairments, or were unable to walk for at least 6 minutes without any assistance.

Participant provided informed consent, with the volunteer form covering research details, risks, benefits, confidentiality, and participant rights. Studies involving humans were approved by the local ethics committee. The research strictly adhered to the ethical principles of the Declaration of Helsinki, prioritizing participant's rights and well-being in design, procedures, and confidentiality measures.

2.2. Data Collection Tools

Evaluation procedures were carried out using two scales. While physical activity levels were evaluated using the PA-SCAQ, HRQoL was evaluated using the Euro-Qol-5 level scale (EQ-5D-3L). Basic clinical features: All participants were interviewed personally for 10 minutes and scale forms were tried to be filled in and collected by the researcher. Basic clinical features included; age, gender, medical history, medications, motor or sensory dysfunction. Additionally, to calculate body mass index (BMI), BMI was obtained as = Body Weight (kg) / Height²(m).

2.2.1. Measurement of Activities of Daily Living (ADL)

The Katz index was used to evaluate personal ADL [13]. The index has been described as a valid and reliable measure to determine the level of independence in performing ADLs [14]. The assessment is based on the ability to perform an activity without the assistance of another person. The Katz ADL index includes six basic activities of daily living: bathing, dressing, toileting, transferring, sustaining, and feeding. Ability to perform each activity was assessed using a two-point categorical scale: 1 = independence and 0 = dependence. The total score ranges from 0 (low function, dependent) to 6 (high function, independent).

2.2.2. Physical Activity Questionnaire

The Physical Activity Socio-Cultural Adapted Questionnaire (PA-SCAQ) was administered to measure each participant's physical activity level [15,16]. PA-SCAQ; How do you walk? How long is your walking time? What are your activities at home (such as walking or gardening)? The structure of the survey regarding physical activity areas; duration and frequency were performed according to the recommendations of the World Health Organization (WHO) [17], taking into account some appropriate variants of physical activity measures valid for elderly subjects. According to WHO recommendations, physical activity variables are classified as walking, home activities and outdoor activities.

2.2.3. HRQoL (EQ-5D) General Quality of Life Scale

EQ-5D is a general health scale used to measure quality of life. EQ-5D scale: It consists of five dimensions: mobility, self-care, usual activities,

pain/discomfort and anxiety/depression. Responses to each dimension; There are 3 options: no problem, some problem and major problem. In the score function, a value of 0 indicates death, a value of 1 indicates perfect health, while negative values indicate unconsciousness, bedridden living, etc. shows the situations. Quality of life scores ranging from 0 to 100 are obtained from the scale [18,19].

2.3. Statistical analysis

All statistical analyzes were performed with SPSS version 22.0. In the analysis of the data obtained in the research; frequency, arithmetic mean, standard deviation; Spearman correlation Test, Mann-Whitney U tests were used to measure

the strength and direction of the relationship between physical activity and HRQoL (EQ-5D), and Kruskal-Wallis tests were used to determine changes between groups. Significance was accepted as $p < 0.05$.

3. RESULTS

This study included 190 older adults (120 men and 70 women). Their average age was (58 ± 4.3) . Participants' chronic disease diagnosis; 41.1% was determined as diabetes, 24.2% as hypertension, 34.7% as cardiovascular disease. Approximately 58.9% of the participants were smokers. Sleep quality was good in 32.4% of the subjects and poor in 67.4% (Table 1).

Table 1. Demographic and characteristic characteristics of 65 participants with chronic diseases

Variables	n(%)
Gender	
Male (%)	120(63,2)
Female (%)	70(36,8)
Body Height (cm) (X± SD)	169± 4,5
Body Weight (kg) (X± SD)	76,4±5,3
BMI (kg/m ²) (X± SD)	26,4±2,3
Age Groups (%)	
60-69 age	92(48,4)
70-79	65(34,2)
80 and above	33(17,4)
Chronic Disease State	
Diabetes Mellitus	78(41,1)
Hypertension	46(24,2)
Cardiovascular disease	66(34,7)
Smoking habits (Yes / No)	112(58,9) / 78(41,1)
Sleep quality (Good / Bad)	62(32,6) / 128(67,4)
Walking Time n(%)	
Less than 150 minutes (min./week)	118(62,1)
150 – 300 (min / week)	62(32,6)
More than 300 minutes per week (min/week)	10(5,3)

Body Mass Index (BMI), Number (n), Standard Deviation (SD)

Descriptive measurements of physical activity parameters showed that the percentage of men in the low, medium and high physical activity groups was greater than women ($p < .001$). 38.9% of women and 61.1% of men were at low level of physical activity, and 32.3% of women and 67.7% of men were at medium level of physical activity (Table 2). 62.1% of the participants had low physical activity (walking time <150 minutes/week), 32.6% had moderate physical activity (walking time = 150-300 minutes/week) and 5.3% had high physical activity. activity (walking time >300 minutes/week).

Body mass index (BMI) measurements were given in low physical activity, moderate physical

activity and high physical activity (29.5, 28.2 and 26.3, respectively) ($p < .001$; Table 2). Low physical activity showed higher value. Women were more physically active than men. Outcome measures showed that the incidence of Diabetes Mellitus was higher in the low physical activity group than in the high physical activity group and compared to the moderate physical activity group (66.6%, 25.7%, and 7.7%, respectively). Additionally, as seen in Table 2, the number of smokers was higher in the low physical activity group (59.8%), medium activity group (29.5%) and high physical activity group (10.7%) ($p < .001$; Table 2).

Table 2. Physical activity levels of individuals with chronic diseases

Variables	Low Physical Activity n=118 (%62,1)	Moderate Physical Activity n=62 (%32,6)	High Physical Activity n=10 (%5,3)	P Value
Male n (%)	72(61,1)	42(67,7)	6(60,0)	<.001
Female n (%)	46(38,9)	20(32,3)	4(40,0)	<.001
BMI (kg/m ²) (X± SD)	29,2±2,4	26,3±2,6	23,1±2,4	<.001
Chronic Disease / n (%)				
Diabetes Mellitus n (%)	52(66,6)	20(25,7)	6(7,7)	<.001
Hypertension / n (%)	23(50,0)	17(37,0)	6(13,0)	<.001
Cardiovascular disease/ n (%)	34(51,5)	24(36,4)	8(12,1)	<.001
Smoking habits (Yes / No) /n (%)	67(59,8)/38(48,8)	33(29,5) /27(34,6)	12(10,7) /13(16,6)	<.001

Body Mass Index (BMI), Number (n), Standard Deviation (SD)

As shown in Table 3, the low physical activity level group reported walking problems ranging from mild/moderate to severe/extreme ($p < .001$). A significant difference was detected between the participants ($p < .001$) in the dimensions of mobility, self-care, usual activities, pain/discomfort and anxiety/depression. In the group with moderate physical activity level, walking problems ranging from mild/moderate to severe/extreme levels were recorded ($p < .001$). In the high physical activity group, no participant had severe/extreme walking problems on all

dimensions. Using Kruskal-Wallis tests, results showed statistically significant differences between the 3 groups ($P < .001$); high, medium and low physical activity groups). The moderate and high physical activity groups showed higher HRQoL scores than the low physical activity group on all 5 dimensions. In the EQ-VAS measurement, the high-level group showed higher scores than the intermediate-level group, and the intermediate-level group showed higher scores than the low-level group ($P < .001$), as shown in Table 3.

Table 3. HRQoL Levels of individuals with chronic diseases according to low, moderate and high physical activity levels

HRQoL Variables	Low Physical Activity n=118	Moderate Physical Activity n=62	High Physical Activity n=10	P Value
1. Movement				
1. I do not have any difficulty while walking.	38(32,2)	41(66,1)	7(70,0)	<.001
2. I have some difficulties when walking	72(61,1)	18(20,0)	3(30,0)	
3. I am bedridden	8(6,7)	3(4,9)	0	
2. Self-Care				
1. I have no difficulty taking care of myself	45(38,1)	27(43,5)	5(50)	<.001
2. I have some difficulties washing or dressing myself	65(55,2)	34(54,9)	5(50)	
3. I am not able to wash or dress myself	8(6,7)	1(1,6)	0	
3. Regular Activities				
1. I do not have any difficulties doing my usual work.	67(56,8)	28(45,2)	7(70,0)	<.001
2. I have some difficulties doing my usual work.	47(39,8)	32(51,6)	3(30,0)	
3. I am not able to do my normal work.	4(3,4)	2(3,2)	0	
4. Pain/Discomfort				
1. I have no pain or discomfort	12(10,2)	8(12,9)	6(60,0)	<.001
2. I have moderate pain or discomfort	98(83,1)	52(83,9)	4(40,0)	
3. I have extreme pain or discomfort	8(6,7)	2(3,2)	0	
5. Anxiety/Depression				
1. I am not anxious or depressed	10(8,5)	8(12,9)	3(30,0)	<.001
2. I am moderately anxious or depressed	102(86,4)	51(82,3)	7(70,0)	
3. I am extremely anxious or very depressed.	6(5,1)	3(4,8)	0	
EQ-VAS (Ortalama ± SD)	62±12.3	68±11.2	79±5.6	<.001

P <.05. EQ-VAS = EuroQol-görsel analog skalası, HRQoL = sağlıkla ilgili yaşam kalitesi, n = sayı, SD = standart sapma.

Using the Spearman correlation coefficient, a strong positive correlation occurred in this study between the 5 dimensions of HRQoL and physical

activity level in terms of walking minutes, as shown in Table 4.

Table 4. Correlation coefficient between HRQOL dimensions and physical activity level of individuals with chronic diseases.

HRQoL Variables	% 95 güven aralığı		r _s
	Low Value	High Value	
Movement	0,70	0,41	0,61
Self-Care	0,57	0,37	0,54
Regular Activities	0,67	0,41	0,55
Pain/Discomfort	0,43	0,18	0,54
Anxiety/Depression	0,49	0,20	0,37
EQ-VAS Point	0,52	0,78	0,66

4. DISCUSSION

This study aimed to investigate the relationship between physical activity levels and health-related quality of life (HRQoL) of individuals with chronic diseases. According to our findings; showed a positive relationship between physical activity levels and HRQoL, and it was determined that physical activity also had a significant relationship with the functional and subjective dimensions of HRQoL. This positive relationship suggests that physical activity levels may help individuals with chronic diseases achieve desired health benefits. According to our results, in individuals with chronic diseases, 62.1% of the participants had low physical activity (walking time <150 minutes/week), 32.6% had moderate physical activity (walking time = 150-300 minutes/week). and 5.3% were high physical activity (walking time >300 minutes/week). However, individuals with chronic disease with high levels of physical activity (>300 minutes/week) had higher HRQoL levels. In a study conducted by [8,16,19], it was suggested that light sports and walking had positive effects on controlling cardiovascular diseases in postmenopausal women. Additionally, in another study, all dimensions of HRQoL were significantly higher in the moderate and high PA groups compared to the low physical activity (PA) group. A significant relationship was determined between the five dimensions of HRQoL and FA level. The prevalence of hypertension in the low PA group was (64%) and the prevalence of diabetes was (50%). Finally, it found a strong association between higher levels of physical activity and all dimensions of HRQoL [8]. Many studies have confirmed that regular physical activity has a significant improvement in health variables and disease control [8,17,20].

HRQoL levels of participants with high FA levels were also determined to be high. When

Table 3 was evaluated, it was determined that the mobility dimension in the high physical activity group was higher than the low physical activity group rather than the medium physical activity group. These results support the high relationship between physical activity and HRQoL. The study conducted by Abdelbasset and Nambi supports our findings [20]. This study evaluated HRQoL in independent individuals without cognitive impairments. Walking time appears to be directly related to the positive strength of leg muscles and physical capacity in older individuals. Because walking is a normal physical activity for older adults and can be easily adapted to daily life without any effort [21]. This study included 2 subscales related to HRQoL assessment. The first is functional evaluation; mobility, self-care and usual activities dimensions. On the other hand, pain / discomfort and anxiety / depression dimensions; It was used to evaluate subjective well-being. Therefore, it was considered an easy and valid measure for elderly quality of life [22].

Thus, people with high levels of physical activity showed high scores on the self-care and usual activity dimensions noted in the HRQoL. Therefore, high physical activity supports reducing disease risks in individuals with chronic diseases. Regarding the subjective well-being assessment field from HRQoL sub-dimensions (Pain / discomfort and anxiety / depression); most participants in this study showed mild pain/discomfort and mild anxiety/depression. There were significant differences in subjective well-being variables at moderate and high levels of physical activity compared to low levels of physical activity. Consistent with many studies, our study found that physical activity had positive effects on depression and pain in individuals [8,23,24].

5. Conclusion

In conclusion; It was concluded that high and moderate levels of physical activity have a large positive association with HRQoL in individuals with chronic diseases and positively affect HRQoL. It should be emphasized that physical activity is the driving force behind the positive effects on HRQoL, especially in individuals with chronic diseases, in order to gain active lifestyle habits.

Conflicts of Interest

No conflict of interest is declared by the authors. In addition, no financial support was received.

Ethics Committee

Participant provided informed consent, with the volunteer form covering research details, risks, benefits, confidentiality, and participant rights. Studies involving humans were approved by the local ethics committee. The research strictly adhered to the ethical principles of the Declaration of Helsinki, prioritizing participant's rights and well-being in design, procedures, and confidentiality measures.

Author Contributions

The article was planned and finalized by the author.

REFERENCES

- Hajian-Tilaki, K., Heidari, B., Hajian-Tilaki, A. (2016). Solitary and combined negative influences of diabetes, obesity and hypertension on health-related quality of life of elderly individuals: A population-based cross-sectional study. *Diabetes Metab Syndr*;10:S37-42. [[PubMed](#)]
- Orfila, F., Ferrer, M., Lamarca, R., Tebe, C., Domingo-Salvany, A., Alonso, J. et al.(2006). Gender differences in health-related quality of life among the elderly: The role of objective functional capacity and chronic conditions. *Soc Sci Med*;63:2367- 80. [[CrossRef](#)]
- Wu, S., Wang, R., Jiang, A., Ding, Y., Wu, M., Ma, X., et al. (2014). Abdominal obesity and its association with health-related quality of life in adults: A population-based study in five Chinese cities. *Health Qual Life Outcomes*;12:100. [[PubMed](#)]
- Hajian-Tilaki, K., Hajian-Tilaki, A. (2017). Are Gender Differences in Health-related Quality of Life Attributable to Sociodemographic Characteristics and Chronic Disease Conditions in Elderly People?. *International Journal of Preventive Medicine*; 8(95); 1-5. [[PubMed](#)]
- World Health Organization (2010). Global recommendations on physical activity for health. Geneva, Switzerland: (WHO).
- Vagetti, GC., Barbosa Filho, VC., Moreira, NB, et al. (2014). Association between physical activity and quality of life in the elderly: a systematic review, 2000–2012. *Rev Bras Psiquiatr*;36:76–88. [[PubMed](#)]
- Ferrans, CE., Zerwic, JJ., Wilbur, JE., et al. (2005). Conceptual model of health-related quality of life. *J Nurs Scholarsh*;37:336–42. [[PubMed](#)]
- Halaweh, H., Willen, C., Grimby-Ekman, A., et al. (2015). Physical activity and health-related quality of life among community dwelling elderly. *J Clin Med Res*;7:845–52. [[PubMed](#)]
- Choi, M., Prieto-Merino, D., Dale, C., et al. (2013). Effect of changes in moderate or vigorous physical activity on changes in health related quality of life of elderly British women over seven years. *Qual Life Res*;22:2011–20. [[PubMed](#)]
- Pedersen, BK., Saltin, B. (2006). Evidence for prescribing exercise as therapy in chronic disease. *Scand J Med Sci Sports*;16(Suppl 1):3-63. [[PubMed](#)]
- Paterson DH, Jones GR, Rice CL. (2007). Ageing and physical activity: evidence to develop exercise recommendations for older adults. *Can J Public Health*;98(Suppl 2): S69-108. [[PubMed](#)]
- Svantesson, U., Jones, J., Wolbert, K., Alricsson, M. (2015). Impact of Physical Activity on the Self-Perceived Quality of Life in Non-Frail Older Adults. *J Clin Med Res*;7(8):585-593. [[PubMed](#)]
- Katz, S., Ford, AB., Moskowitz, RW., Jackson, BA., Jaffe, MW. (1963). Studies of illness in the Aged. The Index of Adl: A Standardized Measure of Biological and Psychosocial Function. *JAMA*;185:914-919. [[PubMed](#)]
- Brorsson, B., Asberg, KH. (1984). Katz index of independence in ADL. Reliability and validity in short-term care. *Scand J Rehabil Med*;16(3):125-132. [[PubMed](#)]
- Washburn, RA., Smith, KW., Jette, AM., et al. (1993). The physical activity scale for the elderly (PASE): development and evaluation. *J Clin Epidemiol*;46:153–62. [[PubMed](#)]
- Beitz, R. and Doren, M. (2004). Physical activity and postmenopausal health. *J Br Menopause Soc*;10:70–4. [[PubMed](#)]
- Grimby G. (1986). Physical activity and muscle training in the elderly. *Acta Med Scand Suppl*;711:233–7. [[PubMed](#)]
- Global Recommendations on Physical Activity for Health. Geneva, 2010. [[PubMed](#)]
- Machon, M., Larranga, I., Dorronsoro, M., et al. (2017). Health-related quality of life and associated factors in functionally independent older people. *BMC Geriatrics*;17:19. [[PubMed](#)]
- Aburuz, S., Bulatova, N., Twalbeh, M., et al. (2009). The validity and reliability of the Arabic version of the EQ-5D: a study from Jordan. *Ann Saudi Med*;29:304–8. [[PubMed](#)]
- Abdelbasset, WK. and Nambi, G. (2017). Relationship between physical activity and health-related quality of life in elderly people: a cross-sectional study. *Sanamed*;12:87–92. [[CrossRef](#)]

22. Atalay, OT. and Cavlak, U. (2012). The impact of unsupervised regular walking on health: a sample of Turkish middle-aged and older adults. *Eur Rev Aging Phys Act*;9:71–9.
23. Holland, R., Smith, RD., Harvey, I., et al. (2004). Assessing quality of life in the elderly: a direct comparison of the EQ-5D and AQL. *Health Econ*;13:793–805. [[PubMed](#)]
24. Abdelbasset, WK., Alsubaie, SF., Tantawy, SA., Abo Elyazed, TI., Ahmed, A. Elshehawy, AA. (2019). A cross-sectional study on the correlation between physical activity levels and health-related quality of life in community-dwelling middle-aged and older adults. [[PubMed](#)]



This work is distributed under <https://creativecommons.org/licenses/by-sa/4.0/>