

Physical activity levels of rural and urban seniors in the region of Warmia and Mazury in Poland

Authors' Contribution:

- A Study Design
- B Data Collection
- C Statistical Analysis
- D Data Interpretation
- E Manuscript Preparation
- F Literature Search
- G Funds Collection

Aneta Omelan^{1 ABDEFG}, Robert Podstawski^{2 BDEFG}, Bogdan Wziątek^{3 CG},
Rafael Merino-Marbán^{4 E}, Oscar Romero-Ramos^{4 E}

¹ Department of Tourism, Recreation and Ecology, Faculty of Environmental Sciences, University of Warmia and Mazury in Olsztyn, Poland

² Department of Physical Education and Sport, University of Warmia and Mazury in Olsztyn, Poland

³ Department of Fish Biology and Pisciculture, Faculty of Environmental Sciences, University of Warmia and Mazury in Olsztyn, Poland

⁴ Faculty of Educational Sciences, University of Malaga, Spain

abstract

Background A sedentary lifestyle may lead to infirmity or disability. This study was undertaken to evaluate the physical activity (PA) levels of rural and urban seniors (60+) in Poland.

Material/Methods The study was conducted on 274 seniors (60+, 146 urban dwellers, 128 rural dwellers). An interview questionnaire was used to collect data. The results were analyzed statistically using descriptive statistics, and a significance test was applied to determine differences between the two subpopulations ($\alpha = 0.05$).

Results Urban seniors had significantly ($p = 0.0007$) higher PA levels than rural seniors. The majority of physically active seniors did not meet the World Health Organization's recommendations on physical activity. In both groups, the most popular type of PA was walking. A large percentage of the rural population preferred dancing, whereas cycling was more popular among urban respondents (for both $p = 0.0001$). The majority of urban and rural respondents evaluated their physical fitness (PF) levels as high (63.70% and 54.68%, respectively), and 7.66% declared to have very high PF levels.

Conclusions Efforts should be made to increase the PA levels among seniors, in particular in rural areas where the operations of welfare organizations should be expanded to include education and promotion of physical culture.

Key words physical activity, seniors 60+, urban and rural residents

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Corresponding author: Robert Podstawski, PhD, Department of Physical Education & Sport, University of Warmia & Mazury in Olsztyn, Prawocheńskiego 7, 10-720 Olsztyn, Poland. tel. (+4889) 523 33 08), mobile: +48 601652527, E-mail: podstawskirobert@gmail.com

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INTRODUCTION

In recent decades, many countries around the world have witnessed revolutionary social and economic changes that have led to a significant increase in life expectancy. This phenomenon has been extensively studied in the realm of social, economic and medical sciences. In highly industrialized countries, dwindling population growth and population aging have become a fact and a pressing problem. According to estimates, every fifth citizen in the world will be 60 years old, and every sixth citizen will be older than 65 by 2050 [1], and the senior population will increase from 841 million to 2 billion [2]. This problem also applies to Poland where demographic changes proceed rapidly. In 2013, Poland had a population of 38.5 million, including 5.7 million citizens aged 65 and older. In 1989–2013, the elderly population of Poland increased by nearly 1.9 million to account for 14.7% of the country's total population¹ [3]. The population of people older than 80 is growing most dynamically. There are 1,483,000 senior citizens older than 80 who account for 4% of Poland's population. Such dynamic changes in the demographic structure will affect all areas of life in contemporary societies, beginning with housing to market services and the Internet [4], and they will contribute to significant social and economic problems [5, 6].

Complex measures and strategies are required to alleviate the burden posed by an aging population. In addition to increasing birth rates, active measures are also needed to improve senior citizens' quality of life. Regardless of the alarming forecasts, aging is a natural and inevitable process. From both the individual and the social point of view, the greatest challenge is to keep senior citizens in good physical and mental health. The process of maintaining a positive attitude and good health during retirement is known as positive aging. Positive aging also implies the absence of disability, physical and mental independence and an active lifestyle [7, 8]. Physical activity is the key prerequisite for achieving this goal [9].

PHYSICAL ACTIVITY OF SENIOR CITIZENS

A physically active lifestyle significantly contributes to the health and wellbeing of senior citizens. A sedentary lifestyle speeds up involutionary changes, and it may lead to infirmity or disability [10, 11]. According to Leveille et al. [12], physical activity (PA) plays a key role in preventing disability in seniors, and the risk of infirmity is twice higher among elderly with a sedentary lifestyle than in seniors who remain physically active.

The level of physical fitness (PF) often declines in senior citizens who develop various geriatric syndromes, such as cognitive impairment, depression and incontinence. Those chronic conditions lead to the loss of independence, and the affected persons require care [13]. Physical activity contributes to positive aging; it improves the quality of life and can be the best "medicine" for declining health in the senior population [14]. Quality of life (QOL) is a broad concept that encompasses good health [15] as well as physical, material, social and emotional wellbeing, personal growth and activity [16, 17]. Regular PA improves physical and emotional wellbeing, and it slows down the decline in PF levels. In the elderly population, PA has both preventive and therapeutic roles. It reduces the risk of obesity and cardiovascular diseases, lowers blood pressure, improves physical capacity, sleep quality, nutrient absorption, visual

¹ According to the Central Statistical Office (2014), children and young people account for only 18% of the Polish population.

perception and psychomotor skills, thus contributing to independence and greater life satisfaction [18, 19, 20]. Physical activity significantly lowers the frequency of a trial fibrillation episodes [21], decreases mortality associated with cardiovascular diseases [22] and improves the mental wellbeing of senior citizens. Regular physical exercise can slow down involutionary changes and enhance older citizens' independent living skills [23]. The above has important social implications because healthy seniors contribute to a reduction in healthcare and welfare spending [24]. Elderly citizens often become neophobic towards physical activity; they are reluctant to exercise and avoid vigorous physical exertion, which may contribute to involutionary processes [25]. For this reason, senior citizens should be educated about the benefits of physical activity to make exercise a regular part of their lifestyles [26, 27, 28]. The aim of this study was to describe the physical activity levels of rural and urban citizens aged 60 years and older in the region of Warmia and Mazury in Poland.

MATERIALS AND METHODS

MOTIVATION FOR RESEARCH

The present study was undertaken to evaluate the PA levels of senior citizens living in the investigated region. Poland has undergone rapid social and economic transformations in recent decades, and the authors were hoping to analyze the influence of those changes on senior citizens inhabiting rural areas. The rural seniors' lifestyles, in particular the importance of PA in their daily routines, constitute a very interesting topic of scientific inquiry.

PROCEDURES

The study was performed in observance of the provisions of the Declaration of Helsinki and upon the prior consent of the Bioethics Committee of the University of Warmia and Mazury in Olsztyn (UWM). All respondents gave their written consent to participate in the study.

PARTICIPANTS

The study was conducted in January 2016 in the Region of Warmia and Mazury (Poland) among citizens older than 60 years of age. In Warmia and Mazury, incomes are derived mostly from agriculture and tourism. The Federation of Social Work Organizations in the Region of Warmia and Mazury operates a database of senior residents, and it assisted the researchers in selecting the study population and contacting the respondents. A total of 400 seniors were selected for the study, but 76 potential respondents could not be contacted and 50 subjects refused to participate; therefore, the study was conducted on a population of 274 senior citizens. Seniors living in typical villages were very difficult to access, but the interviewers managed to survey all respondents in person. According to the definitions of the Norfolk Planning Board and the Institute of Geography and Spatial Organization of the Polish Academy of Sciences, a rural area is a rural territory that is 5 miles (8 km) distant from an urbanized area with a population of 20,000 and 10 miles (16 km) distant from an urbanized area with a population of 10,000 [29, 30]. The respondents surveyed in this study inhabited rural areas separated by a distance of more than 30 km from an urbanized area. Poland is experiencing a rapid growth of suburban areas which attract urban dwellers who continue to commute to work in the city while maintaining their urban lifestyles. The authors intended

to reach senior citizens who had lived and worked in traditional villages all their lives and had never had any links with urban areas. Urban seniors were much easier to survey because they are often members of formal and informal communities; they participate in various types of activities, are keen on exploring the world and more willing to participate in research studies.

The minimum age requirement for the study was 60 years, in accordance with the World Health Organization's classification of age groups: young-old (60-74), old-old (75-89) and very old (90+) [31]. The characteristics of the respondents are presented in Table 1.

Table 1. Demographic characteristics of the respondents

Characteristic	Urban (n = 146)		Rural (n = 128)		Total (n = 274)	
	N	%	N	%	N	%
Gender						
Women	119	81.51	84	65.62	203	74.10
Men	27	18.49	44	34.38	71	25.90
Age						
Young-old	119	81.51	119	92.97	238	86.90
Old-old	27	18.49	9	7.03	36	13.10
Educational background						
University	46	31.50	26	20.31	72	26.28
Secondary school	82	56.16	25	19.54	107	39.06
Vocational school	11	7.55	34	26.56	45	16.43
Primary school	7	4.79	43	33.59	50	18.23
Economic status						
High	12	8.23	3	2.35	15	5.50
Satisfactory	70	47.94	52	40.62	122	44.50
Average	61	41.78	67	52.35	128	46.70
Low	3	2.05	6	4.68	9	3.30
Marital status						
Married	73	50.00	95	74.21	168	61.30
Single	73	50.00	33	25.79	106	38.70
Professionally active						
Yes	17	11.64	14	10.94	31	11.30
No	129	88.36	114	89.06	243	88.70

Women accounted for the majority of the respondents, and the greatest disproportions were noted in urban areas where the vast majority of the participants were female. Most respondents belonged to the young-old category of persons aged 60 to 74 years. None of the participants belonged to the very old category. The majority of the respondents had secondary school education, and persons with vocational education were least numerous in the studied population. Most respondents had satisfactory or average material status. More than half of the participants were married, and the percentage of long-term couples was higher in rural than in urban areas. The vast majority of the respondents were not professionally active.

METHODS

The study involved a diagnostic survey and a questionnaire. This method was selected because some senior citizens had impaired verbal skills, and they did not understand the discussed topics. The first part of the questionnaire comprised questions about the respondents' socioeconomic background, including age, gender, place of residence, professional activity, subjective

evaluation of economic status, and membership in senior organizations. The second part of the questionnaire was dedicated to leisure time activities. The third part focused on PA (motivation, types, results, exercise companions), and it was addressed only to respondents who described themselves as physically active.

STATISTICAL ANALYSIS

The results were processed statistically with the use of descriptive statistics (number, percent). The significance of differences between urban and rural seniors was determined in a significance test of two structure coefficients at a significance level of $\alpha = 0.05$.

RESULTS

Nearly half of the surveyed seniors were members of senior organizations, and a significantly higher percentage of these respondents were urban dwellers ($p < 0.0001$). The compared groups significantly differed in their choice of leisure time activities. Rural seniors most frequently watched television, whereas their urban peers were more likely to read during their free time. The second most popular activity was housework in the group of rural seniors and watching TV in the group of urban dwellers. The percentage of respondents who were physically active in their free time was significantly ($p = 0.0173$) higher among urban (13.01%) than rural (5.47%) seniors. No significant differences were noted in the percentage of respondents who had no leisure time or who chose gardening as the preferred pastime. Most rural respondents did not use a computer. Significant differences were observed between participants who used the computer for 1-2 hour daily ($p = 0.0050$) and those who spent less than 1 hour in front of the computer each day ($p = 0.0003$).

Significant differences between groups were noted in all answers in the "means of transport" category. In rural areas, the most popular means of transport was a car, followed by cycling, walking and public transport. Most urban seniors preferred walking, followed by driving a car, using public transport and, least often, cycling. The majority of urban and rural respondents evaluated their PF levels as high (63.70% and 54.68%, respectively), and 7.66% declared to have very high PF levels. Significantly more ($p = 0.0075$) rural seniors (8.59%) assessed their PF levels as low. Surprisingly, none of the respondents regarded their PF levels as very low.

Table 2. Lifestyle and PF levels of the surveyed seniors

Factor	Respondents						p
	urban (N = 146)		rural (N = 128)		total (N = 274)		
	N	%	N	%	N	%	
Membership in a senior organization							
Yes	94	64.38	31	24.22	125	45.62	p < 0.0001
No	52	35.62	97	75.78	149	54.38	p < 0.0001
Leisure time activities							
Watching TV	35	23.97	46	35.94	81	29.56	0.0094
Reading	42	28.77	18	14.06	60	21.90	0.0017
Housework	26	17.81	41	32.03	67	24.45	0.0032
Gardening	16	10.96	13	10.16	29	10.58	0.4151
Physical activity	19	13.01	7	5.47	26	9.49	0.0173
No leisure time	6	4.11	3	2.34	9	3.28	0.2020
Other	2	1.37	0	-	2	0.74	-
Daily duration of computer and Internet use							
> 4 h	6	4.11	5	3.91	11	4.01	0.4664
2-4 h	21	14.38	12	9.38	33	12.04	0.1020
1-2 h	39	26.72	18	14.06	57	20.80	0.0050
< 1h	37	25.34	12	9.38	49	17.88	0.0003
None	43	29.45	81	63.28	124	45.27	> 0.001
Main means of transport							
Walking	70	47.95	28	21.88	98	35.77	p < 0.0001
Cycling	14	9.59	35	27.34	49	17.88	0.0001
Public transport	23	15.75	5	3.92	28	10.22	0.0006
Car	39	26.71	60	46.86	99	36.13	0.0003
Subjective evaluation of PF level							
Very high	11	7.53	10	7.82	21	7.66	0.4507
High	93	63.70	70	54.68	163	59.49	0.0650
Average	39	26.72	37	28.91	76	27.74	0.3240
Low	3	2.05	11	8.59	14	5.11	0.0075
Very low	0	0.00	0	0.00	0	0.00	-

Table 3. PA levels of seniors

Factor	Respondents						P
	urban (N=146)		rural (N=128)		total (N=274)		
	N	%	N	N	%	N	
Need for PA							
Yes	126	86.30	89	69.53	215	78.47	0.0004
No	5	3.43	10	7.81	15	5.47	0.0548
Limited	15	10.27	29	22.66	44	16.06	0.0027
Frequency of PA in the past							
None	22	15.07	40	31.25	62	22.63	0.0007
Less than once a month	49	33.56	40	31.25	89	32.48	0.3426
Once a month	23	15.75	12	9.37	35	12.77	0.0569
Several times a week	52	35.62	36	28.13	88	32.12	0.0923
Daily	0	0.00	0	0.00	0	0.00	-
Frequency of PA at present							
None	23	15.75	41	32.03	64	23.35	0.0008
Less than once a month	6	4.12	10	7.81	16	5.84	0.0961
Once a month	13	8.90	12	9.38	25	9.12	0.4430
Several times a week	80	54.79	31	24.22	111	40.51	p < 0.0001
Daily	24	16.44	34	26.56	58	21.18	0.01960
Duration of PA per week							
0 h	23	15.75	41	32.03	64	23.36	0.0016
< 1 h	19	13.01	22	17.19	41	14.96	0.3558
1-2 h	60	41.10	50	39.06	110	40.15	0.7361
2.1-4 h	39	26.71	13	10.16	52	18.98	0.0005
4.1-6 h	5	3.43	2	1.56	7	2.55	0.3465
> 6 h	0	0.00	0	0.00	0	0.00	-
Reasons for lack of PA*							
No motivation, laziness	12	44.44	18	32.14	30	36.14	0.1372
Health problems	9	33.33	25	44.64	34	40.97	0.1633
No company	2	7.41	4	7.14	6	7.23	0.4802
No equipment	3	11.11	8	14.29	11	13.25	0.3436
Lack of funds	1	3.70	1	1.79	2	2.41	0.2988

Notes: *n = 83 (urban - 27, rural - 56 respondents) because this question was addressed only to respondents who described themselves as physically inactive

The vast majority of urban residents (86.30%) felt the need to be physically active, and the corresponding percentage among rural dwellers was 69.53%. The observed difference was statistically significant ($p = 0.0004$). The percentage of seniors who had a limited need for physical activity was significantly ($p = 0.0027$) higher in rural areas. In the past, 32.12% of the respondents were physically active several times a week, 32.48% - less than once a month, and 12.77% - once a month. No significant differences were observed between groups. Seniors who had led a sedentary lifestyle in the past accounted for 22.63% of the surveyed population. A significant ($p = 0.0007$) difference was noted between groups: the percentage of sedentary seniors was twice higher in rural than in urban areas. In the group of rural residents, 32.03% of the polled subjects did not participate in organized physical activities, and the corresponding percentage in urban areas was 15.75%. In the studied population, 26.56% of rural seniors and 16.44% of urban seniors exercised daily, and 54.79% of urban dwellers and 24.22% of rural dwellers exercised several times a week. Significant differences were noted between groups ($p = 0.008$, $p = 0.01960$, $p < 0.0001$, respectively). The largest group of respondents (40.15%), regardless of their place of residence, exercised 1-2 hours each week. A significantly higher proportion of urban seniors (26.71%, $p = 0.0005$) devoted 2.1-4 hours to exercise each week, but none of the respondents exercised more than 6 hours per week. Twice as many rural seniors (32.03%) as urban seniors (15.75%) did not exercise at all, and the difference was statistically significant ($p = 0.0005$). Regardless of the place of residence, most respondents did not exercise for health reasons (40.97%) and due to lack of motivation and laziness (36.14%). A significant percentage of seniors did not exercise due to the lack of sports facilities and equipment (13.25%).

Table 4. PA levels of seniors

Factor	Respondents						P
	urban (N = 119)		rural (N = 70)		total (N = 189)*		
	N	%	N	%	N	%	
Motivation for PA							
Improved PF	40	33.61	14	20.00	54	28.57	0.0046
Weight loss	19	15.97	11	15.71	30	15.88	0.4726
Doctor's orders	2	1.68	4	5.71	6	3.17	0.0478
Life satisfaction	58	48.74	41	58.58	99	52.38	0.0385
Most popular types of PA*							
Walking/ Nordic walking	75	63.03	40	57.14	115	60.85	0.1573
Dancing	6	5.03	27	38.57	33	17.46	0.0001
Cycling	16	13.45	1	1.43	17	8.99	0.0001
Aerobics	4	3.36	2	2.86	6	3.17	0.4047
Swimming	1	0.84	0	-	1	0.54	-
Jogging	17	14.29	0	-	17	8.99	-
Exercise companions							
I exercise alone	37	31.09	42	60.00	79	41.80	$P < 0.0001$
With family	18	15.12	17	24.29	35	18.52	0.0283
With friends	49	41.18	11	15.71	60	31.74	$p < 0.0001$
PA class	15	12.61	0	-	15	7.94	-
Experience benefits of PA							
Yes	115	96.64	69	98.57	184	97.35	0.1282
No	4	3.36	1	1.43	5	2.65	0.1282

Notes: *n = 189 because the successive questions were addressed only to respondents who described themselves as physically active

More than half of the polled subjects, mostly rural residents (58.58%, $p = 0.0038$), undertook PA to increase their life satisfaction. Nearly a third of the respondents (28.57%), mostly urban seniors ($p = 0.0046$), exercised to improve their PF levels. The remaining reasons for undertaking PA were weight loss (15.88%) and, least frequently, doctor's orders (3.17%). The latter was a more motivational factor for rural inhabitants ($p = 0.0478$). In both groups, the most popular type of PA was walking, including Nordic walking (60.85%), whereas aerobics and swimming (no significant differences between groups) were least popular. A large percentage of the rural population (38.57%) preferred dancing, whereas this type of PA was indicated by only 5.03% of urban dwellers ($p = 0.0001$). The reverse was noted for cycling, which was significantly ($p = 0.0001$) more popular among urban than rural respondents.

Most of the surveyed seniors exercised on their own, and the relevant percentage was significantly ($p < 0.0001$) higher in rural areas. In the studied population, the percentage of seniors (60+) who exercised with friends reached 41.18% in urban areas and only 15.71% in rural areas ($p < 0.0001$). Rural seniors were also significantly ($p = 0.0283$) more likely to exercise in the company of family members. Only urban inhabitants (12.61%) attended organized PA classes. Nearly all physically active respondents experienced the positive effects of exercise, and no significant differences were observed between groups.

DISCUSSION

Seniors have more free time once they retire from professional activity. Effective management of free time poses a considerable challenge for many elderly people, and it significantly influences their health and physical well-being. In the surveyed group of seniors aged 60 and older, the most popular pastime was watching TV (29.56%) (Table 2). This leisure activity was significantly ($p = 0.0092$) more popular among rural than urban dwellers. In a US study, seniors above 65 years old watched television three times more often than young persons did [32]. In Poland, watching TV is a popular pastime, and the percentage of Poles who watch television during their spare time has increased significantly in recent decades [33]. In this study, the significant difference between rural and urban seniors (60+) could be attributed to differences in lifestyle resulting from education (rural seniors have markedly lower levels of educational attainment, Table 1) and professional achievement. This difference could also result from access to other types of leisure activities or the awareness that free time can be spent in other ways than watching TV. Urban seniors have access to various activities and attractions that are adapted to their physical and mental capabilities, including art and cultural activities (cinemas, theatres, concerts, exhibitions) that can compete with television. Polish rural areas are devoid of such attractions, and a trip to a cultural event usually requires financial and organizational effort. Senior organizations are rare in rural areas, and in the surveyed population, significantly more ($p < 0.0001$) urban than rural dwellers belonged to senior organizations (Table 2).

Significant differences were not observed only in the percentage of respondents who had no leisure time or who chose gardening as their favorite pastime. A very low percentage (10.16%) of rural seniors who kept gardens initially

seemed highly surprising. In Polish villages, vegetable gardens are part of the rural tradition. However, after some deliberation, the authors concluded that gardening is a utilitarian activity in villages; therefore, most rural respondents would regard it as a daily chore rather than a leisure activity.

The evaluated groups differed significantly with regard to other leisure activities. The largest percentage of urban seniors chose reading (28.77%) which is a widely available and enriching activity. By comparison, reading (19%) is the most popular type of intellectual activity among seniors in Stockholm (43%) [34]. It should be noted that reading reduces the risk of age-related dementia [35]. In this study, reading was selected by only 14.06% of rural respondents, which could be attributed to significantly lower levels of educational attainment and lack of reading culture in rural Poland. In the studied population, housework was performed by 32.03% of rural seniors and 17.81% by urban seniors in their free time. The above does not imply that urban residents are less dedicated to keeping their homes clean, but that they have a different system of values and that they devote more time to enriching and pleasant activities. Urban residents also have better access to cultural activities which effectively compete with housework.

In this study, PA was the most popular pastime for 13.01% of urban seniors and 5.47% of rural seniors ($p = 0.0173$), with a population average of 9.49%. This is not a satisfactory outcome, and the corresponding result will be discussed in greater detail in successive parts of this study.

In the contemporary world, computers and the Internet have become an essential element in the life of individuals of all ages. The computer is a work tool, a source of entertainment and a means of communication for millions of people around the world. Computer technology can have a significant impact on the social life of elderly people [36]. The elderly can learn to use computers, and they search for methods to stay connected and be informed [37]. In this study, the largest percentage of respondents did not use a computer (45.27%), in particular in rural areas (63.28%) (Table 2). The percentage of non-computer literate seniors was twice lower (29.45%) in urban areas, and the difference between groups was statistically significant ($p > 0.001$). In Poland, computers and the Internet became popular at a time when some of the polled subjects had reached retirement age; therefore, they were not required to learn computer literacy skills. Urban seniors who attend Universities of the Third Age (UTA) and belong to other senior organizations have an opportunity to learn how to use computers. They can attend computer classes tailored to the needs and capabilities of senior students, which is probably why more urban seniors are computer literate than their rural peers. Nonetheless, according to the Public Opinion Research Center [38], computer and Internet literacy is generally low among Polish seniors.

This study focused mainly on the PA of senior respondents. According to Hirvensalo et al. [39], past PA is strongly linked with maintaining high levels of PA in old age regardless of chronic conditions that may develop. In this study, the respondents were asked to assess their PA levels in the past (Table 3), and 32.12% of the polled subjects claimed that they had been physically active several times a week. The veracity of this statement is difficult to ascertain, and it is highly probable that most respondents had overestimated

their PA levels in youth and adulthood. An analysis of PA levels among Poles in the past decades supports the above conclusion [40, 33]. The number of people who opt for sport and active recreation continues to increase, but the noted growth is not highly dynamic, and at present, only 15.5% of Poles meet the World Health Organization's recommendations on physical activity [41]. Respondents who claimed to be physically active once a month (12.77%), less than once a month (32.48%) or not at all (22.63%) were probably closer to the truth. A significant difference ($p = 0.0007$) was observed only in the percentage of respondents who admitted that they had not been physically active in the past, i.e. 31.25% of rural inhabitants and 15.07% of urban dwellers. The results of our survey indicate that the majority of the polled subjects had not been physically active in adulthood, which probably negatively affected their health. Those respondents entered old age without making a lifestyle habit, which is of key importance for positive aging. Urban seniors, in particular those who belong to senior organizations, have many opportunities to develop a fondness for PA, but rural inhabitants are less fortunate. In this study, 86.30% of urban seniors and only 69.53% of rural seniors felt the need to remain physical active ($p = 0.0004$) (Table 3). Most urban respondents attended UTA or were members of other senior organizations. According to Jurczak and Przybysz [42], Polish seniors enrolled in UTA are very keen on participating in organized physical activities. Those findings suggest that organized and regular activities aiming to improve seniors' fitness levels and health can encourage elderly citizens to develop a liking for exercise, and the resulting benefits will be felt not only by seniors, but by the entire society.

In the studied population, 32.03% of rural residents did not participate in organized physical activities, whereas the corresponding percentage was twice lower in urban areas (15.75%, $p = 0.0008$). A US study demonstrated that elderly women living in rural areas, in particular women with lower educational status, have a more sedentary lifestyle than their peers in urban areas. Rural inhabitants also encountered more personal limitations to being physically active in their free time [43].

A large group of rural seniors (26.56%) claimed to be physically active every day, whereas only 16.44% of urban respondents exercised on a daily basis ($p = 0.01960$) (Table 2). In view of the answers to the remaining questions concerning PA, in particular the preferred leisure activities, and the results of studies investigating PA levels of Polish citizens, it seems that the respondents were not being truthful or misunderstood the concept of PA as a leisure activity, in particular in rural areas. Physical activity performed several times a week seems to be a more plausible scenario, and this option was selected mainly by urban seniors ($p < 0.0001$). The remaining respondents, in both urban and rural areas, were physically active once a month or less.

According to the WHO guidelines, seniors should get a minimum of 150 minutes of moderate-intensity exercise or 75 minutes of vigorous-intensity exercise per week [44]. The Centers for Disease Control and Prevention (CDC) recommend 30 minutes of physical activity every day for seniors [45]. In this study, 14.96% of the respondents exercised less than one hour per week, and 40.15% exercised for 1–2 hours weekly. The PA recommendations for seniors were fulfilled by only a small percentage of the polled seniors of whom only 2.55% exercised for 4–6 hours per week, and 18.98% –for 2–4 hours per week.

The percentage of urban seniors exercising 2–4 hours per week significantly ($p = 0.0005$) outweighed the percentage of rural inhabitants. Although 61.69% of the polled subjects claimed to exercise daily or several times a week, only a fifth of the respondents fulfilled the PA standards recommended by the WHO.

A study of British seniors revealed that 62% of the respondents were not engaged in any form of PA [46]. In this study, 33.3% of the polled subjects claimed to lead a sedentary lifestyle (Table 3). Both urban and rural seniors used similar arguments to justify the lack of physical activity, and no significant differences were noted between groups. The largest group of respondents did not exercise due to health problems. In a study carried out by the Ministry of Sport and Tourism [41], the polled seniors used the same argument to justify their reluctance to move. However, according to the authors of the cited research, the poor health argument is often overused by seniors. Elderly citizens who are willing to exercise can always find activities that are suited to their individual health needs. However, seniors who do not have the required knowledge or access to a medical professional, such as a physiotherapist, are reluctant to exercise in fear of worsening their health. Scottish seniors also claimed that health problems (joint pain, shortness of breath), followed by laziness, prevented them from being physically active [47]. This honest and negative self-appraisal testifies to a high level of self-awareness; nonetheless, it is rather unfortunate that laziness won the battle for seniors' health. The problem is more complex, and it is probably related to the lack of lifetime commitment to exercise. The Scottish study also revealed that the main reason for the respondents' sedentary lifestyle was a lack of interest in PA [47]. Similar results were reported in the MSiT study [41] and by Jurczak and Przybysz [42], who observed that most seniors did not exercise regularly due to low conscientiousness and reluctance to be physically active, which was exacerbated with age. These problems pose a significant challenge for senior caregivers. In this study, shortage of funds was the least frequently indicated obstacle to physical activity.

In a study by Lim and Taylor [27], approximately half of the examined senior population had adequate PA levels. Their results point to the need for new strategies promoting PA among elderly citizens. In our study, the questions in the third part of the questionnaire were answered by 68.97% of the polled seniors from the Region of Warmia and Mazury, which indicates that the above percentage of respondents regarded themselves as physically active. Seniors residing in urban areas (81.50%) were significantly more engaged in organized PA than rural seniors (54.68%), which suggests that the place of residence (urban/rural area) is an important determinant of PA levels in elderly citizens. The above observation can be attributed to numerous factors, such as lifestyle, education or professional attainment, but according to the authors, the main reason for the noted difference is the absence of senior organizations and sports facilities in rural areas. The results of surveys examining changes in Poles' PA levels in the past decades indicate that both urban and rural seniors entered old age without well-formed PA habits. However, urban citizens were given far more opportunities to develop such habits, and the results of our study indicate that they were able to use those opportunities to their advantage.

In this study, life satisfaction was the main motivation for exercise, and this answer was more frequently given by rural respondents ($p = 0.0385$). The second most common motivational factor was the improvement in PF levels (28.57%) which was more frequently encountered among urban residents ($p=0.0046$). The above findings are compatible with the results of the respondents' self-assessment of PF. More than 60% of the polled subjects evaluated their PF levels as high or very high; therefore, they did not feel the need to become more physically fit in their free time. Weight loss was the main motivational factor for 15.88% of the respondents, and a significant difference was not noted between groups ($p = 0.4726$). Walking was the most popular type of PA for most seniors (Table 4). In a study by Harris et al. [46], walking was also the predominant activity in the corresponding age group. Nordic walking enjoys high popularity in Poland. This type of exercise is highly recommended for the 60+ population because it improves circulation, respiratory efficiency and endurance without the risk of exertion. Nordic walking poles prevent joint injuries and help maintain balance [48]. Other studies have also demonstrated that walking, in particular Nordic walking, is the most popular type of PA among Polish seniors [42, 49]. The second most popular type of PA was dancing. A significant ($p < 0.0001$) difference was observed between groups where dancing was the preferred form of exercise for 38.57% of rural seniors but only for 5.03% of urban seniors. The percentage of seniors who cycled was significantly higher ($p < 0.0001$) in the group of urban residents. Numerous observations conducted in rural areas during the study led the researchers to anticipate that cycling would be much more popular among rural seniors. The reason why only a small fraction of rural respondents (1.43%) chose cycling as their preferred form of PA is similar to that noted in the gardening category: in rural areas, cycling is regarded as a means of transport rather than a leisure activity. Jogging was the preferred type of PA for 14.29% of urban seniors, but it was not selected by any rural respondent despite the fact that rural areas offer a much better environment for jogging. Jogging requires effort and a higher level of overall fitness, which could explain why it was relatively unpopular in the analyzed population. Our results indicate that a large percentage of seniors avoid vigorous exercise. Moderate-intensity aerobic exercise is recommended for elderly citizens, and it should be promoted among seniors as a health-promoting activity. Balance and stretching exercises are also highly recommended for seniors [50].

A study of Australian seniors demonstrated that regular PA performed in the company of family and friends significantly improves fitness levels in old age [26]. In our study, the majority of seniors exercised alone (Table 4). A significant difference ($p < 0.0001$) was observed between groups where 60% of rural seniors (most frequent answer) and 31.09% of urban seniors exercised alone. In urban areas, seniors were more likely to exercise in the company of friends. The difference between groups was statistically significant ($p < 0.0001$), where rural seniors were more likely to exercise with family members ($p = 0.0283$) and did not participate in organized PA. Our results indicate that rural seniors have far fewer opportunities to remain physically active than urban residents. The observed differences can be attributed mainly to the place of residence and, consequently, access to senior organizations. Urban seniors can participate in organized PA classes as part of UTA courses. Senior organizations enable elderly persons to make new friends and stay socially active, and their members are eager to make the most of such opportunities. For this reason,

urban dwellers find it much easier to find exercise companions outside their families. The situation in rural areas is more complex, and the fact that many rural seniors are not interested in PA exacerbates the problem.

Both rural and urban seniors experienced the benefits of physical exercise (Table 4). This is a very optimistic result which indicates that seniors should also receive support from organizations other than UTA or senior community centers that are not widely accessible in rural areas. Much remains to be done in Polish rural areas which do not receive the required support from national institutions serving the elderly, at least with regard to PA promotion.

CONCLUSIONS

This study investigated the preferred leisure time activities and PA levels of Polish seniors. Rural and urban inhabitants aged 60 years and older prefer different types of leisure activities, which indicates that the place of residence influences the choice of free time activities. Urban seniors read more and are more physically active, whereas rural seniors watch more television, are less physically active, rarely use the computer and are at much greater risk of digital exclusion.

Most of the surveyed seniors feel the need to be physically active, and this need was expressed by more urban than rural respondents. More urban than rural seniors regard themselves as physically active, but the majority of respondents from both groups did not meet the weekly exercise standards recommended by the WHO and CDC. In both groups, life satisfaction was the main motivating factor for exercise, whereas the main reasons for a sedentary lifestyle were poor health and laziness. According to nearly all urban and rural respondents who declared to be physically active, exercise has a positive influence on their health and wellbeing. Walking is the most popular type of PA among seniors. Despite the declared high level of physical activity, most seniors do not exercise long enough and tend to choose low-intensity physical activities.

PRACTICAL IMPLICATIONS OF THE RESEARCH

The results of this study indicate that organized and systematic efforts are required to increase the PA levels of seniors, in particular in rural areas. In Polish rural areas, there is a scarcity of programs and measures popularizing PA among seniors. Rural residents have limited access to sports facilities, PA classes or knowledge about the health benefits of exercise. Rural seniors are characterized by lower educational status than their urban peers, but gaps in education can be compensated for to improve the quality of life of rural residents. Educational programs for seniors are available in UTA which, however, rarely reach the elderly in rural areas. Social work organizations in rural areas mainly focus on welfare services, whereas their operations should be expanded to include education and promotion of physical activity for seniors. Our findings also indicate that physical activity should become a habitual part of the lifestyle of Polish children and adolescents because lifelong physical activity produces the best results and contributes to positive aging.

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