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The relationship between physical activity and quality of life of people in age 25–30, 35–40 and 45-50

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Abstract

Purpose: The aim of the research was to assess the relationship between physical activity and quality of life of the respondents. *Methods:* There was a study conducted on 150 people divided into three age groups: 25-30, 35-40 and 45-50 years old. The study was conducted by using its own questionnaire. The evaluated factors were health status, material status, life satisfaction, attitudes to drugs and drug use, ways of spending free time, the ratio of physical activity or cultivated forms of activity. In order to carry out the correlation analysis between the subjective assessment of quality of life and physical activity there were numerical indicators of quality of life and physical activity introduced. *Results:* The correlation between these indicators for all examined and for different age groups was assessed. The most evident correlation appeared in

the oldest group. *Conclusions:* The examined are aware that taking up physical activity regularly is conducive to improving their well-being, physical condition and appearance. The subjective evaluation of the level of general fitness and the frequency of doing physical activity tend to fall with age. Physical activity influences not only the physical and psychological health, but also indirectly conditions the capability of succeeding in other areas of life.

Keywords: physical activity, quality of life, age

Introduction

Physical activity is one of the most important factors determining long and healthy life. Each exercise taken regularly allows to live in full working order and has an impact on daily functioning. It has a significant impact as a inhibiting and developmental factor at any age. In children and adolescents it affects personality, physical and social development. In adults it can maintain capability and self-reliance in everyday life, which significantly affects the quality of life.

The decline of physical capacity occurs after the age of 20. It has been proven that in people who do not display any activity the process is even 2-3 times faster. Physical activity has a significant impact on the prevention and treatment of cardiovascular diseases (coronary heart disease, hypertension, stroke), respiratory and the immune system diseases and the ability to cope with stress [1,2,3,4,5,6]. A moderate intensity effort has a protective influence on the central nervous system. It also plays an important role in maintenance and regulation of body weight and metabolic efficiency. It has a positive effect on increasing the mechanical strength of bone and tendon tissue, helps to maintain normal joint mobility, plays an important role in the prevention of osteoporosis, has a significant impact on the increase in immunity, prevents fatigue [7,8], raises self-esteem [9,10,11].

Lack of or a little physical activity may contribute to the formation of motility disturbances in humans, civilization diseases, eg. obesity, hypertension, depression. In contrast, sedentary lifestyle (leisure time in front of a computer or a TV) results in physical and mental fatigue, irritation, reduced concentration and creativity [12].

In this paper the relationship between physical activity and the quality of life has been demonstrated and also physical activity in different age groups has been compared. It has been shown how study subjects spend their time and to what extent physical activity affects the physical and mental state taking into account groups of smaller and greater involvement in improving their health.

Material and methods

The study was conducted between February and April 2016 among 150 randomly selected

inhabitants of Bydgoszcz, Kujawsko-Pomorskie voivodeship. The respondents were a group of 75 women and 75 men. Tests were performed in three age groups: 25 to 30, 35 to 40 and 45 to 50 years of age. Throughout this paper the groups will be determined as follows: "A", "B" and "C". In every age group, there was an equal distribution by gender (25 subjects).

The study consisted of completing a questionnaire. It contained 40 open-ended and closed-ended questions and consisted of four parts, which concerned: personal data, health, quality of life and physical activity. In the first part, the issues concerned gender, age, marital status, place of residence, and education. The second part included questions regarding body weight, chronic diseases, surgery, permanent injuries, medications, addictions, attitude to medical care and self-assessment of own health and activity. In the section on the quality of life we collected information about the number of children, family relations, housing and vocational conditions, subjective evaluation of financial situation, a sense of happiness or contentment. The last section included questions on physical activity in school age and nowadays, forms of spending leisure time, reasons for taking or not taking physical activity. Individual responses to the questionnaire were assigned with point values. For statistical interpretation of the results, life quality indicators (WJZ - values ranged from 1 to 37) and physical activity indicators (WAF – values ranged from 1 to 27) have been established. In order to demonstrate the relationship between these two variables, correlation for all respondents and for different age groups has been estimated.

Results

The study included 150 persons, 50 in each age group: 25-30 years old (group A), 35-40 years old (group B) and 45-50 years old (group C). In each group there were 25 women and 25 men. Group A was dominated by unmarried subjects (29 individuals – 58.0%), group B contained 23 unmarried subjects (46.0%), group C contained 12 unmarried subjects (24.0%), which is more than $\frac{3}{4}$ of this group which was married. Respondents with higher education dominated quantitatively (9102 people; 68%) (table 1).

Subjects from all three groups did not differ significantly in terms of body weight. In each group subjects with normal body weight dominated. In total, the study attended 3 underweight subjects (2.0%), 102 subjects with normal body weight (68.0%), 38 overweight subjects (25.3%) and 7 with obesity (4.7%).

Table 1. Study group characteristics

Study group characteristics		25-30 years old		35-40 years old		45-50 years old	
		n	%	n	%	n	%
Sex	Women	25	50,0%	25	50,0%	25	50,0%
	Men	25	50,0%	25	50,0%	25	50,0%
Marital status	Unmarried	24	48,0%	13	26,0%	3	6,0%
	Married	21	42,0%	27	54,0%	38	76,0%
	Divorced	0	0,0%	4	8,0%	5	10,0%
	Cohabitant relationship	5	10,0%	6	12,0%	4	8,0%
Place of residence	Village	9	18,0%	8	16,0%	9	18,0%
	Small town (< 50 000)	11	22,0%	5	10,0%	7	14,0%
	Big city (>50 000)	30	60,0%	37	74,0%	34	68,0%
Education	Primary	0	0,0%	0	0,0%	1	2,0%
	Professional	1	2,0%	2	4,0%	2	4,0%
	Secondary	12	24,0%	17	34,0%	13	26,0%
	Higher	37	74,0%	31	62,0%	34	68,0%
Age		27,7 ± 1,9		36,9 ± 1,5		48,4 ± 1,6	

Among the most common chronic diseases associated with study subjects was hypertension. This disease gradually and increasingly involved older people. The oldest respondents also suffered from diabetes (3 subjects - 6.0%), which was not observed in other tested age groups (table 2).

Table 2. Chronic diseases in each age groups

Chronic diseases	25-30 years old		35-40 years old		45-50 years old		Significance (p)
	n	%	n	%	n	%	
Hypertension	3	6,0%	5	10,0%	9	18,0%	$\chi^2(2)=3,72$ p=0,1561
Diabetes	0	0,0%	0	0,0%	3	6,0%	$\chi^2(2)=6,12$ p=0,0468
Heart diseases	2	4,0%	1	2,0%	2	4,0%	$\chi^2(2)=0,41$ p=0,8131
Respiratory diseases	4	8,0%	3	6,0%	2	4,0%	$\chi^2(2)=0,71$ p=0,7015

N - number; % - percent; χ^2 - Pearson chi square test result; p - statistical significance

Diseases affecting the subjects' permanent deterioration of health and fitness were more frequent among the elderly (p = 0.0202). There were 3 such subjects in group A (6.0%), 7 in group B (14.0%) and 13 in group C (26.0%).

Also regularly taken medications was reported by respondents in the following age groups: respectively 8 subjects in group A (16.0%), 10 in group B (20.0%) and 22 in group C (44.0%). This relation was also statistically significant (p = 0.0028).

There were no statistically significant differences in the incidence of addiction to tobacco. Among the respondents, 97 subjects did not smoke at all (64.7%), 28 subjects smoked occasionally (18.7%), 6 subjects smoked a few cigarettes a week (4.0%), 13 subjects smoked a few cigarettes per day (8.7%) and the remaining 6 subjects smoked more than one pack of cigarettes per day (4.0%).

The different age groups did not differ significantly in terms of alcohol consumption. In

general, 25 subjects did not consume alcohol at all (16.7%), 106 respondents rarely drank alcohol (70.7%), 18 subjects consumed alcohol several times a week (12.0%) and 1 respondent consumed alcohol everyday (0.7%).

Table 3. Subjective assessment of health condition, physical fitness and satisfaction from financial situation in each study groups

Health condition [1-10]	Descriptive statistics							
	n		Me	Min.	Max.	Q1	Q3	s
25-30 years old	50	7,82	8,00	4,00	9,00	8,00	9,00	1,30
35-40 years old	50	7,50	8,00	2,00	10,00	6,00	9,00	1,76
45-50 years old	50	7,22	7,00	4,00	10,00	6,00	8,00	1,43
Significance (p)	H=5,61 p=0,0604							
Physical fitness [1-10]								
	n		Me	Min.	Max.	Q1	Q3	s
25-30 years old	50	7,08	7,50	2,00	10,00	6,00	8,00	1,86
35-40 years old	50	6,38	6,50	2,00	10,00	5,00	8,00	1,98
45-50 years old	50	6,30	7,00	1,00	9,00	6,00	7,00	1,62
Significance (p)	H=7,06 p=0,0292							
Satisfaction from financial situation [1-10]								
	n		Me	Min.	Max.	Q1	Q3	s
25-30 years old	50	6,56	7,00	2,00	10,00	5,00	8,00	1,98
35-40 years old	50	7,22	8,00	1,00	10,00	7,00	8,00	1,97
45-50 years old	50	6,18	7,00	1,00	10,00	5,00	7,00	2,17
Significance (p)	H=8,66 p=0,0132							

n - number; - arithmetic average; Me - median; Min - minimum; Max - maximum; Q1 - lower quartile; Q3 - upper quartile; s - standard deviation; H – Kruskal-Wallis ANOVA test value; p – statistical significance

The respondents were asked to subjectively assess their health condition on a scale of 1 to 10, where 1 means the weakest grade and 10 the strongest grade. Average score of subjects aged 25 - 30 years was 7.82 ± 1.3 , the average score of those aged 35-40 years, was slightly lower at 7.5 ± 1.76 while the average score for subjects aged 45-50 years was the lowest and was 7.22 ± 1.43 . The differences in the assessment of health condition were not statistically significant ($p = 0.0604$), although the described relation was close to the significance threshold, what the probability ratio suggests (table 3).

The physical fitness of the subjects was evaluated similarly. This time, the respondents' opinions from the three groups differed significantly ($p = 0.0292$). Their own physical condition was well perceived by subjects aged 25-30 years (average score 7.08 ± 1.86), and the worst at the age of 45-50 years (average score of 6.3 ± 1.62). Together with age, physical fitness condition assessment by the respondents significantly decreased (table 3).

A degree of satisfaction from own financial situation was evaluated. The respondents' ratings tested in three groups differed significantly ($p = 0.0132$). The financial situation was

well perceived in group aged 35-40 years (mean score 7.22 ± 1.97), badly perceived in group aged 45-50 years (6.18 ± 2.17), which was similar to the evaluation in group aged 25-30 years (6.56 ± 1.98) (table 3).

On scale from 1 to 10, the subjects evaluated the level of life satisfaction. The assessment given by respondents in three different age groups did not differ significantly ($p = 0.5762$). A weak relation in the results can be observed indicating a progressively higher level of life satisfaction among younger respondents and a progressively lower level of life satisfaction in older subjects.

The study also took into consideration the participation in physical education classes in adolescence life. Most of the respondents participated in this type of classes at school (134, 89.3%). The frequency of indicating this answer in the questionnaire did not depend on age of the respondents. Similarly, a majority of respondents declared practicing a sports discipline in school age (105 subjects, 70.0%). The frequency of sports activities in three surveyed groups did not differ significantly. The evaluation of current life status did not differ significantly among the three groups of respondents. Out of all respondents, 14 subjects admitted to having no activity at all (9.3%), another 61 respondents were a little active (40.7%), 64 individuals were active (42.7%), and 11 subjects were very active (7.3%). Regular sports declared a total of 78 (52.0%) respondents. The frequency of sports activity gradually decreased with age. In the youngest group 58% of respondents declared a systematic sports practice, in the group of 35 – 40-year olds 52%, and among the oldest respondents only 46%.

There were no significant differences in forms of physical activity preferred by respondents in the three groups. Most respondents indicated cycling, running and swimming. A large part of the respondents indicated other forms of activity. Also the frequency of physical activity did not differ significantly in the three groups ($p = 0.7374$). In total, the majority of subjects showed physical activity usually a few times a month (45 respondents, 30.0%) or several times a week (55 respondents, 36.7%).

The reasons for undertaking physical activity were similar among the three study groups. The respondents indicated a desire to improve mood, a desire to improve physical condition, and a desire to improve appearance as the most important reasons.

The majority of respondents, regardless of age group ($p = 0.2024$) declared attached attention to importance of healthy diet (107 respondents, 71.3%). A different opinion in this matter presented only 43 respondents (28.7%).

Regardless of age group, the majority of respondents preferred watching TV, reading books, houseworks, web browsing and meeting with family in their free time.

Table 4. Ways of spending free time

Ways of spending free time.	25-30 years old		35-40 years old		45-50 years old		Significance (p)
	n	%	n	%	n	%	
Watching TV	21	42,0%	24	48,0%	29	58,0%	$\chi^2(2)=2,61$ p=0,2707
Reading books/magazines	29	58,0%	19	38,0%	32	64,0%	$\chi^2(2)=7,45$ p=0,0242
Houseworks	25	50,0%	28	56,0%	35	70,0%	$\chi^2(2)=4,34$ p=0,1140
Growing garden	6	12,0%	8	16,0%	6	12,0%	$\chi^2(2)=0,46$ p=0,7939
Listening to the radio/music	27	54,0%	17	34,0%	20	40,0%	$\chi^2(2)=4,30$ p=0,1161
Web browsing	29	58,0%	28	56,0%	32	64,0%	$\chi^2(2)=2,69$ p=0,6106
Computer games	6	12,0%	8	16,0%	3	6,0%	$\chi^2(2)=2,52$ p=0,2835
Family meetings	32	64,0%	27	54,0%	34	68,0%	$\chi^2(2)=2,21$ p=0,3317
Other	11	22,0%	5	10,0%	6	12,0%	$\chi^2(2)=3,30$ p=0,1918

n - number; % - percent; χ^2 - Pearson chi square test result; p - statistical significance

Table 5. Reasons for not taking physical activity

Reasons for not taking physical activity	25-30 years old		35-40 years old		45-50 years old		Significance (p)
	n	%	n	%	n	%	
Poor health condition	11	22,0%	10	20,0%	12	24,0%	$\chi^2(2)=0,23$ p=0,8899
Lack of motivation	19	38,0%	27	54,0%	18	36,0%	$\chi^2(2)=3,98$ p=0,1368
Lack of time	35	70,0%	27	54,0%	30	60,0%	$\chi^2(2)=2,75$ p=0,2522
The choice of passive rest	5	10,0%	6	12,0%	4	8,0%	$\chi^2(2)=0,44$ p=0,8007
Lack of financial resources	9	18,0%	3	6,0%	6	12,0%	$\chi^2(2)=3,41$ p=0,1819
Tired of hard work	8	16,0%	9	18,0%	8	16,0%	$\chi^2(2)=0,10$ p=0,9531
Family situation	8	16,0%	9	18,0%	9	18,0%	$\chi^2(2)=0,09$ p=0,9545
Other	3	6,0%	6	12,0%	3	6,0%	$\chi^2(2)=1,63$ p=0,4425

n - number; % - percent; χ^2 - Pearson chi square test result; p - statistical significance

There were no statistically significant differences in the reasons for not taking physical activity by subjects of the three study groups. The main reasons indicated this time by the respondents were: lack of time, lack of motivation and poor health condition.

The respondents also evaluated the extent to which they felt the need for physical activity or sport activity. This assessment was similar in all three study groups (p = 0.6106). However, it can be noticed that the greatest need of being active was expressed by 25-30-year old respondents.

Based on answers given by the respondents to selected questions in the survey, their life satisfaction rate was determined. The range for this ratio was from -1 to 37. Average results obtained from the three study groups did not differ significantly (p = 0.2195) and were respectively 27.14 ± 7.76 in group A, $28,06 \pm 8.04$ in group B and 25.88 ± 9.07 in group C (table 6).

Similarly, based on answers given by the respondents to selected questions in the survey, a level of physical activity was evaluated on a scale of 1 to 27. Average scores obtained by subjects of the three groups also did not differ significantly (p = 0.3308) and were respectively 15.84 ± 5.89 (group A) 14.22 ± 5.61 (group B) and 14.58 ± 6.21 (group C) (table 6).

Table 6. Life satisfaction indicators (WSŻ) and physical activity indicators (WAF).

WSŻ [-1-37]	Descriptive statistics							
	n		Me	Min.	Max.	Q1	Q3	s
25-30 years old	50	27,14	30,00	5,00	37,00	26,00	32,00	7,76
35-40 years old	50	28,06	30,50	4,00	36,00	28,00	33,00	8,04
45-50 years old	50	25,88	30,00	3,00	37,00	26,00	31,00	9,07
Significance (p)	H=3,03 p=0,2195							
WAF [1-27]								
	n		Me	Min.	Max.	Q1	Q3	s
25-30 years old	50	15,84	16,00	5,00	26,00	10,00	21,00	5,89
35-40 years old	50	14,22	14,00	3,00	25,00	9,00	19,00	5,61
45-50 years old	50	14,58	14,50	1,00	24,00	10,00	21,00	6,21
Significance (p)	H=2,21 p=0,3308							

n - number; - arithmetic average; Me - median; Min - minimum; Max - maximum; Q1 - lower quartile; Q3 - upper quartile; s - standard deviation; H – Kruskal-Wallis ANOVA test value; p – statistical significance

An evaluation of correlation between subjects' physical activity and their level of life satisfaction was made. It revealed the presence of statistically significant relationship between physical activity of all subjects together and the level of life satisfaction ($R = 0.29$). The correlations were also positive in the group aged 25-30 years old ($R = 0.33$) and the group aged 45-50 years old ($R = 0.38$). The weakest relationship was found in the group of subjects aged 35-40 years old ($R = 0.18$). All obtained correlation R values were positive, which means an increase in the value of one variable with the increase in the value of the other variable. Thus, the higher the level of physical activity, the greater life satisfaction of the respondents. However, these correlations were relatively weak (table 7).

Table 7. The relation between life satisfaction and physical activity (WSŻ vs WAF).

WSŻ vs WAF	R	p
Together	0,29	0,0003
25-30 years old	0,33	0,0208
35-40 years old	0,18	0,2165
45-50 years old	0,38	0,0059

R - Spearman's rank correlation coefficient; p – statistical significance

Discussion

More and more people undertake physical activity for the sake of their own health. The media, health programs and social environment build the awareness that exercise is one of the most important elements for maintaining health. Physical activity should be linked with a pleasant time associated with regular walks in the fresh air or recreational cycling. However, a sedentary lifestyle dominates nowadays [13,14]. Not only at work, where almost half of the respondents (46.0%) spend most of the time exactly like that, but also at home - watching television (49.3% respondents) [15], at the computer (60.7%) or reading books / magazines (52.7%) (table 4). Based on the collected results it can be observed that this type of preference

for leisure time increases with age. Worth remembering is the fact that the start of an active and healthy lifestyle is never too late. It is well known that regular exercise improves mood, relaxes, is beneficial to the appearance by slowing down the aging process, it shapes personality and prevents social isolation [16,17]. Mainly for these positive reasons, the respondents undertake physical activity. With no significant difference in age, 68.0% of respondents have a normal body weight and regularly the majority of them is physically active.

In addition to physical activity, other determinants affect health condition - eg. Eating habits. Out of all respondents 71.3% draw attention to the fact that healthy eating is important to them. Such individuals prevail among the group that also declares higher physical activity. It is noteworthy that this group contains subjects aged 35 to 40 and 45 to 50 years old, which means that the pro-health awareness is associated with age.

People more or less consciously submit to different trends. This is particularly noticeable among young people. Mass media and the environment have a strong impact. Many people desire to be fashionable, not only physically, but also in mental and spiritual sphere. A number of 52% of the respondents regularly practice physical activity, among which 36.7% do it several times a week, and 30.0% do it a few times a month. The youngest age group most often declared a desire to undertake physical activity. This relation decreases with age. It is worth mentioning that running, cycling and swimming are the most willingly undertaken forms of physical activity among respondents.

An important factor that shapes patterns of pro-health benefits is certainly the family environment [18,19]. The activity in adult life is conditioned by whether a person willingly practiced sports in childhood and took an active part in physical education classes. Respondents who are active in adulthood were also active in school age – they practiced sports, especially team games (70.0%), and actively participated in physical education classes (89.3%). This regularity occurred regardless of age of the respondents.

One of the most important reasons for limiting physical activity indicated by respondents are health problems. The most frequently mentioned chronic disease was hypertension. Injuries affecting the permanent deterioration of health were most often pointed by the oldest study group. There were 26.0% of the respondents, while the whole study group contained 15.3% of such people (table 2). Due to indicated complaints, 26.7% of the whole group admitted to regularly use drugs, but in the oldest age group it was 44.0%. Health condition is also strongly affected by drugs and addictions, such as cigarettes or alcohol. Without significant difference for each age group, studies have shown that people who are physically active much less likely reach for cigarettes (64.7% of the study group does not smoke), while alcohol consumption was limited to occasional circumstances (70.7% of the total occasionally consume alcohol). The

progress of civilization brings a lot of convenience with it, but the price for it is an increasing stress exposure. It turns out that regardless of the age group, all respondents feel the effects of stress. As many as 40% of respondents reported that they are often exposed to this factor, wherein this problem frequently occurs in 48% of the youngest respondents, 40% in the intermediate group and 32% in the oldest group, which means that older subjects either learn to cope with stress or accustomed to it and do not see it as such an important issue, or could organize their lives in way that stress accompanies them much less than younger respondents. Prolonged stress affects health and leads to depression, neurosis, weakened immune system and exacerbation of autoimmune diseases. Sports and physical recreation help in the fight against stress [21,22].

An adult man is a man aware of own needs and values, which help making important decisions and challenges. It is worth mentioning that the largest group in terms of education were subjects with higher education (68.0%). Research confirms a relationship between the level of general knowledge and the ability of conscious development of healthy behaviors, including attitude towards physical activity.

The aim of this study was to demonstrate the importance of physical activity for the quality of life, since these two aspects are intimately related. Having a job does not answer the question, which of these aspects determines and which is determined. It can be assumed that they both complement and stimulate each other. This means that on one hand, people physically active are probably also more active in other spheres of life, and it allows them to achieve greater satisfaction with undertaken tasks and they also have a greater chance of success. On the other hand, those who are successful in life, feature better financial situation and a higher level of satisfaction, which may result in a greater willingness to make physical efforts and simplify the making of such efforts based on better financial and organizational capabilities.

Conclusions

1. The study group declared a positive attitude towards physical activity and the need for undertaking it. The most popular form of activity among respondents include: cycling, running and swimming.
2. The respondents are aware that regular physical activity undertaken helps to improve the well-being, physical condition and appearance.
3. Subjective assessment of own physical fitness level and the frequency of it, decreases with age.
4. The most frequent obstacle in doing exercise is the lack of time and motivation, and in the oldest examined group also poor health condition.

5. Promoting physical activity should pay more attention to the fact that it has an impact not only on the physical and mental health, but also indirectly determines the possibility of obtaining success in other spheres of life, helping to improve the overall quality of life.

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