

SELECTED FACTORS DIFFERENTIATING THE FORMS OF PHYSICAL ACTIVITY TAKEN UP OR EXPECTED BY THE STUDENTS OF PSW IN BIAŁA PODLASKA

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Abstract. In view of new civilizational challenges of the 21st century, health promotion and education encouraging active participation in physical recreation, which should be implemented at all levels of education, within family, peer environment and local environment, become issues of particular importance.

The research was carried out in the summer of 2013 and included 572 students of John Paul II State School of Higher Education in Biała Podlaska (PSW), of such degree courses as Tourism and Recreation, Public Health, Nursing, Rescue Medicine and Computer Science. The method used in the research was a diagnostic survey based on International Physical Activity Questionnaire (IPAQ). The aim of the study was to get to know the differentiation between the forms of recreational physical activity taken up and expected by the students of PWS and their gender, BMI and self-assessment of physical fitness. Basing on the results of the analysis it was concluded that the abovementioned independent variables have significant impact on the forms of physical activity chosen and expected by the surveyed. Studies of the literature on the subject and the results of our previous research entitle us to conclude that university students, who in the near future will constitute the intellectual elite of the country, should be aware of the influence of physical activity on general health, the importance of healthy lifestyle and their role in promoting healthy attitudes. However, the research showed that the students are not ready to perform such tasks, therefore the actions preparing them to lead a healthy lifestyle need to be intensified.

Key words: physical activity, The International Physical Activity Questionnaire (IPAQ), students

Introduction

Modern civilization on the one hand brings development and convenience in many aspects of life, on the other hand, however, it carries many dangers, such as the lack of physical activity in a daily life. Regular physical activity is the basic condition that determines health and reduces the risk of developing diseases (Allan et al. 2011; Feedson et al. 2011; Shephard and Aoyagi 2010; Blair et al. 2001). International organizations such as WHO (World Health Organization), FIMS (International Federation of Sports Medicine), CDDS (Committee for the Development of

Sport), NIH (National Institute of Health in the USA), UNESCO (United Nations Educational, Scientific and Cultural Organization), worried by the increasing hypokinesia of societies, have called on countries to promote healthy attitudes towards physical activity as a basic aim of modern public health strategy.

A very important issue of the objectification of research concerning the assessment of physical activity of societies is carrying out such research in many countries, using the same tool, that is the International Physical Activity Questionnaire (IPAQ) (Gomez et al. 2005; Hallal et al. 2003; Sebastiao et al. 2012; Bergier et al. 2012). It is also emphasized that regular physical activity in a greater extent limits the social problem of overweight which affects also Polish students (Romanowska-Tołoczko 2011; Myszkowska-Ryciak et al. 2011; Seń et al. 2012).

In order to know better the condition and factors differentiating and conditioning physical activity of students in Poland, a lot of research with the use of IPAQ questionnaire has been carried out in the recent years (Biernat 2011; Bergier et al. 2012; Mynarski et al. 2009; Sokołowski et al. 2010; Bergier et al. 2014; Niżnikowska et al. 2014).

Education for active participation in physical activities should be implemented on every level of education, within family, peer environment, local environment and mass media as its role is crucial.

In the implementation of such a process the universities play an important role and they are obliged to not only educate specialists in a given field of studies, but also educate them intellectually and physically.

The particular, academic lifestyle has influence on the development of students' personalities, their system of values and standards of conduct. Their ways of spending free time are prone to changes as well (StudentBus 2004).

The way of living and spending free time of students is subject to a lot of research and publications which are very important from the social point of view. Students, especially students of medicine and future teachers, will soon constitute the intellectual elite of the country, responsible for promoting healthy attitudes and recreational forms of physical activity (Mędrela-Kuder 2011).

Among the factors differentiating levels of physical activity taken up, gender is indicated quite often (Bergier et al. 2014). However, there is significantly smaller number of studies concerning the forms of physical activity that the students would like to take up in the future. The index of physical fitness self-assessment is a differentiating factor which is analyzed relatively rarely (Bergier et al. 2013).

The study of the abovementioned factors, both in relation to the physical activity realized or expected in the future, may have important application significance as far as taking care of students' active lifestyle is concerned.

The aim of the study was to get to know the differentiation between the forms of recreational physical activity taken up and expected by the students of PWS and their gender, BMI and self-assessment of physical fitness.

The objective can be achieved by answering the following questions:

1. Are gender, BMI and self-assessment of physical fitness the factors differentiating the forms of physical activity taken up?
2. Are gender, BMI and self-assessment of physical fitness the factors differentiating the forms of physical activity that students would like to take up in the future?

Material and methods

The research was carried out in the spring of 2013. It involved 572 students of Pope John Paul II State School of Higher Education in Białą Podlaską of such degree courses as Tourism and Recreation (n = 210) Public Health (n = 94), Nursing (n = 87), Rescue Medicine (n = 57) and Computer Science (n = 124).

The method of diagnostic survey in a form of questionnaire was used in the research. The short version of International Physical Activity Questionnaire (IPAQ) with three additional authorial questions was used in the research.

The selection of the material was designed so that it included the students of every year and of the degree course on which the research was carried out. The pollsters were the authors of this article themselves – trained academics.

In order to detect the differences that are statistically important for the characteristics measured on nominal scale the Chi-square test for independence was used. The Chi-square test level of significance was established on the level $p = 0.05$.

The BMI (or, in other words, Quetelet Index II) was calculated by dividing the body mass (in kilograms) by the square of body height (in meters) basing on the data obtained from students.

In the group on which the research was carried out women were slightly prevailing and they constituted 54.2% ($n = 310$). The majority of respondents (71%) had healthy BMI. More than a half (69.1%) of the people surveyed described their physical fitness as average (Table 1).

Table 1. Characteristics of the surveyed

Variable	Number (n)	Structure (%)
Gender		
Men	262	45.8
Women	310	54.2
Classification according to BMI		
Underweight	50	8.7
Healthy weight	405	70.8
Overweight	117	20.5
Self-assessment of physical fitness		
High	86	15.0
Medium	395	69.1
Low	91	15.9

Results

The main forms of physical activity (only those constituting at least 50% of choices were taken into account) that are taken up more eagerly by women than by men are: walking, cycling, aerobics- fitness, dancing. On the other hand, men take up more often such activities as football, volleyball, exercises at the gym and billiards.

The biggest differences in participation of men and women in physical activities were shown in relation to such forms as aerobics-fitness- respectively 55.2% and 22.9%, dancing – 49.7% and 28.2% and walking – 88.7% and 71.0%. Men, more often than women, take up such activities as football – relatively 75.6% and 32.3%, exercises at the gym – 53.1% and 38.7% and billiards – 51.9% and 34.2% (Table 2).

The differences concerning the choice of physical activities that men and women would like to take up in the future also arise from the research. Among women the dominating forms are: aerobics-fitness – 54.8%,

dancing – 47.1%, cycling – 43.3%, roller-skating – 36.5%. It can be observed that women in the future would like to participate in similar activities as they already do, however, more women declared the will to take up aerobics-fitness or dance.

Men in the future would like to take part mainly in such activities as windsurfing – 38.2%, canoeing – 35.9%, climbing – 35.5%, exercises at the gym and cycling – both 32.8%. Therefore, men besides participating in the activities they already do, would also like to take up windsurfing, canoeing and climbing. A lot more women than men would like to participate in aerobics classes, respectively – 54.8% and 8.4%, dance classes – 47.1% and 17.6% and horse-riding classes – 47.4% and 17.6% (Table 2).

Table 2. Forms of physical activity already taken up by the students and forms of physical activity students would like to take up, depending on the gender

Forms of physical activity	The forms of physical activity taken up (%)				The forms of physical activity the students would like to take up (%)			
	gender		chi-square test df = 1		gender		chi-square test df = 1	
	F	M	X ²	p	F	M	X ²	p
Walking	88.7	71.0	28.45	0.001*	37.7	27.5	6.76	0.009*
Cycling	82.9	76.0	4.24	0.039*	43.3	32.8	5.37	0.021*
Running	69.0	65.3	0.91	0.339	35.8	29.0	2.98	0.084
Swimming	64.2	70.0	2.05	0.153	35.8	30.9	1.52	0.217
Volleyball	49.0	57.3	3.85	0.049*	29.4	22.1	3.84	0.050
Football	32.3	75.6	106.7	0.001*	11.9	27.9	23.19	0.001*
Gym	38.7	53.1	11.79	0.006*	35.2	32.8	0.35	0.557
Billiards	34.2	51.9	18.26	0.002*	17.7	20.6	0.76	0.384
Table tennis	37.1	45.8	4.45	0.035*	11.0	17.6	5.13	0.024*
Aerobics-fitness	55.2	22.9	61.38	0.001*	54.8	8.4	137.3	0.001*
Dancing	49.7	25.2	35.97	0.001*	47.1	17.6	55.56	0.001*
Roller-skating	45.8	28.2	18.63	0.001*	36.5	19.5	20.03	0.001*
Basketball	31.9	42.8	7.13	0.008*	15.2	16.4	0.17	0.682
Handball	24.2	34.7	7.66	0.006*	12.3	11.5	0.09	0.766
Canoeing	25.5	28.6	0.71	0.399	31.3	35.9	1.34	0.246
Fishing	17.4	32.4	17.42	0.001*	11.3	21.0	10.08	0.001*
Skiing	21.9	26.7	1.77	0.183	28.4	30.2	0.21	0.644
Skating	26.1	19.5	3.55	0.059	24.5	11.5	16.06	0.006*
Horse riding	18.7	17.9	0.06	0.812	47.4	17.6	56.6	0.001*
Windsurfing	15.8	17.6	0.31	0.575	32.3	38.2	2.18	0.140
Sailing	15.5	17.6	0.44	0.505	26.8	27.9	0.08	0.771
Tennis	10.7	16.4	4.10	0.043*	31.0	30.2	0.04	0.833
Climbing	8.4	11.5	1.51	0.219	34.8	35.5	0.03	0.870

The analysis of the relations between BMI of the respondents (underweight, healthy weight and overweight) and their participation in different forms of physical activity shows clear differences. The subjects with overweight or obesity are characterized by a significantly bigger participation in exercises at the gym. The biggest physical activity characterizes the students with underweight or emaciation and it's proven by participation in such activities as:

walking, aerobics-fitness, dancing, roller-skating. No significantly bigger activity was found in the group of students with normal, healthy body mass.

The BMI values to a lesser degree significantly differentiate the people surveyed in declared forms of physical activity that they are willing to take up in the future. The differences concern mostly the participation in aerobics-fitness classes, horse riding and climbing, in which the higher activity concerns people with underweight or emaciation (Table 3).

Table 3. Forms of physical activity already taken up by the students and forms of physical activity students would like to take up, depending on the BMI

Forms of physical activity	The forms of physical activity taken up (%)					The forms of physical activity the students would like to take up (%)				
	BMI			chi-square test df = 2		BMI			chi-square test df = 2	
	1	2	3	X ²	p	1	2	3	X ²	p
Walking	86.0	82.3	71.8	7.40	0.025*	32.0	35.2	25.6	3.80	0.150
Cycling	86.0	80.5	74.4	3.47	0.176	38.0	37.7	38.5	0.02	0.988
Running	72.0	68.5	61.5	2.52	0.283	26.0	33.7	31.6	1.28	0.527
Swimming	72.0	65.0	70.1	1.75	0.417	38.0	33.3	32.5	0.52	0.770
Volleyball	48.0	52.7	55.6	0.82	0.664	24.0	25.9	27.4	0.22	0.896
Football	44.0	50.5	60.7	5.19	0.075	14.0	18.2	24.8	3.47	0.176
Gym	38.0	43.1	55.6	6.83	0.033*	36.0	32.8	37.6	1.05	0.593
Billiards	42.0	42.9	40.2	0.27	0.874	18.0	18.5	21.4	0.53	0.767
Table tennis	32.0	41.4	43.6	2.02	0.364	14.0	13.6	15.4	0.26	0.880
Aerobics-fitness	50.0	42.4	29.1	8.82	0.012*	46.0	35.5	22.2	10.85	0.004*
Dancing	56.0	38.4	30.8	9.43	0.009*	44.0	34.2	26.5	5.15	0.076
Roller-skating	52.0	39.2	27.4	10.03	0.007*	32.0	27.8	29.9	0.50	0.779
Basketball	28.0	37.0	40.2	2.24	0.326	12.0	16.5	14.5	0.84	0.659
Handball	26.0	27.6	35.0	2.69	0.261	10.0	10.3	18.0	5.20	0.074
Canoeing	34.0	26.9	23.9	1.81	0.405	36.0	30.8	41.0	4.46	0.108
Fishing	28.0	22.4	29.1	2.60	0.272	6.0	15.0	22.2	7.45	0.024*
Skiing	26.0	25.4	18.8	2.25	0.324	42.0	28.3	26.5	4.53	0.104
Skating	34.0	23.2	18.0	5.10	0.078	26.0	18.7	14.5	3.10	0.212
Horse riding	18.0	18.2	18.8	0.02	0.988	60.0	33.3	23.9	20.52	0.001*
Windsurfing	18.0	17.2	13.7	0.92	0.633	44.0	33.3	36.8	2.48	0.289
Sailing	20.0	16.5	14.5	0.77	0.679	36.0	24.4	33.3	5.80	0.055
Tennis	14.0	13.6	12.0	0.22	0.894	32.0	30.8	29.9	0.08	0.963
Climbing	10.0	9.4	11.1	0.32	0.852	56.0	32.3	35.9	11.05	0.004*

1 – underweight, 2 – healthy weight, 3 – overweight.

An important issue in achieving the aim of the research was showing the relation between the self-assessment of physical fitness of the students and the forms of physical activity they take up or would like to take up in the future.

People with high self-assessment of physical fitness participate more actively in various types of activities such as running, skiing, windsurfing, tennis. Students of average physical fitness participate more actively only in walks. As the group of low physical fitness is concerned, higher activity has not been shown in any other form of physical activity.

The form of physical activity that the students would like to participate in to a lesser degree is differentiated by the value of their self-assessment of physical fitness.

In the group of 23 analyzed forms of physical activity that the students are willing to take up in the future the self-assessment of physical fitness considerably differentiates a higher activity only in regard to football classes, climbing, walking, skating and skiing. People with low self-assessment of physical fitness are more often willing to participate in three of these forms: walking, aerobics-fitness and skating (Table 4).

Table 4. Forms of physical activity already taken up by the students and forms of physical activity students would like to take up, depending on the students' self-assessment of physical fitness

Forms of physical activity	The forms of physical activity taken up (%)					The forms of physical activity the students would like to take up (%)				
	physical fitness			chi-square test df = 2		physical fitness			chi-square test df = 2	
	H	M	L	X ²	p	H	M	L	X ²	p
Walking	69.4	84.7	73.3	13.82	0.001*	26.7	32.1	43.3	6.02	0.049*
Cycling	82.6	81.4	72.2	4.27	0.118	29.1	40.0	37.8	3.55	0.170
Running	73.3	69.7	53.3	10.44	0.005*	29.1	33.1	35.6	0.86	0.649
Swimming	76.7	68.5	51.1	14.33	0.001*	32.6	33.6	34.4	0.07	0.965
Volleyball	57.0	53.9	45.6	2.69	0.261	23.3	27.5	22.2	1.45	0.484
Football	74.4	50.1	41.1	22.10	0.001*	30.2	18.3	13.3	8.89	0.012*
Gym	60.5	46.1	28.9	17.83	0.001*	31.4	35.1	32.2	0.60	0.740
Billiards	51.2	42.8	33.3	5.74	0.057	23.3	19.1	15.6	1.69	0.430
Table tennis	46.5	41.7	33.3	3.35	0.188	18.6	14.0	8.9	3.49	0.175
Aerobics-fitness	37.2	41.2	38.9	0.55	0.758	20.9	34.9	41.1	8.72	0.013*
Dancing	40.7	40.2	30.0	3.39	0.183	26.7	34.6	35.6	2.14	0.342
Roller-skating	43.0	36.9	37.8	1.13	0.569	19.8	29.0	35.6	5.44	0.066
Basketball	44.2	37.4	28.9	4.47	0.107	12.8	17.1	13.3	1.46	0.483
Handball	45.4	27.5	21.1	14.27	0.001*	11.6	13.0	7.8	1.89	0.388
Canoeing	34.9	27.2	18.9	5.72	0.057	34.9	33.3	33.3	0.08	0.961
Fishing	25.6	24.9	21.1	0.65	0.721	22.1	15.3	12.2	3.51	0.173
Skiing	38.4	24.2	11.1	17.79	0.001*	36.1	30.8	16.7	9.23	0.010*
Skating	32.6	22.4	17.8	5.86	0.053	8.1	20.6	20.0	7.37	0.025*
Horse riding	17.4	19.1	16.7	0.35	0.838	24.4	36.1	32.2	4.44	0.109
Windsurfing	23.3	16.5	11.1	8.72	0.013*	33.7	37.4	26.7	3.79	0.150
Sailing	22.1	16.5	11.1	3.85	0.146	24.4	27.5	30.0	0.69	0.708
Tennis	23.3	13.0	5.6	12.06	0.002*	29.1	33.1	22.2	4.19	0.123
Climbing	14.0	8.7	11.1	2.43	0.297	44.2	35.1	25.6	6.73	0.035*

* significant difference at $p < 0.05$ depending on the self-assessment of physical fitness of the students, H – high, M – medium, L – low.

Discussion

The main aim of the presented research was to determine the relationship between gender, BMI and self-assessment of physical fitness of students and their participation in various forms of physical activities as well as their willingness to take them up in the future. From the analysis of the results it can be concluded that the respondents choose mainly the activities that are popular at the moment or those that are available, such as walking,

cycling, running, swimming, aerobics-fitness, team games or exercises at the gym. Similar results were obtained by the authors such as Sochocka and Wojtyłko 2013; Jeżewska-Zychowicz 2006; Žižka-Salomon 2008.

The research shows that the forms of physical activity that the respondents participate in do not always coincide with their expectations. The gender in a significant way differentiates the people surveyed in respect of their participation in physical activities- it was also confirmed by other authors (Biernat 2011; Winiarska-Mieczan and Dymek 2009). Female students more often take up such activities as: walking, cycling, running, swimming and aerobics-fitness. Male students, on the other hand, choose cycling, football, walking and swimming which was proven also by other research (Sochocka and Wojtyłko 2013; Žižka-Salomon 2008; Markiewicz-Górka et al. 2011).

The other aim of the research was the analysis of dependences between the forms of physical activities taken up and those expected by the students and their BMI.

The results have shown a statistically important dependence between the choice of physical activity and the BMI of the respondents. Overweight and obese students avoid the forms of physical activities that require big physical effort.

Also the analysis of the dependence between the self-assessment of physical fitness of the respondents and the forms of physical activities they up or expect to take up was crucial for the research.

The students who evaluated their physical fitness as high choose more difficult forms of physical activity, such as swimming, team games, exercises at the gym. In the future they are willing to take up climbing, skiing or canoeing.

The respondents who described their physical fitness as low participate in easier activities that do not require bigger effort, such as walking, cycling and running. In the future they are willing to take up similar forms of physical activity, e.g. walking, cycling, running or aerobics-fitness.

The results of the research and studies of the literature on the subject allowed to draw the following conclusions:

1. Gender, BMI and physical fitness have statistically significant influence on the choice of physical activity taken up and expected.
2. There is a discrepancy between the forms of physical activities that the respondents participate in and those they would like to take up in the future.

Students, especially of degree courses connected with health and physical culture, constitute an interesting study group in the context of social roles that they will fulfill in the future. It will be them to promote healthy attitudes and physical activity as important elements of healthy lifestyle. In the academic environment promotion of physical activity is necessary not only by realizing the program of physical education and health education, but also by enabling the students to participate in various optional sport and recreational activities.

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