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Various aspects of physical activity among Lithuanian adolescents

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Abstract

Studies of the physical activity of 17-year-old adolescents attending selected schools in Lithuania were conducted in 2010 with the use of the IPAQ. The adolescents differed with respect to the scope of leisure time possessed. Considerably more boys than girls indicated that they had a sufficient amount of leisure time, but to the contrary, considerably more girls than boys declared that they possessed an insufficient amount of free time. The majority of schoolchildren were characterized by a high level of physical activity, with the larger group being boys. Low activity was not observed among boys, and in only a few girls.

Moderate effort constituted the highest percentage of physical activity among adolescents, whereas an intensive activity – the lowest. Considering the total area of activity, there dominated occupational activity (education), while its smallest percentage was devoted to sports and recreation. Boys evaluated their physical efficacy in more negative terms than girls. Adolescents with a higher self-reported efficacy were characterized by higher physical activity. The majority of adolescents had a normal BMI. Girls and boys had different preferences concerning motor activities. Girls mainly used walks, bicycle riding, and running, while boys also chose bicycle riding and running, and played sports games. The adolescents also had new expectations – girls reported mainly horse riding, aerobics and dancing, whereas boys mentioned football and bodybuilding fitness exercises.

Key words

Lithuanian adolescents, physical activity – IPAQ, BMI, sports interests

INTRODUCTION

A large group of researchers from various countries have drawn attention to the role of physical activity of contemporary generations and claim that regular participation in motor activities is an important element for a health promoting life style [1, 2, 3, 4, 5]. Systematic physical activity, to a great extent, prevents cardiovascular diseases, which has been emphasized by many researchers [6, 7, 8, 9, 10, 11, 12]. The increasingly greater consequences of low physical activity of societies are related with the growing problem of obesity, as indicated by [13, 14, 15]. It is noteworthy that in the USA overweight or obesity was observed in 66% of the adult population [16] while in Greece in 73% of males and 56% of females [17].

The use of knowledge concerning physical activity out of concern for our health requires proper assessment of the physical activity of individuals, and consequently, reliable methods. Therefore, in 1995, an international team was created which developed the International Physical Activity Questionnaire (IPAQ) for the evaluation of physical activity of societies in various countries. It is noteworthy that this method fulfils the requirements of reliability and validity [18], and was adjusted to Polish conditions by Biernat et al. [19].

While evaluating physical activity among children and adolescents it is worth bearing in mind the previous training of the surveyors [20, 21]. It is also worth emphasizing that carrying out studies among children creates problems with the self-reporting of activity. It seems that this is an up-to-date problem, also with the use of the IPAQ questionnaire which, in Polish conditions, has been indicated by Rozpara et al.[22], Gajewski, Biernat [23], and Bergier [24]. This fact is also confirmed by the many varied conditions of total physical activity of adolescents, from very high [25, 26, 27] to very low. The IPAQ questionnaire developed enables the comparison of physical activity among inhabitants of various countries, which provided the incentive for the authors of the presented report to conduct studies among Lithuanian adolescents.

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MATERIAL AND METHOD

Studies of the physical activity of Lithuanian adolescents were conducted in April 2010 among schoolchildren aged 17 who attended the following schools in Vilnius: Adam Mickiewicz Secondary School, John Paul High Junior School, Szymon Konarski Secondary School, and the Joachim Lelewel High Junior School, with the participation of 101 schoolchildren – 57 girls and 44 boys; mean age 17.2.

The study was conducted with the use of the long version of the International Physical Activity Questionnaire (IPAQ) supplemented by self-designed items concerning self-evaluations of the respondents', and practiced and expected forms of participation in sports-recreational activities. In addition, the basic parameters of physical development were examined, i.e. height and body weight, in order to calculate the BMI.

RESULTS

Level of physical activity. Lithuanian adolescents were characterized by very high physical activity, this level being dominant among boys – 90.0% of schoolchildren, and 71.9% among girls, with a moderate level of 10.0% and 21.1%, respectively. A low level of activity was not noted in the group of boys, and only in 7.0% of girls (Tab. 1).

Table 1. Level of physical activity

Physical activity	Boys	Girls
high	90.0 %	71.9%
moderate	10.0%	21.1%
low	_	7.0%

Types and areas of physical activity. Lithuanian boys and girls showed a varied level of general physical activity, which was higher among boys – 4,895 MET than girls – 4,404 MET. In boys, intensive activity was dominant – 1,940 MET, followed by a moderate activity – 1,548 MET, and walking – 1,406 MET. Among girls, moderate activity prevailed – 1,577 MET and walking – 1,530 MET, with the lowest percentage of intensive activity – 1,296 MET (Tab. 2). A statistically significant difference between boys and girls concerned activity of the intensive type (Tab. 3).

Table 2. Types of physical activity of adolescents

Types of activity	Measurement characteristics	Boys	Girls
intensive	$\bar{X}$	1,940	1,296.14
	SD	1,056.38	961.52
	min	0	0
	max	4,720	3,360
moderate	$\bar{X}$	1,548.73	1,577.81
	SD	907.66	1,003.25
	min	165	40
	max	4,410	5,055
walking	$\bar{X}$	1,406.73	1,530.18
	SD	825.36	1,187.17
	min	99	181
	max	3,696	6,039
total	$\bar{X}$	4,895.46	4,404.12
	SD	2,198.95	2,733.86
	min	1,940	690
	max	9,916	11,442

Table 3. Physical activity of adolescents with consideration of respondents' gender and type of activity

Types of activity	Boys		Girls		Z-test	p
	Rank sum	n	Rank sum	n		
Intensive	2,661	44	2,490	57	**2.856**	**0.004***
Moderate	2,284	44	2,867	57	0.274	0.784
Walking	2,255	44	2,896	57	0.075	0.940
Total	2,444	44	2,707	57	1.370	0.171

Considering the areas of physical activity, among both boys and girls there dominated the area related with occupational activity (education) – 1,888 MET and 1,944 MET, respectively, followed by the area related to household activities in boys – 1,104 MET, and girls – 891 MET. Walking constituted a lower percentage among boys – 972 MET than girls – 699 MET, and recreation – 930 MET, respectively (Tab. 4). A significantly higher statistical difference was observed between boys and girls with respect to the area of walking (Tab. 5).

Table 4. Areas of physical activity among boys and girls

Areas of activity	Measurement characteristics	Boys	Girls
Occupational activity	$\bar{X}$	1,888.64	1,944.89
	SD	1,030.54	1,217.18
	max	4,190	4,616
	min	0	193
Commuting	$\bar{X}$	972.11	699.02
	SD	507.10	619.88
	max	2,106	2,574
	min	231	33
Household activity	$\bar{X}$	1,104.09	891.47
	SD	838.44	696.53
	max	3,090	3,180
	min	0	0
Recreation	$\bar{X}$	930.61	868.74
	SD	747.22	927.93
	max	2,844	3,511
	min	0	0

Table 5. Physical activity of adolescents with consideration of respondents' gender and areas of activity

Areas of activity	Boys		Girls		Z-test	p
	Rank sum	n	Rank sum	n		
Occupational activity	2,265	44	2,886	57	0.144	0.886
Commuting	2,695	44	2,456	57	**3.089**	**0.002***
Household activities	2,395	44	2,756	57	1.034	0.301
Recreation	2,377	44	2,774	57	0.911	0.362

Leisure time and physical activity. The scope of leisure time varied among girls and boys. More boys than girls indicated a sufficient amount of leisure time – 50.0% and only 26%, respectively. As many as 74.0% of girls declared that they did not have a sufficient amount of leisure time, compared to 41.0% of boys. It is interesting that 9% of boys reported that they had no leisure time (Fig. 1).

A compilation of the types of physical activity according to the amount of free time possessed, indicated that physical activity was higher among the respondents who had an insufficient amount of leisure time. Nevertheless, no statistically significant differences were confirmed between the amount of leisure time possessed, and the general activity and individual types of activity (Tab. 6). The leisure time possessed significantly differentiated the percentage of adolescents in the area of physical activity related with recreation, where adolescents who had less leisure time were clearly more active. This may be explained by the fact that this group was better organized (Tab. 7).

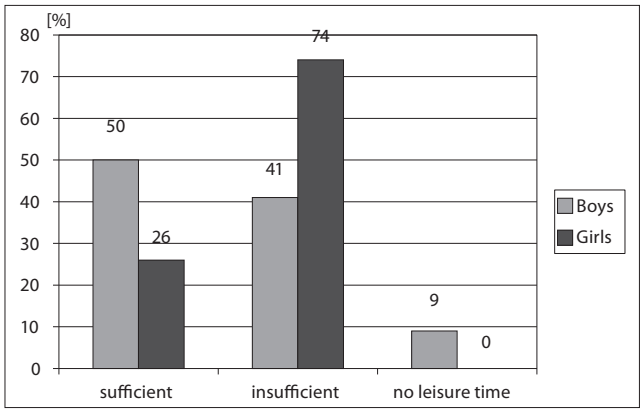

Figure 1. Leisure time possessed by Lithuanian adolescents according to gender

Table 6. Amount of leisure time and types of physical activity among adolescents

Types of activity	Sufficient		Insufficient		t-value	p
	$\overline{X}$±SD	n	$\overline{X}$±SD	n		
Intensive	1,652.97±1,212.92	37	1,532.50±949.10	64	- 0.55	0.58
Moderate	1,378.92±741.94	37	1,672.80±1,053.86	64	1.49	0.14
Walking	1,326.78±1,127.35	37	1,562.89±988.32	64	1.09	0.27
Total	4,358.68±2,594.69	37	4,768.19±2,475.79	64	0.79	0.43

Table 7. Amount of leisure time and areas of physical activity

Areas of activity	Sufficient		Insufficient		t-value	p
	$\overline{X}$±SD	n	$\overline{X}$±SD	n		
Occupational activity	1,868.97±1,143.74	37	1,950±1,137.13	64	0.34	0.73
Commuting	798.62±517.80	37	829.19±626.83	64	0.25	0.80
Household activities	1,020.00±728.58	37	963.34±790.16	64	-0.36	0.72
Recreation	671.08±767.82	37	1,025.55±874.26	64	**2.05**	**0.043***

Self-reported physical efficacy and physical activity. Boys evaluated their fitness in considerably more positive terms than girls; as many as 41% of boys and only 19.3% of girls evaluated their fitness as high, 73.7% of girls and 59% of boys – as satisfactory, while 7% of girls evaluated their fitness as unsatisfactory (Fig. 2).

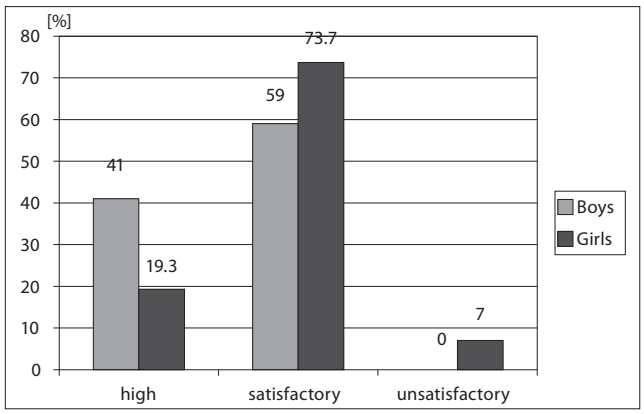

Figure 2. Self-reported physical efficiency of Lithuanian adolescents according to gender

Adolescents who evaluated their physical efficacy in more positive terms were characterized by a higher general physical activity – 5,231 MET, compared to those reported this efficacy as satisfactory and low – 4,371 MET; however, this difference was insignificant statistically. Nevertheless, adolescents with a higher self-reported fitness were clearly more active concerning the type of intensive physical effort – 2,030 MET, compared to the group of respondents who assessed their own fitness in more negative terms – 1,393 MET, a significant difference (Tab. 8).

Table 8. Self-reported physical activity and types of physical activity

Types of activity	High		Satisfactory and low		t-value	p
	$\overline{X}$±SD	n	$\overline{X}$±SD	n		
Intensive	2,030±1,104.30	29	1,393.89±975.28	72	**2.86**	**0.005***
Moderate	1,615.31±1,188.83	29	1,544.93±856.92	72	0.33	0.740
Walking	1,585.86±1,075.42	29	1,432.31±1,032.75	72	0.67	0.505
Total	5,231.52±2,995.26	29	4,371.13±2,270.29	72	1.57	0.120

Considering the areas of physical activity, no significant differences were noted among adolescents who varied with respect to self-reported fitness (Tab. 9).

Table 9. Self-reported efficacy and areas of physical activity

Areas of activity	High		Satisfactory and low		t-value	p
	$\overline{X}$±SD	n	$\overline{X}$±SD	n		
Occupational activity	2,202±1,296.55	29	1,806.96±1,050.92	72	1.60	0.11
Commuting	961.21±677.07	29	760.31±540.70	72	1.57	0.12
Household activities	1,143.10±787.41	29	920.06±751.81	72	1.33	0.19
Recreation	925.21±1,042.10	29	883.81±768.02	72	0.22	0.83

BMI. The largest number of adolescents were characterized by normal parameters of body weight and height (BMI) – 87.7% of girls and 75.0% of boys. It is noteworthy that overweight was found in as many as 25. 0% of boys, whereas underweight in 10.5% of girls. (Fig. 3).

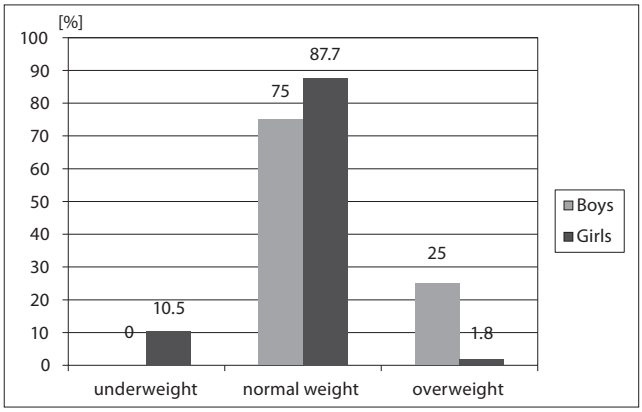

Figure 3. Weight-height parameters (BMI) among Lituanian adolescents according to gender

Practiced and expected forms of recreational physical activity. Boys and girls had different preferences with respect to motor activities. Girls practiced mainly walking – 96.5%,

bicycle riding – 91.2%, running – 77.2%, playing volleyball – 73.7%, dancing – 71.9%, and swimming – 61.4%. However, their expectations were different. The respondents were primarily interested in horse riding – 56. 1%, aerobics and dancing – 36.8% each, and willingness to participate in swimming classes – 33.3%. (Tab. 10).

Table 10. Practiced and expected forms of active recreation according to gender

Forms of physical activity	Girls		Boys	
	Practiced in %	Willingness to practice %	Practiced in %	Willingness to practice in %
Aerobic	28.1	36.8	0	13.6
Running	77.2	15.8	79.5	13.6
Billard	33.3	14.0	50	20.5
Riding bicycle	91.2	29.8	86.4	22.7
Horse riding	0	56.1	4.5	20.5
Roller skating	15.8	17.5	2.3	4.5
Kayaking	10.5	26.3	15.9	25.0
Basketball	43.9	0	77.3	20.5
Fishing	12.3	10.5	31.8	11.4
Ice skating	10.5	24.6	18.2	27.3
Hunting	0	0	2.3	27.3
Cross-country skiing	0	10.5	2.3	9.1
Downhill skiing	5.3	14.0	6.8	9.1
Football	26.3	15.8	77.3	54.5
Volleyball	73.7	10.5	63.6	31.8
Handball	15.8	0	13.6	4.5
Swimming	61.4	33.3	59.1	31.8
Bodybuilding fitness exercises	14.0	7.0	43.2	52.3
Walks	96.5	21.1	40.9	4.5
Dancing	71.9	36.8	11.4	20.5
Table tennis	36.8	3.5	20.5	9.1
Lawn tennis	17.5	17.5	0	15.9
Mountaineering	0	12.3	13.6	40.9
Windsurfing	0	14.0	0	29.5
Yachting	0	7.0	9.1	13.6
Other	0	0	43.2	11.4

Among boys, the main form of recreational activity was bicycle riding – 86.4%, running – 79.5%, as well as basketball and football – 77.3% each. They were most willing to play football – 54.5%, to practice bodybuilding fitness exercises – 52.3% and climbing – 40.9%.

DISCUSSION

The civilisation changes which we have witnessed result in a different style of life. A tendency to decrease physical activity in favour of a sedentary life style is increasingly more commonly observed. This new phenomenon creates the necessity for new health promoting behaviours biased towards a greater role of motor activities [1, 2, 9]. It should constantly be kept in mind that adequate physical activity is very important for the prevention of various diseases, especially those of the cardiovascular system [6, 8, 10]

The IPAQ provides an opportunity to trace the activity of various social and occupational groups in individual countries. Such a social group are adolescents, whose adequately shaped habits of the need for physical activity to a great extent guarantee the maintenance of these habits in the future. In Poland, studies on physical activity with the use of the IPAQ have greatly contributed to the scientific output [22, 25, 27, 28].

The international character of the research method discussed presents challenges concerning the physical activity of adolescents from other countries, on the example of Lithuania, which resulted in the presented study.

Physical activity among the adolescents examined is high, which is confirmed by the majority of reports concerning this age group. Boys showed higher rates of general physical activity, which is also consistent with other studies. Boys also evaluated their physical fitness, which may jointly suggest a more favourable 'silhouette' in their physical activity. It is noteworthy that the majority of Lithuanian adolescents were characterized by a normal BMI, which is very important considering the serious problem of obesity in societies [13, 14, 17]. Attention should be paid to a higher overweight among boys and underweight among girls, which may evidence the presence of the phenomenon of excessive dieting in girls who are concerned about a slim silhouette.

It should be emphasized that adolescents had sports-recreational preferences other than those currently practiced. It seemed that out of concern for the role of physical activity of societies, these different expectations of adolescents should be taken into account. Girls, in their dreams, mentioned classes in horse riding, and boys – bodybuilding fitness exercises. In general, there appeared a positive evaluation of physical activity among Lithuanian adolescents, and the factors indicated may be useful in comparative studies of contemporaries from other countries.

CONCLUSIONS

1. The level of general physical activity among Lithuanian adolescents is high, this level is higher among boys than girls, especially with respect to intensive activity.
2. Girls and boys evaluate differently the scope of their leisure time. A clearly larger group of boys than girls indicated that they had a sufficient amount of leisure time. However, a greater amount of free time does not result in significantly higher physical activity.
3. Boys evaluated their physical fitness in considerably more positive terms than girls. Adolescents with a higher self-reported physical efficiency were especially more active with respect to intensive effort.
4. A large majority of adolescents had a normal BMI, with overweight more frequently noted among boys, and underweight in girls.
5. Differences were observed in the practiced and preferred forms of recreational activities, according to the respondents' gender. Girls mainly participated in walking and bicycle riding, and would prefer to practice horse riding, aerobics, and dancing. The dominant recreational activities practiced by boys were bicycle riding and running, but most willingly they would participate in football classes and bodybuilding fitness exercises.

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