Jurkiewicz Beata, Barnaś Edyta, Kołpa Małgorzata. Physical activity and quality of life in the group of women participating in senior education. Journal of Education, Health and Sport. 2022;12(8):231-243. eISSN 2391-8306. DOI http://dx.doi.org/10.12775/JEHS.2022.12.08.022
https://apcz.umk.pl/JEHS/article/view/JEHS.2022.12.08.022
https://zenodo.org/record/6951570

The journal has had 40 points in Ministry of Education and Science of Poland parametric evaluation. Annex to the announcement of the Minister of Education and Science of December 21, 2021. No. The journal has had 40 points in Ministry of Education and Science of Poland parametric evaluation. Annex to the announcement of the Minister of Education and Science of December 21, 2021. No. 32343.
Has a Journal's Unique Identifier: 201159. Scientific disciplines assigned: Physical Culture Sciences (Field of Medical sciences and health sciences); Health Sciences (Field of Medical Sciences and Health Sciences).

Punkty Ministerialne z 2019 - aktualny rok 40 punktów. Załącznik do komunikatu Ministra Edukacji i Nauki z dnia 21 grudnia 2021 r. Lp. 32343. Posiada Unikatowy Identyfikator Czasopisma: 201159.
Przypisane dyscypliny naukowe: Nauki o kulturze fizycznej (Dziedzina nauk medycznych i nauk o zdrowiu); Nauki o zdrowiu (Dziedzina nauk medycznych i nauk o zdrowiu).

Received: 17.07.2022. Revised: 27.07.2022. Accepted: 02.08.2022.

Physical activity and quality of life in the group of women participating in senior education

Beata Jurkiewicz

Department of Nursing, Faculty of Health Sciences, University of Applied Sciences in Tarnow

https://orcid.org/0000-0001-9788-7602

Edyta Barnaś

Institute of Health Sciences, College of Medical Sciences, University of Rzeszow

https://orcid.org/0000-0002-7567-3782

Małgorzata Kołpa

Department of Nursing, Faculty of Health Sciences, University of Applied Sciences in Tarnow

https://orcid.org/0000-0002-8595-596X

Abstract

Introduction. Maintaining mobility and extending the period of functional activity in everyday life is the basis for gerontological prevention for the elderly. An important task in the physical culture strategy for an aging society is to prepare both oneself and one's family for old age (education "in old age" and "towards old age"). Educational institutions for activation of seniors play a very important role in this area.
The aim of the study was to analyze the relationship between physical activity and quality of life of women 65+, including participation in senior education.
Material and methods. The study was conducted among inhabitants of Tarnów province (southern Poland) aged 65+: 205 educationally active seniors (group I) and 207 women who do not benefit from senior education (group II). The diagnostic survey method and standardized interview technique using the WHOQoL-AGE quality of life questionnaire were used. The level of significance was adopted as $p \leq 0.05$. Results and conclusions. Educationally active seniors significantly more often declared systematic physical activity. Regular physical activity was most often undertaken by women in the youngest age group. It is recommended to carry out activities promoting participation in various forms

of physical activity, especially in the two oldest age groups (old & oldest old). It is also proposed to continue research on the quality of life and its determinants by gender, and the results of these studies can be used by managers and decision-makers in the local health care sector to develop health-promoting strategies targeted at specific groups.

Keywords: physical activity, quality of life, U3A, educational activity, women aged 65

Introduction

There is no doubt that physical activity is currently the most effective way of delaying aging and a determinant of health status. Maintaining mobility and prolonging the period of functional activity in everyday life seems to be the basis for gerontological prevention for the elderly. Educational institutions for activation of seniors play a very important role in this area.

The study conducted in 12 European countries on older people, including Poland as part of the SENECA program (Survey in Europe on Nutrition and the Elderly, a Concerted Action, SENECA) show that women have a worse self-esteem when regards health status than men [1]. Noro and Aro also obtained similar results when they examined residents of nursing homes in Finland. They showed that elderly women are less fit than men and more often complain of lack of energy [2].

In the light of the steadily growing number of older people, it becomes necessary to adapt health care services to the increased prevalence of diseases typical for this age. It is advisable to include in particular health promotion measures and preventive programs aimed at reducing the prevalence of the most severe diseases of the elderly. Therefore, it is recommended to intensify activities aimed at reducing the problem of obesity and cardiovascular diseases, which should include, first of all, increasing physical activity.

In line with the Active Healthy Aging concept, the European Commission introduced the Active Aging Index (AAI) as part of the European Year for Active Aging and Solidarity between Generations 2012. This index identifies the potential of older people in the following areas: employment, social participation, independent, healthy & secure living, capacity & enabling environment. The value of the above index in 2018 for Poland was 31.5 (assuming that 100 reflects 100% participation of older people in all areas), which means an increase by 3.4 points compared to 2014. For comparison, the average index for EU countries is 35.5, and for other Central European countries, such as Germany and Hungary it is 39.5 and 30.7 points respectively [3].

Numerous studies show that women are usually more physically inactive than men [4], and spend more time at home activities [5]. Nevertheless, given the approach related to biological aspect, "any movement of the body triggered by skeletal muscles that causes energy expenditure" should be considered as physical activity [6], thus, activities such as walking or cleaning are important in analyzing the activity of women in old age.

According to Eisele et al., increasing the level of weekly physical activity results in improving the quality of life of older women [7]. The sources also suggest that the benefits of physical activity for the over-65 age group are greater than for any other age group, and the effects of inactivity are more severe [8]. Before engaging in any physical activity, the type and duration of physical activity should be adjusted to an individual needs, ability, age, gender, and health status. It is recommended that WHO standards be applied, according to which people aged 65 and over should devote at least 150 min/week to aerobic physical activity of moderate intensity or at least 75 min/week to high-intensity physical activity. The recommended duration of single exercise is 10 minutes. Additional health benefits may be obtained by increasing the duration of moderate aerobic physical activity to 300 min/week or 150 min if activity is intense.

Weight training involving large muscle groups should be performed at a frequency of 2 times a week. People with reduced mobility are recommended to take physical activity to increase their sense of balance, coordination and prevent falls at least 3 times a week [9].

The beneficial influence of systematic motor activity on the reduction of mortality and incidence of many diseases has been proven in many epidemiological studies [10-14]. Apart from the positive influence on the functioning of most systems, physical activity is a form of social rehabilitation. The participation of seniors in organized physical activity enables them to be in a group, make new acquaintances and strengthen their self-esteem, adding faith in being needed by the society.

An important task in the physical culture strategy for an aging society is therefore to prepare both oneself and one's family for old age (education "in old age' and 'towards old age'). This qualitatively new challenge relates to the creation of conditions increasing participation in sport by representatives of all social groups, at all stages of ontogenesis, which will contribute not only to improving health status, but also closely related quality of life [15].

The aim of the study was to analyze the relationship between physical activity and quality of life of women 65+, taking into account participation in senior education.

Material and methods

The study was conducted among women living in Tarnów province aged 65 years and over in a period from January 2016 to January 2017. Criteria for inclusion in the study: minimum age of 65 years, residence in Tarnów province (southern Poland), conscious written consent to participate in the study, non-use of long-term care services in the place of residence, mental fitness to conduct a questionnaire interview, which was assessed on the basis of an abbreviated mental test score according to Hodgkinson (AMTS) [16].

The study was divided into two groups. The first group consisted of 205 women covered by various forms of education addressed to older people - 100 students of UTAs (48.8%) and 105 participants of senior clubs (51.2%). Group I was divided into three subgroups according to the age criterion:

— IA (n=123) – young-old (65-75 years old);

— IB (n=56) – middle-old (76-85 years old);

— IC (n=26) – old-old (85+ years old).

The second group consisted of 207 women remaining in the living environment, who did not benefit from any form of education addressed to seniors. The respondents were randomly included in the study; they were persons receiving health services in regional clinics located in the Tarnów area and in health centers in the Tarnów province. The division into 3 age groups was taken into account:

— IIA (n=116) – young-old (65-75 years old);

— IIB (n=55) – middle-old (76-85 years old);

— IIC (n=36) – old-old (85+).

The study was based on the diagnostic survey method and the standardized interview technique. The following data collection tools were used:

- World Health Organization Quality of Life (WHOQoL-AGE) questionnaire in the Polish language version. Quality of life is expressed on a scale of 0-100. The results have a positive direction, so a higher number of points means a better quality of life for the respondents [17,18],
- Original interview questionnaire containing, inter alia, data concerning physical activity.

The analysis was performed on the basis of Microsoft Excel package Office 2016 from Microsoft and program R (version 3.4.0.), the level of significance was adopted as $p \leq 0.05$. Before starting to compare the value of a quantitative variable in groups, the normality of the distribution of the tested variable in groups was checked (Shapiro-Wilk test). Comparison of the values of quantitative variables in two groups was performed using the Mann-Whitney test (the variable did not have a normal distribution). Comparison of qualitative variables in the groups was performed by means of chi- square test (with Yates correction for tables 2x2) or Fisher test where low expected numbers appeared in the tables. The values of quantitative variables in three or more groups were compared using the Kruskal-Wallis test (the variable did not have a normal distribution). When such a comparison showed statistically significant differences, a post hoc analysis was performed using Dunn's test.

The study was approved by the Bioethics Committee at the Regional Medical Chamber in Tarnów (Resolution No. 14/0177/2015).

Results

The age of women in both groups was similar (72.49±7.01 years vs. 74.46±7.13 years), ranging from 65 to 93 years. Taking into account marital status, statistically significant differences were found: respondents using education were more often married, and less frequently divorced and maiden compared to women inactive in education ($p=0.023$). A higher level of education was found for women who continued to participate in educational activities with respect to women who were inactive in this field ($p<0.001$). Respondents using education more often than women not participating in education lived alone ($p=0.003$), with their parents ($p=0.007$), son-in-law or daughter-in-law ($p<0.001$), less frequently with their partner ($p<0.001$) and children ($p<0.001$). Significant differences were also found in terms of material status: educationally active women more often assessed their material situation as good or very good, and less frequently as sufficient, insufficient or very bad ($p<0.001$). Detailed data characterizing selected sociodemographic features of the respondents are presented in Table 1.

Table 1. Characteristics of selected sociodemographic features in the studied groups of educationally active and inactive seniors

Variables	Group I N=205		Group II N=207		In total N=412		p
	n	%	n	%	n	%	
Marital status							
single	17	8.30	30	14.49	47	11.42	**0.023***
married	113	55.12	87	42.03	200	48.54	
widow	59	28.78	64	30.92	123	29.85	
divorced	16	7.80	26	12.56	42	10.19	
Education							
primary	21	10.24	85	41.06	106	25.73	**<0.001***
vocational	41	20.00	39	18.84	80	19.42	
secondary	88	42.93	57	27.54	145	35.19	
higher	55	26.83	26	12.56	81	19.66	
Living *(the values does not add up to 100% as this was a multiple choice question)*							
alone	63	30.73	37	17.87	100	24.27	**0.003***
with husband	100	48.78	90	43.48	190	46.12	0.327*
with partner	7	3.41	30	14.49	37	8.98	**<0.001***
with children	57	27.80	113	54.59	170	41.26	**<0.001***
with grandchildren	30	14.63	46	22.22	76	18.45	0.063*
with siblings	1	0.49	3	1.45	4	0.97	0.623 F
with parents	7	3.41	0	0.00	7	1.70	**0.007 F**
with son-in-law / daughter-in-law	14	6.83	0	0.00	14	3.40	**<0.001***
Material situation							
very bad	1	0.49	0	0.00%	1	0.24	**<0.001 F**
insufficient	13	6.34	6	2.90%	19	4.61	
sufficient	79	38.54	119	57.49%	198	48.06	
good	96	46.83	59	28.50%	155	37.62	
very good	16	7.80	23	11.11%	39	9.47	

N – group size; n – sample size; * chi-square test; F = Fisher's exact test (low expected values in the table)

Educationally active women considered themselves to be physically more active than seniors not participating in education (p=0.002). The most willingly undertaken form of activity in both groups was walking (p>0.05). Women who did not participate in education were significantly more likely to choose such forms of activity as cycling (p<0.001), dancing (p<0.001) and swimming (p=0.007), while women who participate in education were more likely to work in the garden (p=0.003; Tab. 2).

Table 2. Physical activity in the studied groups of educationally active and inactive seniors

Variables	**Group I N=205**		**Group II N=207**		**In total N=412**		**p ***
	n	**%**	**n**	**%**	**n**	**%**	
Physical activity							
yes	119	58.05	89	43.00	208	50.49	**0.002**
no	27	13.17	51	24.64	78	18.93	
irregular	59	28.78	67	32.37	126	30.58	
Kind of physical activity *(the values does not add up to 100% as this was a multiple choice question)*							
gymnastics at home	45	21.95	49	23.67	94	22.82	0.765
organized gymnastics	37	18.05	30	14.49	67	16.26	0.398
walks	143	69.76	128	61.84	271	65.78	0.112
work in garden	83	40.49	54	26.09	137	33.25	**0.003**
cycling	40	19.51	82	39.61	122	29.61	**<0.001**
dancing	1	0.49	18	8.70	19	4.61	**<0.001**
Nordic walking	7	3.41	6	2.90	13	3.16	0.986
swimming	5	2.44	19	9.18	24	5.83	**0.007**
yoga	1	0.49	0	0.00	1	0.24	0.498 F
skiing	1	0.49	0	0.00	1	0.24	0.498 F

N – group size; n – sample size; p – significance level; * chi-square test, F = Fisher's exact test (low expected values in the table)

The most physically active were the youngest respondents from both groups and active seniors in middle-old age, and the least physically active were women aged 75+, not participating in education ($p<0.001$). The forms of activity in the form of walks, cycling and gymnastics at home were most often chosen by inactive women in the young-old age and least often by inactive women in the old-old age ($p<0.01$). The youngest women from the active group most often took part in organized gymnastics, while the oldest seniors from the same group were the least likely to participate in it ($p=0.036$; Tab. 3).

Table 3. Physical activity of seniors in the studied groups of educationally active and inactive seniors in particular age categories

Variables	IA N=123		IB N=56		IC N=26		IIA N=116		IIB N=55		IIC N=36		p *
	n	%	n	%	n	%	n	%	n	%	n	%	
Physical activity													
yes	75	60.97	33	58.93	11	42.31	73	62.93	15	27.27	1	2.78	
no	9	7.32	6	10.71	12	46.15	18	15.52	15	27.27	18	50.00	**<0.001 F**
irregular	39	31.71	17	30.36	3	11.54	25	21.55	25	45.45	17	47.22	
Kind of physical activity *(the values does not add up to 100% as this was a multiple choice question)*													
gymnastics at home	28	22.76	12	21.43	5	19.23	40	34.48	8	14.55	1	2.78	**0.002**
organized gymnastics	25	20.33	11	19.64	1	3.85	22	18.97	7	12.73	1	2.78	**0.036 F**
walks	90	73.17	39	69.64	14	53.85	86	74.14	29	52.73	13	36.11	**<0.001**
work in garden	52	42.28	24	42.86	7	26.92	39	33.62	12	21.82	3	8.33	**0.001**
cycling	26	21.14	11	19.64	3	11.54	67	57.76	12	21.82	3	8.33	**<0.001**
dancing	0	0.00	1	1.79	0	0.00	13	11.21	5	9.09	0	0.00	**<0.001 F**
Nordic walking	6	4.88	1	1.79	0	0.00	5	4.31	1	1.82	0	0.00	0.736 F
swimming	3	2.44	2	3.57	0	0.00	17	14.66	2	3.64	0	0.00	**0.001 F**
yoga	1	0.81	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1.000 F
skiing	1	0.81	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1.000 F

N – group size; n – sample size; p – significance level; * chi-square test, F = Fisher's exact test (low expected values in the table)

In the group of educationally active women, the respondents who declared that they were physically active achieved higher quality of life results on the WHOQoL-AGE scale (65.60±14.36) than inactive women (54.95±15.51) and women who were not active regularly (60.90±12.31). These differences were statistically significant (p=0.001). In the educationally inactive group, quality of life also depended on physical activity (p<0.001). Post-hoc analysis showed that physically active respondents (74.7±9.86 pts.) had a significantly higher quality of life than respondents taking up irregular physical activity (49.94±16.44 pts.), which in turn was significantly higher compared to physically inactive respondents (30.12±13.6 pkt.; Tab. 4).

Table 4. Frequency of physical activity and quality of life (WHOQoL-AGE global score) of educationally active and inactive seniors (except n and p, the values are expressed as points)

Group	Physical activity	n	$\bar{x}$	SD	Me.	Min.	Max.	Q1	Q3	p *
Group I (N=205)	yes (A)	119	65.60	14.36	67.07	17.43	98.08	55.71	76.08	**0.001**
	no (B)	27	54.98	15.51	56.97	13.34	87.02	47.72	62.80	**A >**
	irregular (C)	59	60.90	12.31	60.70	32.69	93.99	55.59	66.83	**BC**
Group II (N=207)	yes (A)	89	74.70	9.86	75.60	48.44	87.38	71.51	83.53	**<0.001**
	no (B)	51	30.12	13.60	27.88	16.23	87.38	20.91	31.01	**A > C**
	irregular (C)	67	49.94	16.44	53.85	18.39	75.00	40.99	59.50	**> B**

n – sample size; $\bar{x}$ – arithmetic mean; SD – standard deviation; Me. – median; Min. – minimum; Max. – maximum; Q1 – first quartile; Q3 – third quartile; p – significance level; * Kruskal-Wallis test + post-hoc analysis (Dunn test)

In addition, the frequency of physical activity was analyzed in particular age categories. Due to the low abundance (less than 10.00%) of certain groups of answers, they were combined with the most similar categories. Seniors aged 65-75 from the group participating in education and taking up physical activity had a higher general quality of life (66.84±14.69 pts. vs. 62.52±11.39 pts.) than women who took up physical activity irregularly or not at all. The correlation between physical activity and quality of life in older groups of educationally active women was not confirmed ($p>0.05$). On the other hand, in the educationally inactive group, physically active seniors in young-old age had significantly higher quality of life than the others ($p<0.001$). Also middle-old women declaring themselves physically active presented a higher quality of life than seniors undertaking irregular activity ($p<0.001$), which in turn achieved a better result than those inactive ($p<0.001$). It was shown that in the group of physically active and/or irregularly active respondents, the quality of life was higher than in the group of physically inactive seniors of old-old age ($p<0.001$; Tab. 5).

Table 5. Frequency of physical activity and quality of life (WHOQoL-AGE global score) of educationally active and inactive seniors in particular age categories (except n and p, the values are expressed as points)

Age group	Physical activity	n	$\bar{x}$	SD	Me.	Min.	Max.	Q1	Q3	p
IA (N=123)	yes	75	66.84	14.69	70.91	17.43	93.03	57.15	76.44	**0.019***
	no, irregular	48	62.52	11.39	61.78	36.42	87.02	55.95	68.36	
IB (N=56)	yes	33	64.68	14.07	63.34	39.66	98.08	52.64	73.80	0.330**
	no	6	61.54	6.33	59.68	54.45	73.08	59.13	62.47	
	irregular	17	57.83	16.48	59.74	32.69	93.99	44.71	65.62	
IC (N=26)	yes	11	59.95	12.39	60.46	30.65	76.92	54.51	68.57	0.064**
	no	12	46.74	15.09	47.72	13.34	68.39	39.15	57.93	
	irregular	3	54.37	2.98	53.85	51.68	57.57	52.76	55.71	
IIA (N=116)	yes (A)	73	73.91	9.99	75.60	48.44	87.38	70.91	77.52	**<0.001* A > BC**
	no (B)	18	28.30	14.27	27.34	16.23	69.95	18.99	32.51	
	irregular (C)	25	45.97	18.75	53.85	20.91	75.00	20.91	57.57	
IIB (N=55)	yes (A)	15	78.32	8.96	78.12	61.06	87.38	71.88	87.38	**<0.001* A > C > B**
	no (B)	15	31.63	16.08	27.88	18.03	87.38	27.88	29.81	
	irregular (C)	25	49.93	17.07	53.12	18.39	71.15	35.46	66.47	
IIC (N=36)	yes, irregular	18	57.01	10.62	55.05	40.50	78.12	51.20	66.47	**<0.001****
	no	18	30.68	11.05	27.70	18.75	57.93	22.84	31.01	

n – sample size; N- group size; $\bar{x}$ – arithmetic mean; SD – standard deviation; Me. – median; Min. – minimum; Max. – maximum; Q1 – first quartile; Q3 – third quartile; p – significance level; * Manna-Whitney test, ** Kruskal-Wallis test

Discussion

According to the literature on the subject, both the course of the aging process itself as well as the behaviors, needs and activity of the elderly are a derivative of previously shaped individual characteristics, which result in specific attitudes, i.e., more or less permanent inclinations to certain behaviors [19]. Results of other authors' studies confirm that the level of physical activity recommended by WHO has a positive impact on the perceived quality of life [20]. Ferreira et al. [21] stated that despite the unquestionable benefits of physical activity, 87.2% of respondents aged 65 and over did not undertake any physical activity in their free time. On the other hand, a nationwide study shows that out of 4813 people over 65 years of age, over half of the seniors (60.2%) do not regularly participate in recreational sports of physical activity at least once a week, while it should be emphasized that the above phenomenon concerns as many as ⅔ of the female sex [22]. Many articles of research repeat the same schemata of the ways seniors spend their free time. According to research by CBOS (CBOS, 2012) passive forms of spending free time dominate: watching TV (98%), listening to the radio (81%), reading books and the press (80%). A very common activity is helping the family e.g. looking after family members (44%), and housekeeping (34%) [23].

Dąbek et al. emphasize that a significant group of older people requires encouragement and mobilization for all kinds of activities, as this makes it possible to free them from passivity and helplessness [24]. Regular physical activity also improves mood. Positive influence of physical training on emotional state of elderly women is confirmed by Polish studies [25,26]. Krzepota et al. showed that more physically active students of UTAs more often declare a high quality of life in the psychological and social sphere than other respondents [20]. Maintaining a high level of physical activity enables seniors to maintain autonomy and independence, which in turn improves the quality of life [27]. It has been shown that physical exercise undertaking by older people over 65 years of age is associated with better ability to move, take care of oneself, perform homework and less pain or anxiety [28]. Rogers et al. based on a study conducted among 8649 English people aged 50+ showed that mild physical activity vs. sitting group is not sufficient to significantly slow down frailty syndrome, while moderate physical activity reduces frailty progression in some age groups (especially 65 years and above), while intensive activity in all older people [29].

Older people indicate improvement of health condition and willingness to maintain physical condition as motivations for physical activity undertaking. The most frequent obstacles are high costs, e.g. swimming in a swimming pool, lack of habits of such spending of time or lack of friends participating in sports activities [30]. The most active seniors choose such types of physical activity as: walking, gymnastics, cycling, swimming, jogging and hiking. In turn, inactive seniors, who had contact with physical recreation, sporadically undertake gymnastics, riding a stationary and ordinary bicycle, trot, and trips combined with sightseeing, and in the majority of cases focus on passive ways of spending time, such as: listening to the radio, watching television, reading books or newspapers [31]. The analysis of our study showed that women who were active in education considered themselves to be more active in terms of movement than seniors who did not participate in education. The most willingly undertaken form of activity in both groups were walks, and seniors from the group not participating in education were significantly more willing to choose such forms of activity as cycling, dancing and swimming. Specific forms of exercise depended on the age of the respondents and their personal preferences. The literature on the subject shows that persuading an elderly person to make an effort may be difficult, because movement does not always bring pleasure, does not necessarily come from a biological need and is limited by numerous barriers [32]. Health promotion should explain the health risks that arise from inappropriate lifestyles, such as lack of or inadequate physical activity, as well as present its health properties. A long-term benefit of physical activity is a slower decline in comprehensive motor skills related to age [33]. It should be emphasized that physical fitness is not given to us once and for all, but it should be constantly gained and improved even at an advanced age.

Guszkowska and Kozdroń analyzing the influence of physical activity on emotional states of elderly women, came to the conclusion that physical exercise is an important factor in improving mood and, consequently, quality of life. Already a single exercise reduces the level of anxiety, which depends on the nature of exercises and the current mood of the person exercising [26]. A low level of physical activity was correlated with a reduced quality of life in many studies [34,35]. Thompson et al., evaluating an effect of individual variables on the physical and mental quality of life of people aged 50 and over, found that physical activity had a significant impact on both the psyche and the physical aspects of quality of life, especially for people with physical dysfunctions [36]. Campos et al., who conducted research on the quality of life of older Brazilians, including 1226 women, also demonstrated that physical inactivity significantly reduced the quality of life as measured by the WHOQoL-OLD scale ($r=0.7$; $p=0.022$) [37]. Lack of physical activity correlated with lower WHOQoL-AGE scores in COURAGE study [38]. The analysis of our study in both groups showed that the quality of life was dependent on the level of physical activity - the highest level of satisfaction was observed

in women who took up physical activity on a regular basis. On the other hand, Knapik et al., conducting research among students of UTAs from Upper Silesia, showed that motor activity is a strong factor positively influencing self-assessment of quality of life in all its aspects (measured with SF-36 scale) [39]. Slightly different results were obtained by Owens. His research shows that the life satisfaction of American women was not changed as a result of regular physical exercise [40]. Interesting studies on motor activity in the context of balance, mobility and quality of life of 65+ seniors were conducted by Karahan et al., who divided the respondents into two groups (exergames and home exercises). The study conducted after a 6-week training session, showed that there was a significant improvement in the quality of life of people taking part in exergames, and this type of training can be considered a safe alternative to traditional home-based exercises [41].

Conclusions

The Universities of Third Age and senior clubs, apart from the educational offer, enable seniors to participate in physical activity, which is reflected in the results of this study – educationally active seniors significantly more often declared systematic physical activity. Regular physical activity was most often undertaken by women from the youngest age group. Taking into account the positive impact on the quality of life, it is recommended to carry out activities promoting participation in various forms of physical activity, especially in the two oldest age groups (old & oldest old). It is also proposed to continue research on the quality of life and its determinants by gender, and the results of these studies can be used by managers and decision-makers in the local health care sector to develop health-promoting strategies targeted at specific groups.

References

1. Schroll M, Schlettwein D, van Staveren W, et al. Health related quality of life and physical performance. SENECA 1999. The Journal of Nutrition Health and Aging 2002; 6: 15.
2. Noro A, Aro S. Health-related quality of life among the least dependent institutional elderly compared with the non-institutional elderly population. Quality of Life Research 1996; 5(3): 355-366.
3. UNECE / European Commission (2019) "2018 Active Ageing Index: Analytical Report", Report prepared by Giovanni Lamura and Andrea Principi under contract with the United Nations Economic Commission for Europe (Geneva), co-funded by the European Commission's Directorate General for Employment, Social Affairs and Inclusion (Brussels). URL: http://www.unece.org/fileadmin/DAM/pau/age/Active_Ageing_Index/Stakeholder_Meeting/ACTIVE_AGEING_INDEX_TRENDS_2008-2016_web_cover_reduced.pdf
4. Rizzuto D, Orsini N, Qiu C, et al. Lifestyle, social factors, and survival after age 75: population based study. British Medical Journal 2012; 345: e5568; doi:10.1136/bmj.e5568.
5. Halaweha H, Willena C, Grimby-Ekmanb A, et al. Physical activity and health-related quality of life among community dwelling elderly. Journal of Clinical Medicine Research 2015; 7(11): 845–852.
6. Caspersen CJ, Powell KE, Christenson GM. Physical activity, exercise, and physical fitness: definitions and distinctions for health-related research. Public Health Rep. 1985; 100(2):126-31.
7. Eisele M, Kaduszkiewicz H, König HH, et al. Determinants of health-related quality of life in older primary care patients: results of the longitudinal observational AgeCoDe Study. British Journal of General Practice 2015; 65(640): 716–723.
8. Paterson DH, Jones GR, Rice CL. Ageing and physical activity: evidence to develop exercise recommendations for older adults. Canadian Journal of Public Health 2007; 98(Suppl. 2): S69–108.
9. WHO: Physical Activity and Older Adults, 2011. Dostępny pod adresem URL: http://www.who.int/dietphysicalactivity/factsheet_olderadults/en/ [Dostęp 30.11.2017].
10. Schnohr P, Lange P, Scharling H, et al. Long–term physical activity in leisure time and mortality from coronary heart disease, stroke, respiratory diseases and cancer. The Copenhagen Heart Study. European Journal of Cardiovascular Prevention and Rehabilitation 2006; 13(2): 173–179.

11. Samitz G, Egger M, Zwahlen M. Domains of physical activity and all – cause mortality: systematic review and dose – response meta–analysis of cohort studies. International Journal of Epidemiology 2011; 40(5): 1382–1400.
12. Rossi A, Dikareva A, Bacon SL, et al. The impact of physical activity on morality in patients with high blood pressure: a systematic review. Journal of Hypertension 2012; 30(7): 1277–1288.
13. Chomistek AK, Manson JE, Stefanick ML, et al. The relationship of sedentary behavior and physical activity to incident cardiovascular disease: results from the Women's Health Initiative. Journal of the American College of Cardiology 2013; 61(23): 2346–2354.
14. Shortreed, SM, Peeters A, Forbes AB. Estimating the effect of long–term physical activity on cardiovascular disease and mortality: evidence from the Framingham Heart Study. Heart 2013; 99(9): 649–654.
15. Kozdroń E. Aktywność ruchowa w procesie pomyślnego starzenia się. Zeszyty Naukowe 2014; 9: 75–84.
16. Hodkinson HM. Evaluation of a mental test score for assessment of mental impairment in the elderly. Age Ageing. 1972; 1(4):233–238. DOI: 10.1093/ageing/1.4.233
17. Caballero FF, Miret M, Power M, et al. Validation of an instrument to evaluate quality of life in the aging population: WHOQOL-AGE. Health Quality of Life Outcomes 2013; 11: 177; doi: 10.1186/1477-7525-11-177.
18. Zawisza K., Gałaś A., Tobiasz-Adamczyk B. Walidacja polskiej wersji skali oceny jakości życia WHOQoL-AGE w populacji osób starszych. Gerontologia Polska 2016; 24: 7–16.
19. Adamczyk M, Budny A. Lifelong Learning as an Important Element of the Social Integration of the Elderly. Opuscula Sociologica 2016; 4: 81-93. DOI: 10.18276/os.2016.4-06
20. Krzepota J, Biernat E, Florkiewicz B. The relationship between levels of physical activity and quality of life among students of the University of the Third Age. Cent Eur J Public Health 2015; 23 (4): 335–339.
21. Ferreira MT, Matsudo SM, Ribeiro MC, et al. Health-related factors correlate with behavior trends in physical activity level in old age: longitudinal results from a population in São Paulo, Brazil. BMC Public Health. 2010; 10:690. doi: 10.1186/1471-2458-10-690.
22. Rowiński R, Dąbrowski A. Physicial recreation in the relation of the functional efficiency and the quality of life of elderly people. Social Politic 2011; 4: 44-51. https://www.ipiss.com.pl/wp-content/uploads/downloads/2013/03/ps_17ang_2011_r_rowinski_a_dabrowski.pdf
23. Zrałek M. The social context of ageing in Poland. EXLIBRIS Biblioteka Gerontologii Społecznej 2014; 1-2 (8): 9-40.
24. Dąbek A, Misiak K, Zborowska I i wsp. Uwarunkowania aktywności człowieka w podeszłym wieku. Pielęgniarstwo i Zdrowie Publiczne 2015; 5(1): 67–72.
25. Kozak-Szkopek E, Galus K. Wpływ rehabilitacji ruchowej na sprawność psychofizyczna osób w podeszłym wieku. Gerontologia Polska 2009; 17(2): 79–84.
26. Guszkowska M, Kozdroń A. Wpływ ćwiczeń fizycznych na stany emocjonalne kobiet w starszym wieku. Gerontologia Polska 2009; 17(2): 71–78.
27. Kaczmarczyk M, Trafiałek E. Aktywizacja osób w starszym wieku jako szansa na pomyślne starzenie. Gerontologia Polska 2007; 15(4):116–118.
28. Borowiak E, Kostka T. Influence of chronic cardiovascular disease and hospitalization due to this disease on quality of life of community-dwelling elderly. Quality of Life Research 2006; 15(7): 1281–1289.
29. Rogers NT, Marshall A, Roberts CH, et al. Physical activity and trajectories of frailty among older adults: Evidence from the English Longitudinal Study of Ageing. PLoS ONE 2017; 12(2): e0170878; doi:10.1371/journal.pone.0170878.
30. Borzucka D, Rektor Z. Motywy podejmowania aktywności fizycznej przez ludzi starszych. Annales Universitatis Mariae Curie-Skłodowska 2005; 60, Suppl. 16, 43: 193–197.
31. Bicka A, Kozdroń E. Aktywność ruchowa w stylu życia ludzi starszych. Annales Universitatis Mariae Curie-Skłodowska 2003; 58, Suppl. 13: 61–65.
32. Kozdroń E. Kinezyprofilaktyka geriatryczna w relacji lekarz – instruktor rekreacji. [W:] Kulkowski K (red): Medycyna sportowa. Medical Trybune, Warszawa 2011: 87–89.
33. MacAuley D. Potencjalne korzyści płynące z aktywności fizycznej podejmowanej przez ludzi starszych. Medicina Sportiva 2001; 5(4): 229–236.

34. Perales F, del Pozo-Cruz J, del Pozo-Cruz J. On the associations between physical activity and quality of life: findings from an Australian nationally representative panel survey. Quality of Life Research 2014; 23(7): 1921–1933.
35. Gill DL, Hammond CC, Reifsteck EJ, et al. Physical activity and quality of life. Journal of Preventive Medicine and Public Health 2013; 46(Suppl. 1): S28–34.
36. Thompson WW, Zack MM, Krahn GL, et al. Health-related quality of life among older adults with and without functional limitations. American Journal of Public Health 2012; 102(3): 496–502.
37. Campos ACV, Ferreira EF, Vargas AMD, et al. Aging, Gender and Quality of Life (AGEQOL) study: factors associated with good quality of life in older Brazilian community-dwelling adults. Health and Quality of Life Outcomes 2014; 12: 166.
38. Raggi A, Corso B, Minicuci N, et al. Determinants of quality of life in ageing populations: Results from a cross-sectional study in Finland, Poland and Spain. PLoS ONE 2016; 11(7): e0159293; doi: 10.1371/journal.pone.0159293.
39. Knapik A, Saulicz E, Plinta R i wsp. Aktywność fizyczna a zdrowie kobiet w starszym wieku. Journal of Orthopaedics Trauma Surgery and Related Research 2011; 6(26): 27–33.
40. Owens BB. Self-care agency, health promoting lifestyle, and satisfaction with life in postmenopausal women who mall walk. Medical-Surgical Nursing Journal 2007; 16(6): 383–390.
41. Karahan AY, Tok F, Taşkın H, et al. Effects of exergames on balance, functional mobility, and quality of life of geriatrics versus home exercise programme: randomized controlled study. Cent Eur J Public Health 2015 Nov; 23 (Suppl): S14–S18.