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PHYSICAL ACTIVITY AND LIFE SATISFACTION IN SENIORS PARTICIPATING IN EDUCATIONAL PROGRAMS¹

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SUMMARY

The present study examines participation in physical activity and its relationship with life satisfaction in a sample of 212 Czech seniors attending educational and social programs. The battery of questionnaires (The Leisure Time Exercise Questionnaire, Physical Activity Survey for the Elderly, and Satisfaction with Life Scale) was administered in order to measure perceived participation in physical activity and life satisfaction. It was found that 77% of the respondents do not participate in any strenuous physical activity, 47% do not participate in any moderate physical activity and 64% of respondents do not meet the minimal levels of physical activity recommended by the World Health Organization. In the majority of the sample, the physical activity originated from everyday activities such as walking, gardening, or working around the house. Also, a significant relationship between participation in physical activity and life satisfaction was found: The group of participants who met the recommended levels of physical activity indicated significantly higher satisfaction with life. Only moderate and combined moderate and strenuous activity was significantly related to life satisfaction.

Key words: physical activity, life satisfaction, seniors

INTRODUCTION

During the 20th century, the average length of life has increased significantly and it is expected to continue rising, mainly because the major causes of premature death have been reduced (Murray, Lopez, 1996). According to World Health Organization statistics, the expected average length of life in the Czech Republic has risen from 71.4 years to 77.2 years and the expected years to live in the cohort of 65–69 years have increased from 13.5 to 17.1 in the last 20 years. At the same time, the birth rate decreased from 13.82 births per 1000 people in 1990 to 8.83 in 2009.

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Given the aging of the population, the important research task is not only to identify ways of increasing the length of life, but above all to improve the quality of life in senior age and the length of active life. International research suggests that the key predictor of active life or non-disability in old age is sufficient physical activity (Leveille et al., 1999). Participation in moderate physical activity brings numerous cognitive, emotional and physical benefits for older adults and significantly extends the span of active life (Netz et al., 2005; Kramer et al., 2003; Laurin et al., 2001; Fox, 1999). However, it appears that majority of seniors do not make use of the beneficial effects of physical exercise and do not engage in sufficient regular physical activity (Cavill, Kahlmeier, Racioppi, 2006; McAuley et al., 2003). Finding ways to increase their participation in physical activity remains one of the biggest challenges for health, exercise, and geriatric psychology.

Numerous research studies concerned with physical activity in older adults have been conducted also in the Czech context. For example, Pelclová, Vašíčková et al. (2008) researched demographic factors related to the participation in physical activity in the population of 55–69 years old Czech adults. Macháčová et al. (2007) focused on possibilities of objective evaluation of the level of physical activity in seniors. Závazalová et al. (2007) examined changes in lifestyle during the process of aging. Bunc (Bunc, Štílec, 2007; Štílec, Bunc, Matouš, 2000) researched positive physiological outcomes of regular physical activity in seniors. However, only limited attention has been paid in the Czech context to relationship of physical activity and emotional characteristics, such as subjective well-being or life satisfaction, which are important factors of the quality of life in older age.

The aim of the study is to expand more focused research on this topic. The population of seniors who regularly participate in educational programs for seniors, such as universities of the third age, senior clubs or exercise for seniors was examined. These programs represent an important source of activity in this age cohort and can be used as a valuable intervention tool. Therefore, it is important to seek information about the participants in these programs that could be utilized for an improvement of the quality of life in older age.

Research goals of the study: (1) to explore the role of physical activity in the lifestyle of this sub-population of seniors, especially whether they meet the level of physical activity recommended by WHO, (2) to examine preferred types of physical activity in which these people engage, (3) to explore the relationship between their physical activity and life satisfaction.

METHODOLOGY

Participants

A group of 212 people of age 60 and older who lived in metropolitan area (Prague, about 1.3 mil. inhabitants), medium sized city (Plzeň, about 180k inhabitants) and district town (about 30k inhabitants) participated in the study. They regularly attended social and educational programs for older adults, such as senior clubs, universities of the third age or exercise groups for seniors. They were contacted through these institutions and asked to fill a questionnaire (the return rate of the questionnaire has been about 50%). The main characteristics of the group are described in the results.

Procedures

The participants were given three questionnaires: The Leisure Time Exercise Questionnaire, Physical Activity Survey for the Elderly a Satisfaction with Life Scale, complemented by a demographic questionnaire. All the instruments have been commonly used in research on the population of older adults. The back-translation check procedure was conducted for the questionnaires which were translated to the Czech language.

Demographic variables

All participants of the study were asked about basic demographic variables – gender, marital status, age, education, number of years in retirement, weight and height (which were used to compute BMI index) and details of their health status.

The Leisure Time Exercise Questionnaire (LTEQ)

Self-evaluating questionnaire LTEQ was used as the main instrument aimed at the intensity and duration of physical activity. It measures perceived average weekly amount of physical activity during the past month on four levels of intensity (strenuous, moderate, mild and time spent sitting). LTEQ is considered a valid and reliable instrument for measuring physical activity in older adults (Godin, Shephard, 1985).

Physical Activity Survey for the Elderly (PASE)

PASE was used as a complementary instrument to LTEQ, mainly to obtain qualitative data about types of physical activity and perceived intensity level of indicated activities. PASE is a ten-item questionnaire which measures type, intensity and duration of perceived physical activity during one week period. PASE collects information from various domains, such as leisure, household, and work. It has been considered a valid instrument for measuring physical activity in older adults (Washburn et al., 1993).

Satisfaction with Life Scale

Satisfaction with Life Scale (Diener et al., 1985) has been frequently used in a variety of studies as a measure of global life satisfaction. It consists of five items which evaluate the satisfaction in various domains according to respondent's values and standards. Every item consists of a 7 grade scale ranging from "strongly disagree" to "strongly agree" where the higher score represents the higher level of life satisfaction. The Satisfaction with Life Scale is an instrument with good inner consistency and validity and it is suitable for research on the population of older adults (Diener et al. 1985).

Analysis

The data obtained through questionnaires have been processed by analytic software Statistica ver. 10. Descriptive statistics (frequency tables, mean, median, standard deviation) were used to describe the research sample and the types and duration of physical activity. The non-parametric correlation analysis (Spearman R) was used to identify the relationship between physical activity and life satisfaction, the Analysis of variance was used to compare the groups of physically active and non-active seniors. The qualitative analysis indicated types of physical activity in the sample.

RESULTS

Demographical data

The average age was of the group was 67.9 years; more than 90% were retired. Almost 80% of the group were women, 90% graduated from high school or attended university, the average BMI index was 26.5. For detailed demographical data see Tables 1–5.

Table 1.

Age		
N	Mean	St. dev.
203	67.94	6.77
Gender		
	N	%
Female	168	79.25
Male	30	14.15
Missing	14	6.6
Total	212	100

Table 2.

Marital status		
	N	%
Married	107	50.47
Single	7	3.3
Divorced	22	10.37
Separated	2	0.94
Living with a partner	4	1.89
Widow/er	50	23.58
Missing	20	9.43
Total	212	100

Table 3.

Education		
	N	%
Elementary	3	1.42
Vocational school	8	3.77
High school graduate	112	52.83
University	79	37.26
Missing	10	4.72
Total	212	100

Table 4.

Working/retired		
	N	%
Working	8	3.77
Retired	194	91.51
Missing	10	4.72
Total	212	100
Years in retirement		
N	Mean	St. dev.
201	10.88	9.11

Table 5.

Average BMI		
N	Mean	St. dev.
202	26.46	4.38
BMI levels		
	N	%
<20	3	1.42
20–25	78	36.79
25–30	89	41.98
30–35	26	12.26
>35	6	2.83
Missing	10	4.72
Total	212	100

Physical activity

According to the results of the LTEQ questionnaire, the level of physical activity in the studied sample is relatively low. It is surprising; especially when we consider that the respondent were active in other domains of life. Over 64 percent of respondents do not reach the recommended 150 minutes of at least moderate physical activity per week (see Table 8). At the same time, almost 77 percent did not participate in any strenuous physical activity, 46.7% did not participate in any moderate activity and 17.9% did not even participate in any mild physical activity. Only 2.4 percent of respondents participated in strenuous physical activity every day of the week, at least 10 minutes a day. 9% participated in everyday moderate physical activity and 33% participated in everyday mild physical activity (see Table 6). In the group of people who stated at least minimal amount (10 minutes) of physical activity per week, the average duration of physical activity was 230 minutes a week for strenuous, 307 minutes for moderate, and 387 minutes for mild physical activity. However, considering the high standard deviation, median probably represents a more accurate measure – it indicates 120 minutes of strenuous, 180 minutes of moderate and 240 minutes of mild physical activity per week (see Table 7).

Table 6.

Weekly participation in physical activity/number of sessions								
Strenuous physical activity			Moderate physical activity			Mild physical activity		
Times p/week	N	%	Times p/week	N	%	Times p/week	N	%
Never	163	76.89	Never	99	46.70	Never	38	17.92
1x	18	8.49	1x	19	8.96	1x	18	8.49
2x	10	4.72	2x	30	14.15	2x	19	8.96
3x	9	4.25	3x	13	6.13	3x	18	8.49
4x	4	1.89	4x	8	3.77	4x	13	6.13
5x	3	1.42	5x	20	9.43	5x	27	12.74
6x	0	0.00	6x	4	1.89	6x	9	4.25
7x	5	2.36	7x and more	19	8.96	7x and more	70	33.01

Table 7.

Total amount of physical activity per week (in minutes)											
Strenuous physical activity (only active)				Moderate physical activity (only activ)				Mild physical activity (only active)			
N	Mean	Median	St. Deviation	N	Mean	Median	St. Deviation	N	Mean	Median	St. Deviation
49	228.84	120.00	367.74	112	307.50	180.00	377.41	169	387.27	240.00	441.82

Table 8.

Physically active/ physically non-active participants		
	N	%
Non-active (< 150 min./pw)	136	64.15
Active (> 150 min./pw)	76	35.85
Total	212	100

It is interesting that on all levels of intensity the participants repeatedly mentioned similar activities; it was the frequency of various activities on various intensity levels that changed. The indicated types of physical activity are of particular interest. Surprisingly, the main source of physical activity was not related to sports. The participants mentioned a whole range of leisure sporting activities but they were usually limited to individuals. The main source of activity in the whole group was of a non-sporting character and stemmed from regular every day domains, such as taking care of household or garden. The most frequently mentioned mild physical activities were walking, gardening and working around the house, on the moderate intensity level it was gardening and working in the household and cottage, on the strenuous intensity level it was cycling and swimming (see Table 9).

Table 9. Indicated types of physical activity (the most frequently mentioned activities are in bold)

Indicated types of physical activity
Types of mild intensity physical activity
Walking (going for a walk, hiking, walking the dog, walks with grandchildren), household chores (shopping, cleaning), gardening, working around the house (picking fruit, raking, maintenance), mild sporting activities (Pilates, stretching, yoga, morning exercise, exercise in Sokol, zumba, ball games, swimming, tai chi, physiotherapy, bowling, cycling, fitness), playing with grandchildren
Types of moderate intensity physical activity
Gardening, working around the house and cottage (beekeeping, grass cutting, raking, cleaning, planting, digging, hoeing, compost distribution, snow removal, wood cutting, hand laundering, mushrooming), walking, running, inline skating, exercising (fitness, tennis, conditioning, physiotherapy, aqua-aerobic, ball games), dancing, swimming, cycling, cross-country skiing
Types of strenuous intensity physical activity
Tennis, cycling , walking, running, swimming , fitness, snow removal, wood chopping, downhill and cross-country skiing, zumba, Pilates, archery, aerobic, hiking, football

Physical activity and life satisfaction

In the second part of our study, we researched possible emotional outcomes of physical activity and analyzed the relationship between various levels of physical activity and life satisfaction, as reflected in the Leisure Time Exercise Questionnaire and Satisfaction with Life scale. It was found that perceived life satisfaction was significantly related to moderate physical activity ($r = 0.27$), even slightly stronger relation was found between life satisfaction and combined moderate and strenuous physical activity ($r = 0.27$). On the other hand, there was no significant relationship between life satisfaction and mild or only strenuous physical activity (see Table 10).

Table 10. (significant correlation are in bold)

Correlations between the type of physical activity and items of SWL scale (Spearman R)						
Type of p.a. / Items of SWL	Ideal	Conditions	Satisfaction	Goal attainment	Change	Total
Strenuous p. a.	0.07	0.01	0.08	0.08	-0.01	0.04
Moderate p. a.	0.28	0.11	0.15	0.23	0.19	0.27
Mild p. a.	0.01	-0.08	-0.05	0.06	-0.04	-0.02
Strenuous and moderate p. a.	0.28	0.11	0.21	0.26	0.17	0.27
Total p. a.	0.16	0.019	0.11	0.22	0.07	0.15

When comparing the group of physically active respondents (i.e. people who met the recommendation of World Health Organization to participate in at least moderate physical activity for at least 150 minutes per week), and the group of non-active respondents (who did not meet the WHO recommendation), it was found that both groups significantly differ in the indicated level of life satisfaction (both on the level of individual items and in the total score). The results of comparison of active and non-active group (ANOVA, t-test and mean values of Satisfaction with Life Questionnaire items) are recorded in Tables 11–13.

Table 11.

Comparison of physically active and physically non-active in life satisfaction – ANOVA					
Test	Value	F	effect df	error df	P
Wilks	0.890736	4.5142	5	184	0.000663

Table 12.

Mean values of SwL items in physically active and non-active participants				
Item	mean	St. dev.	-95%	+95%
Ideal – non-active	4.07	0.10	3.86	4.27
Ideal – active	4.82	0.13	4.56	5.08
Conditions – non-active	4.44	0.11	4.21	4.66

Mean values of SwL items in physically active and non-active participants				
Item	mean	St. dev.	-95%	+95%
Conditions – active	4.75	0.14	4.47	5.04
Satisfaction – non-active	4.80	0.10	4.60	5.01
Satisfaction– active	5.41	0.13	5.15	5.67
Goal attainment– active	4.86	0.11	4.65	5.08
Goal attainment – non-active	5.44	0.14	5.17	5.71
Change – non-active	3.87	0.14	3.59	4.15
Change – active	4.36	0,18	4.00	4.71

Table 13.

Comparison of physically active and physically non-active in life satisfaction (SwL total score) – t-test								
Mean non-active	Mean active	T	Df	P	St. dev. Non-active	St. dev active	F – ratio (variance)	p (variance)
21.50820	24.78082	-4.23207	193	0.000036	5.774332	4.144094	1.941531	0.002558

DISCUSSION

As reported in a comprehensive study of European population organized by WHO (Cavill, Kahlmeier, Racioppi, 2006), two thirds of European adults do not meet the recommended levels of physical activity. In our research, we obtained similar results –64% of our sample indicated insufficient engagement in physical activity. On the other hand, another Czech study (Pelclová, Vašíčková at al. 2008) found somewhat higher estimates of physical activity in a group of older adults (e.g. more than 52% met the recommendations for participation in moderate activity). These differing results probably stem from demographic differences in both samples. The study of Pelclová, Vašíčková at al. (2008) analyzed a general sample of older adults whereas we focused on the people participating in educational and social programs for seniors. The findings of Pelclová, Vašíčková et al. (2008) suggest possible explanation of higher participation of the general sample in physical activity: in their study the highest probability to meet the recommended levels of physical activity was in the group with elementary education. When contrasting both samples, there are obvious differences in educational level of respondents – for example only 5% of our respondents have not finished high school (compared to 27.2% of the participants in the other study).

This result may seem surprising but only until we look at the most prevalent sources of physical activity in our sample. Although our respondents brought up a wide range of leisure sporting activities, these activities were rarely mentioned in more than one or few cases. In the overall sample, common everyday activities unambiguously dominated: walking, gardening and working around the house in mild physical activity, gardening and working around the house and cottage in moderate activity and cycling in strenuous physical activity. Therefore, it seems that the physical activity of the participant stems more

from necessity than from decision to exercise – we can expect that in this sense, it would be helpful if older adults included in their daily routine compulsory activities (for example related to work, household maintenance, garden, walking the dog, and so on) that would help them to boost their motivation and overcome obstacles related to regular exercise. This is supported also by findings of Pelclová, Vašíčková et al. (2008) who found higher probability to meet the recommended amounts of physical activity in seniors with the secondary education, living in a house, and still working. It is probable that these people have incorporated various obligatory physical activities in their life style.

Also other studies point in similar direction: Souverai and Avorn (1983) found that seniors significantly increased their physical activity when they were offered an opportunity to participate in part time or volunteer work. This research also shows the importance of intervention programs, as none of the seniors in their control group started part time or volunteer work by him or herself. And again, the participation in work-related activity seems to be beneficial for well-being of seniors, for example Willigen (2000) found that participation of seniors in volunteer work was significantly related to higher life satisfaction.

However, the fact that the respondents did not participate more in leisure sporting activities does not necessarily mean that they are not motivated for this kind of activity. Slepíčková et al. (2009) or Slepíčka and Slepíčková (2002a, 2002b) show in their study that seniors did not participate in leisure sporting activities not because they lacked motivation. Most of them stated that they had abundance of free time and would welcome an opportunity to participate in sports. As the main obstacle, they reported insufficient social support and, above all, insufficient supply of sport programs that would suit their needs, especially their health limitations.

The results of this research also add more to the increasing number of studies (e.g. Penedo, Dahn, 2005, Ruskaanen, Ruopila, 1995; Fox, 1999) that show positive relationship between physical activity and life satisfaction. It was found that the respondents who met the recommended amount of physical activity indicated significantly higher level of satisfaction with life than the non-active ones. Fox (1999) overviewed up to date research on this topic and found extensive evidence of positive impact of physical activity on various emotional outcomes in seniors; for example it appeared that regular physical activity can be therapeutic in mild forms of depression and anxiety, improve resilience to stress or quality of sleep. Similarly, Ruskaanen and Ruopilla (1995) found significantly higher occurrence of depression in non-active Finish seniors; on the other hand, physically active seniors indicated significantly higher subjective health and perceived meaningfulness of life. This relationship seemed to be reciprocal – people who stated higher levels of subjective well-being were more inclined to be physically active in older age.

However, it can be seen that not all types of physical activity are related to positive emotional outcomes. There is a significant relationship between life satisfaction and moderate physical activity or combined strenuous and moderate physical activity. Conversely, mild or only strenuous physical activity was not significantly related to life satisfaction. These results may indicate that seniors should exert sufficient effort in order to make use of the beneficial effects of physical activity and, at the same time, that strenuous physical activity is not the most beneficial type of activity for the senior population.

There are limitations stemming from the size and internal variability of the sample. Data was collected on people participating in educational and social programs for seniors

who seem to be different from general senior population. For example, when compared with a more representative sample of seniors (Pelclová, Vašíčková at al., 2008), we can find much higher proportion of women and people with higher education in our sample. It seems that educational and social programs attract a specific group of seniors – men and people with lower level of education probably prefer different types of activity.

Another limitation stems from the used instruments. The LTEQ questionnaire only allows to measure subjective evaluation of one's physical activity. We can expect that it brings somewhat different estimates than objective measures, such as pedometers. Nonetheless, it still comes up with useful information. For example, subjective evaluation reflects exerted effort which may better correspond to the relative conditions of individual respondents.

Also, the method of correlation study does not allow to determine causal relations, therefore we do not know how participation in physical activity and life satisfaction influence each other; we can expect that this relationship is to a certain degree bidirectional.

CONCLUSION

The main findings of our study can be summarized as follows: The majority (77%) of our respondents did not participate in any strenuous physical activity and almost half of the respondents (47%) did not participate in any moderate physical activity. Two thirds of the respondents (64%) did not meet the levels of physical activity recommended by World Health Organization. The main source of physical activity was not sport but common everyday activities such as walking, gardening, or working around the house. The participation in physical activity was related to positive emotional outcomes: respondents who met the recommended levels of physical activity indicated significantly higher level of satisfaction with life. This was limited only to certain kinds of physical activity: a significant relationship was observed in moderate and combined moderate and strenuous activity, there was no significant relationship between life satisfaction and mild or only strenuous physical activity.

Based on these results, we can conclude that seniors should be offered more opportunities to participate in physical activity, such as volunteer or part time work, but also sport programs that would suit their specific needs.

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POHYBOVÁ AKTIVITA A ŽIVOTNÍ SPOKOJENOST U SENIORŮ ÚČASTNÍCÍCH SE VZDĚLÁVACÍCH PROGRAMŮ

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SOUHRN

Předkládaná studie se zabývá pohybovou aktivitou a jejím vztahem k životní spokojenosti u skupiny 212 českých seniorů navštěvujících specializované vzdělávací a sociální programy určené pro tuto věkovou skupinu. Pro zjištění toho, jak vnímají svou účast v pohybové aktivitě a jak hodnotí svou životní spokojenost jim byla administrována baterie dotazníků (The Leisure Time Exercise Questionnaire, Physical Activity Survey for the Elderly, Satisfaction with Life Scale). Bylo zjištěno, že 77 % respondentů se aktuálně nevěnuje žádné namáhavé pohybové aktivitě, 47 % se nevěnuje žádné středně obtížné pohybové aktivitě a 64 % respondentů nesplňuje minimální dávky pohybové aktivity doporučené Světovou zdravotnickou organizací. Hlavním zdrojem pohybu byly u většiny

účastníků běžné každodenní aktivity jako například chůze a práce na zahradě či na chalupě. Byl zjištěn signifikantní vztah mezi účastí v pohybové aktivitě a životní spokojeností: Respondenti, kteří splnili doporučené dávky pohybové aktivity uváděli signifikantně vyšší spokojenost se životem. Pouze středně namáhavá a kombinovaná středně namáhavá a namáhavá pohybová činnost byly signifikantně vztaženy k životní spokojenosti.

Klíčová slova: pohybová aktivita, životní spokojenost, seniři

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