

LEISURE-TIME PHYSICAL ACTIVITY AS A COMPONENT OF UNIVERSITY STUDENTS' LIFESTYLE IN SELECTED COUNTRIES OF THE CARPATHIAN EUROREGION

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Abstract:

Systematically undertaken exercise should be a constant element of human lifestyle today, as it significantly contributes to preventing chronic non-contagious diseases. The purpose of the study is to present the level and determinants of leisure-time physical activity among university students from selected countries of the Carpathian Euroregion. The research was conducted among full-time students of various specializations in Poland, Slovakia and Ukraine. The level of leisure-time physical activity was assessed using MLTPAQ (Minnesota Leisure-Time Physical Activity Questionnaire). The findings show significant differences in the level of physical activity between the students from Poland, Ukraine and Slovakia. Gender is a factor significantly differentiating the level of such activity. The highest level of activity was identified in the case of subjects from Slovakia, both females and males. Nearly every fourth woman from Slovakia is highly active, and among the respondents from Poland and Ukraine only one in ten female students achieved this result. Place of residence (rural vs. urban area) does not differentiate the subjects in terms of the level of physical activity.

INTRODUCTION

According to WHO more than half of the European population is insufficiently active physically to meet health recommendations. Estimates show that 40 to 60% of the EU population live sedentary lifestyle [4]. Sedentary lifestyle, including the more and more frequent hypokinesia, is a significant risk factor for cardio-vascular diseases and other chronic disorders. Lack of physical activity is currently identified as the fourth most important risk factor for global death rate. Deficiency in exercise is a growing problem in many countries, which is reflected by the general health condition of people worldwide [23]. Due to this regularly performed and carefully balanced exercise should be a constant ingredient of contemporary people's lifestyles, as a significant factor contributing to their well-being and an effective way to prevent diseases of civilization. Research shows that physical activity connected with energy expenditure exceeding 1000 kcal/week is linked with approx. 30% decrease in mortality rate, and the risk of ischemic heart disease (IHD) is reduced by 30-50% [3]. WHO guidelines for healthy adults, aged 18-64, suggest a weekly minimum of either 150 minutes of moderate intensity aerobic physical activity or 75 minutes of vigorous, high-intensity aerobic physical activity, as a way to improve blood circulation and muscular fitness

and to reduce the risk of non-contagious diseases. Moreover, pointing to additional health benefits, WHO recommends an increase in activity to 300 minutes per week, including muscle and endurance strengthening exercise to be done on 2-3 days a week [4,22].

On average residents of the old EU countries have 5 hours and 21 minutes of leisure time, and for the new EU countries the mean rate amounts to 4 hours and 35 minutes; by comparison this rate is even lower for Poles who, on average, have only 3 hours and 54 minutes of leisure time. In depth analysis of research focusing on physical activity of university students suggests that people in this group have significant amount of leisure time. Yet, they spend it in ways which suggest negative conclusions about their ability to benefit from it. Favourite ways of spending free time, reported by university students in Poland, include social gatherings, listening to music, using various kinds of multimedia games and the Internet and watching a variety of TV shows. Physical activity does not rank among the preferred pastimes [6,8,17,25]

The purpose of this study is to present the level and determinants of leisure-time physical activity among university students from selected countries of the Carpathian Euroregion. The Euroregion comprises populations of 5 countries, including Poland, Slovakia, Hungary and Romania which belong to the European Union. The fifth country within the Euroregion, Ukraine is working towards its membership in the EU.

MATERIAL AND METHODS

The material presented in this article is related to young people from Poland, Slovakia and Ukraine attending universities within the Carpathian Euroregion, and it is a part of more comprehensive research carried out in the framework of the project entitled “Lifelong physical activity – Polish and Slovak platform for physical culture and promotion of students’ health” co-financed by the European Union from the European Regional Development Fund and by the national budget via the Carpathian Euroregion in the framework of 2007-2013 Program for Cross-Border Cooperation, the Republic of Poland – the Republic of Slovakia (Project No. PL-SK/KAR/IPP/I/49) and in 2011 in course of a research project financed by the grant of the University of Rzeszów entitled “Assessment of physical activity and fitness of university students from the area of the Eastern Carpathian Euroregion, as an element of preventive cardiology and promotion of health” (Project No. DN/GRU/WF/2/2011). The anonymous and voluntary survey was conducted in 2010-2011, following the approval of Bioethics Commission of the University of Rzeszów (No. 1/02/2009). The study group included 3851 full-time students of various specializations at universities in Poland, Slovakia and Ukraine. The research was conducted with randomly selected group of students participating in physical education classes provided by their universities for the specific courses of study. The survey was based on Minnesota Leisure-Time Physical Activity Questionnaire (MLTPAQ). The tool made it possible to collect information concerning physical activity performed in their free time (outside the university classes), providing the value of energy expenditure in kcal/week. The questionnaire classified the intensity of effort in accordance with a three-level scale: low intensity effort “L” [≤ 4 MET], moderate intensity effort “M” [4,5-5,5 MET], high intensity effort “H” [≥ 6 MET]. Categorization of weekly caloric expenditure assumed the following levels: ≤ 999 (low), 1000-1999 (medium), 2000-2999 (high), ≥ 3000 kcal/week (very high) [12]. The collected data were subjected to statistical analysis, adopting the following statistical principles: $p > 0.05$ – lack of statistical significance, $p < 0.05$ – significant statistical correlation (*), $p < 0.01$ – highly significant statistical correlation (**), $p < 0.001$ – extremely significant statistical correlation (***)

RESULTS

The findings are related to university students from Poland, Slovakia and Ukraine. The analysis took into account subjects up to 25 years of age, for whom the available data also

included the score in MLTPAQ Test, information about place of residence and the course of study. The number of the set of data defined in this way was N=3851. Table 1 shows numerical characteristics of the respondents. Distribution by gender in the groups representing the specific countries was similar, which is advantageous from the viewpoint of the analysis credibility. There were quite big differences between the specific countries in the structure of the place of residence. Residents of rural areas constituted a majority (57.4%) in the group of Polish students. Urban populations were represented by more students both in Slovakia (51.8%), and in Ukraine (62.2%).

Table 1. Characteristics of the whole study group

Characteristic	Country			Total N=3851
	Poland N=2898	Slovakia N=488	Ukraine N=465	
Gender				
female	58,7%	54,7%	55,3%	57,8%
male	41,3%	45,3%	44,7%	42,2%
Place of residence				
rural area	57,4%	48,2%	37,8%	53,9%
urban area	42,6%	51,8%	62,2%	46,1%
Course of study				
Physical Education	27,7%	5,1%	6,2%	22,3%
other	72,3%	94,9%	93,8%	77,7%

To ensure uniform character of the study group, students of Physical Education (N=857) were excluded from the data processing due to the specificity of their specialization, and the analysis took into account only the level of leisure-time physical activity in the group of 2994 students from Poland, Ukraine and Slovakia, studying other courses than “Physical Education” (Table 2).

Table 2. Characteristics of the study group, excluding students specializing in “Physical Education”

Characteristic	Country			Total N=2994
	Poland N=2095	Slovakia N=463	Ukraine N=436	
Course of study	<i>(p = 0,0000***)</i>			
technical	12,3%	54,0%	9,9%	18,4%
humanities	31,1%	30,7%	27,8%	30,5%
law and administration	12,8%	0,0%	20,6%	12,0%
medical	8,3%	3,0%	5,7%	7,1%
sciences	21,0%	3,5%	19,5%	18,1%
tourism and recreation	13,7%	0,0%	0,0%	9,6%
other (excluding PE)	0,9%	8,9%	16,5%	4,4%
Gender	<i>(p = 0,0000***)</i>			
female	69,9%	56,6%	57,6%	66,1%
male	30,1%	43,4%	42,4%	33,9%
Place of residence	<i>(p = 0,0000***)</i>			
rural area	60,5%	48,4%	37,8%	55,3%
urban area	39,5%	51,6%	62,2%	44,7%

p – chi-square test result

More than half of the respondents in the three countries were women; the percentage of female subjects from Poland was 69.9% (N=1465), from Slovakia 56.6% (N=262), and from Ukraine

57.6% (N=251). In the group of students from Poland residents of rural areas constituted 60.5%, and the relevant rate for Slovakia was 48.4% and for Ukraine - 37.8%. The subjects' mean age was varied. On average students from Ukraine, with the mean - age of 18.3, were the youngest participants (Table 3).

Table 3. Numerical distribution of the set of data, by age and country of origin

Characteristic	Country									p
	Poland			Slovakia			Ukraine			
	\bar{x}	Me	s	\bar{x}	Me	S	\bar{x}	Me	s	
Age	20,5	20,0	0,8	20,8	21,0	1,0	18,3	18,0	1,1	0,0000***

p – test result

The analysis focused on the level of students' leisure-time activity and some of its determinants. Particular attention was paid to the varied level of students' activity relative to gender, and to comparison of physical activity performed by subjects from Poland, Ukraine and Slovakia. The analysis also investigated the impact of the place of residence on the level of physical activity. The basic measure for the level of physical activity was the overall score achieved in MLTPAQ and its components (L), (M), (H). The findings showed that on average the level of physical activity among women was nearly 800kcal/week (close to one third) lower than among men (Table 4).

Table 4. Level of leisure-time physical activity in kcal/week in the study group, by gender

Characteristic	MLTPAQ Test		
	\bar{x}	Me	s
Gender	<i>p_{M-W}=0,0000***</i>		
female	1 676	1 340	1 232
male	2 437	1 997	1 762

p_{M-W} –Mann-Whitney test result

If the position of the median value is taken into account the difference between the two genders is slightly smaller but it still exceeds 600kcal/week. Slightly greater variability in the activity level observed among male subjects is reflected by the values of standard deviation and the disparities in the mean value and the median. Only one in eight women is classified at the highest activity level (≥ 3000 kcal/week) as compared to nearly 30% of male subjects (Table 5).

Table 5. Numerical distribution of results for the levels of leisure-time physical activity for the whole group, by gender

Level of physical activity (according to MLTPAQ test)	Gender (<i>p</i> = 0,0000***)				Total N=2994
	Female N=1978		Male N=1016		
low	670	(33,9%↓)	188	(18,5%↓)	858
medium	721	(36,5%↓)	321	(31,6%↓)	1042
high	340	(17,2%↓)	219	(21,6%↓)	559
very high	247	(12,5%↓)	288	(28,3%↓)	535

p – chi-square test result

The comparison of students from Poland, Ukraine and Slovakia in terms of their activity level was controlled by the factor of gender, because the results presented in Table 5 show that activity levels significantly differ for female and male subjects. The findings listed in Table 6 show that there are quite large differences in activity levels between university students from Poland, Ukraine and Slovakia. The highest level of activity was identified in the case of subjects from Slovakia, both females and males.

Table 6. Numerical distribution of the results for physical activity in the whole group, by gender and nationality

Country	MLTPAQ Test (total)							
	Females $p_{K-W} = 0,0001***$				Males $p_{K-W} = 0,0008***$			
	<i>N</i>	\bar{x}	Me	<i>S</i>	<i>N</i>	\bar{x}	Me	<i>s</i>
Poland	1465	1598	1294	1128	630	2408	1920	1857
Slovakia	262	2082	1638	1623	201	2785	2450	1818
Ukraine	251	1704	1368	1265	185	2154	1912	1239

p_{K-W} –Kruskal-Wallis test result

Table 7 presents distribution of activity levels relative to the respondents' nationality. There are clearly visible differences between groups from the various countries, for instance nearly every fourth woman from Slovakia is highly active, and among the respondents from Poland and Ukraine only one in ten female students achieved this result. Place of residence (rural vs. urban area) does not differentiate the students in terms of the level of physical activity. Verification by means of Mann-Whitney test, carried out in each of the six groups defined by gender and country, showed there were no statistically significant differences in activity levels between students from urban and rural areas in any of these subgroups.

Table 7. Numerical distribution of results for the levels of leisure-time physical activity for the whole group, by gender and nationality

Level of physical activity (according to MLTPAQ Test)	Females ($p = 0,0000***$)					
	Country					
	Poland <i>N</i> = 1465		Slovakia <i>N</i> = 262		Ukraine <i>N</i> = 251	
low	527	(36,0%↓)	75	(28,6%↓)	68	(27,1%↓)
medium	528	(36,0%↓)	84	(32,1%↓)	109	(43,4%↓)
high	248	(16,9%↓)	44	(16,8%↓)	48	(19,1%↓)
very high	162	(11,1%↓)	59	(22,5%↓)	26	(10,4%↓)
	Males ($p = 0,0001***$)					
	Country					
	Poland <i>N</i> = 630		Slovakia <i>N</i> = 201		Ukraine <i>N</i> = 185	
low	138	(21,9%↓)	25	(12,4%↓)	25	(13,5%↓)
medium	194	(30,8%↓)	54	(26,9%↓)	73	(39,5%↓)
high	124	(19,7%↓)	46	(22,9%↓)	49	(26,5%↓)
very high	174	(27,6%↓)	76	(37,8%↓)	38	(20,5%↓)

p – chi-square test result

DISCUSSION

Regular exercise is a key ingredient of a healthy lifestyle. Yet, in order to make sure it fulfils its goal, which is maintenance and improvement of health, physical activity should be carried out at a sufficient level. To ensure these health-related effects, energy expenditure should amount to 1200-2000 kcal per week [16]. Therefore, the present study investigated leisure-time physical activity of university students from three countries and examined selected factors determining its level. Assessment of physical activities was performed using Minnesota Leisure - Time Physical Activity Questionnaire (MLTPAQ), which is frequently applied in studies of adults and their physical activity to measure energy expended during leisure time [13,14,15,19,24].

The issues connected with the level of physical activity in contemporary society are of great interest to many groups, including those representing the sector of public health. Conducted in 2002-2004, a comprehensive study carried out in 20 countries measured physical activity using IPAQ tool [1]. Yet the study did not include populations of Poland, Slovakia or Ukraine. In 2012 Bergier et al. employed IPAQ to investigate physical activity of female students in Ukraine. The findings related to a relatively small group of subjects: N=58. The reported activity level among female students was predominantly moderate, to a degree - high, and to small extent – low [2]. The issues of sport and physical activity were investigated in 28 member states of the EU in the end of 2013 by means of Eurobarometer, a special study in the series of surveys carried out on behalf of the European Commission. The findings, by reference to the results from previous years (2002, 2009), show that the situation related to the level of physical activity among European populations is not improving, and sedentary lifestyles continue to dominate. The results also show large differences between the various member states. Inhabitants of north European countries are more physically active than people living in southern and eastern Europe [20]. A study focusing on public health and health-oriented behaviours in the Republic of Slovakia provided documented evidence of very low level of physical activity in the population [10,21]. The number of hours designated for physical activity rapidly decreases with age. Recreational sports dominate in younger age groups, while people classified in older age groups favour short walks as a form of physical activity. Yet, there is an alarmingly high percentage of people, in all age categories, who do not participate in any physical activity exceeding one hour per week. According to estimates, overweight individuals account for 28% of a population and those with first-degree obesity constitute 9%, and these rates are growing [10]. Similarly, the Polish population is characterized by low physical activity. It can be estimated that only approx. 30% of children and teenagers and 10% of adults participate in activities with the type and intensity of exercise stress meeting the physiological requirements of the body [11]. Findings of our study confirm this negative tendency related to physical activity and show differences in its level between university students representing the three countries in question. In the case of both female and male subjects, the highest activity level is characteristic for the participants from Slovakia. The presented findings and results reported by other authors investigating physical activity among Polish students consistently point to the fact that the level of activity is definitely lower than that recommended by health-oriented guidelines [18]. Gender is a factor significantly differentiating the level of leisure-time physical activity. On average the level of physical activity among the female subjects was nearly 800kcal/week lower than among the male subjects. This is consistent with findings reported by other studies, according to which men undertake physical activity more often than women [7,20].

Effective use of leisure time available to people is of critical importance for their well-being. Leisure-time activity can be undertaken spontaneously or can be carefully designed in terms of exercise stress. Yet, it is also necessary to remember that our health will not really benefit from physical effort of excessive intensity and excessive duration, disregarding the specific exercise capacities related to gender, age and existing medical condition [5].

CONCLUSIONS

- More than half of the female and male students, representing the relevant countries of the Carpathian Euroregion, are characterized by low or moderate level of leisure-time physical activity.
- The university students from Slovakia participate in physical activity more frequently than the subjects from Poland or Ukraine.
- In the entire study group, the male subjects tended to be more physically active than the females.

- Physical activity undertaken by the students is dominated by low and moderate intensity exercise.
- There is an urgent need to intensify operations promoting involvement in leisure-time physical activity among young people.
- The public sector, including institutions of higher education, should inspire and encourage students to take up physical activity and should monitor its level in order to develop positive behaviour models in this regard, which is consistent with the recommendations of the EU.

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