

Part II. Physical activity of social and professional groups
Dział II. Aktywność fizyczna grup społecznych i zawodowych

**NUTRITIONAL HABITS AND PHYSICAL ACTIVITY OF THE YOUTH OF LATVIA
CONSIDERING GENDER DIFFERENCES**

**ZACHOWANIA ŻYWIENIOWE I AKTYWNOŚĆ FIZYCZNA MŁODZIEŻY ŁOTEWSKIEJ
Z UWZGLĘDNIENIEM PŁCI**

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E. Preparation of manuscript
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Summary

Introduction. Nutritional habits and physical activity are fundamental for a healthy lifestyle. The aim of the paper is to present differences in the area of important pillars of health taking into account youth's gender.

Material and methods. The research was conducted on Polish high school students in Riga, Latvia. The diagnostic survey method was used with International Physical Activity Questionnaire - IPAQ's short version and the Health Behaviour Questionnaire.

Results. There are major differences in health behaviour between girls and boys, including willingness to lose and gain weight, various motives for exercising to gain or lose body weight and the fear of weight gain.

The field of physical activity regarding greater activity and participation in intensive exercises was dominated by boys.

Conclusions. The school process of eating habits education and physical activity should be modified.

Keywords: youth of Latvia, nutritional habits, physical activity, gender

Streszczenie

Wprowadzenie. Zachowania żywieniowe i aktywność fizyczna stanowią podstawę zdrowego stylu życia. Celem pracy było wykazanie występowania różnic w obrębie tych ważnych filarów zdrowia w zależności od płci młodzieży.

Materiał i metody. Badaniem objęto młodzież licealną szkół polskich w Rydze na Łotwie. Zastosowano metodę sondażu diagnostycznego z wykorzystaniem Międzynarodowego Kwestionariusza Aktywności Fizycznej – IPAQ w wersji krótkiej oraz kwestionariusza zachowań zdrowotnych.

Wyniki. Wykazano znaczące różnice w zachowaniach zdrowotnych między dziewczętami i chłopcami w tym, w chęci schudnięcia i przytycia, innych motywów stosowania ćwiczeń w celu zwiększenia lub zmniejszenia masy ciała oraz strachu przed przytyciem. W zakresie aktywności fizycznej wykazano znacząco większą aktywność i większy udział w intensywnych wysiłkach wśród chłopców. **Wnioski.** Należy modyfikować szkolny proces edukacyjny w zakresie roli zachowań żywieniowych i aktywności fizycznej.

Słowa kluczowe: młodzież łotewska, zachowania żywieniowe, aktywność fizyczna, płeć

Introduction

Nutritional habits and physical activity are the pillars of a healthy lifestyle. Appropriate nutritional habits, that is regularity, quality and quantity of eaten meals during a day adjusted to body's needs as well as systematic physical activity have major impact on health, mental and physical development of children and youth [1,2]. One of the fundamental principles of a good diet for children and youth is eating nutritious and little processed meals 4-5 times a day and avoiding snacks between meals. The most important meal should be nutritious breakfast that will cover 20-25% of daily body energetic requirement. Consumption of breakfast before going out from home guarantees better concentration and comfort during school time [3]. The research conducted in Poland shows many abnormalities about the way of nutrition of schools' youth, including: irregular meal eating, having snacks between meals, increased amount of eaten sweets, sugary soda's and fast foods [4,5,6,7,8,9].

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The research of physical activity among children and youth indicates that one of the reasons of their low activity is civilizational progress. The influence of new technologies alters the way of spending free time. Students' organisms perform more mental exercises than physical ones, which leads to energy accumulation in the organism. Use of cell phones, computers and internet is connected with a long immobilisation and because of the attractiveness of these inventions – they compete with physical activity [10].

Observations of changes in Polish students' physical activities to the end of 90's allow to claim that their level is getting lower with ageing and is permanently lower than recommended [11]. Therefore, following changes in physical activities of youth is still vital and the results have special value when obtained with the use of same research method. Contemporarily recommended tool is International Physical Activity Questionnaire (IPAQ) that has been used by many scholars in many researches in Poland [12,13,14,15,16].

The works of Wasilewska, Bergier [17] are worth mentioning because of using the questionnaire among school youth in other countries [18,19,20,21,22,23,24]. Among researches on current nutritional habits and physical activities it is essential to show their differentiation by gender.

The aim of the paper is to show differences in nutritional habits and physical activity of the youth of Latvia considering gender differences.

Methods and materials of research

Material of research

The research was conducted in May 2014 on the group of 150 students (62 girls – 48% and 88 boys – 52%) in two Polish high schools: in the Ita Kozakiewicz High School in Riga and High School no. 87 in Riga, Latvia.

The research group was proportionally divided by age of students. The age of 18 – 34%, and at the age of 17 and 16 – 33%.

Methods and organization of research

The research method was the diagnostic survey, and the measurement tool was International Physical Activity Questionnaire - IPAQ's short version. It is one of the most commonly used questionnaires in survey research of physical activity, recommended, among others, by European Physical Activity Surveyance System (EUPASS) and European Health Interview Survey (EUROHIS). In numerous studies a satisfactory repetitiveness (reliability) and validity (accuracy) of this measurement tool was confirmed while confronted with objective measurement devices (accelerometer, pedometer) (25,26).

On the basis of the physical activity self-evaluation results by IPAQ questionnaire of boys and girls, a weekly level of it was determined in the three zones of effort's intensity using unit METmin×week.⁻¹. The calculation procedure relied on multiplying an average physical activity duration time per day by number of days it was undertaken and the MET's value for a given zone of effort's intensity. Total weekly amount of physical activity of subjects (WPA) was designated by summing up its level in three intensity zones.

The studied boys and girls were assigned to highly, sufficient and not sufficient physically active groups, taking criteria acknowledged by International Committee IPAQ [27] into consideration.

For each parameter of physical activity the basic descriptive statistics parameter was assigned: arithmetical means (\bar{x}), standard deviations (SD) and variation coefficient (V). In order to determine a significance of differences between average results of girls and boys self-evaluation the t Student tests were conducted for independent samples.

The results of research were statistically analysed by Statistica v. 7.1 software. For every kind of physical activity there were calculated basic descriptive statistics (arithmetic mean and standard deviations). In order to determine the dependencies that are statistically significant for features measured in nominal value the Chi-square test was used. In other case (for quantitative scale) the nonparametric tests U Mann-Whitney and Kruskal Wallis were used. In all analysed cases the level of significance $p=0,05$ was assumed.

Research results

1. Students' nutritional habits

The need to lose/gain weight

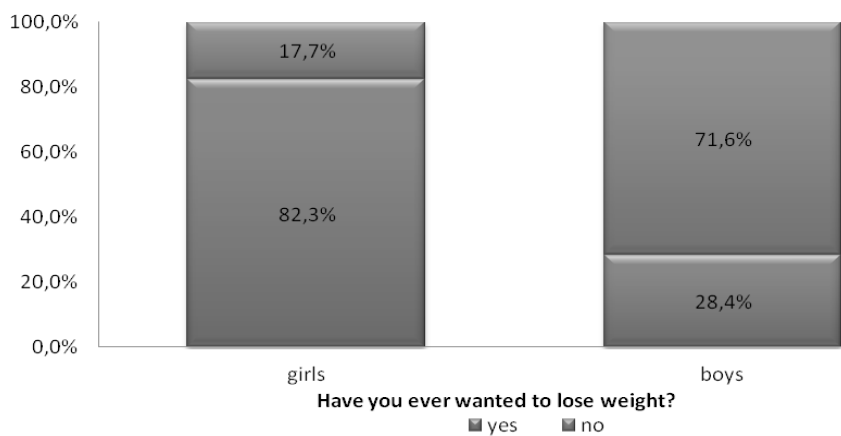
In the girls' group 82.3% of students wanted to lose weight, while 17.7% did not intend to do so. In the case of boys, 71.6% did not want to lose weight, whereas 28.4% wanted to lose weight. It has been shown that there is a significant differentiation about the issue of losing weight among girls (Tab. 1, Fig. 1).

Among girls, 96.8% did not want to gain weight, while only 2 people (3.2%) wanted to increase their body weight. Whereas, 84.1% of boys did not want to gain weight, while only 15.9% wanted to increase their body weight. Boys significantly more often wanted to gain weight than girls (Tab. 2, Fig. 2).

Table 1. Have you ever wanted to lose weight?

Gender	Have you ever wanted to lose weight?		Gender differentiation
	Yes	No	
Girls	51 (82.3%)	11 (17.7%)	$\chi^2=59.07$ p<0.0001*
Boys	25 (28.4%)	63 (71.6%)	
Total	76 (50.7%)	74 (49.3%)	

*-significant differences with p<0.05



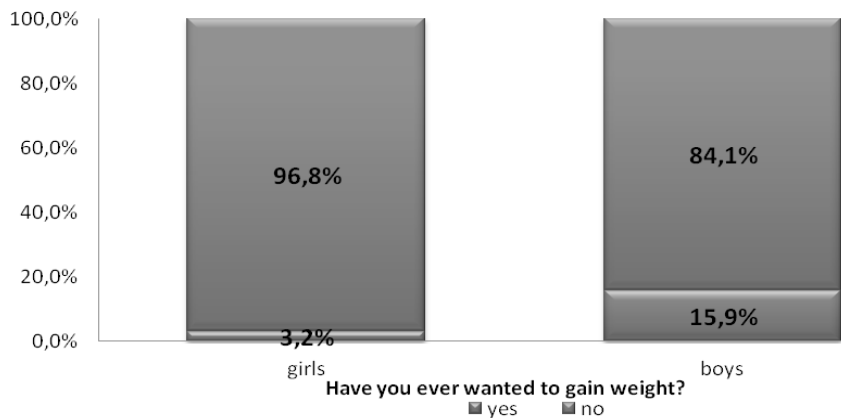
Value of Chi test square of Pearson: $\chi^2=59,07$ p<0,0001*

*-significant differences with p<0.05

Figure 1. Have you ever wanted to lose weight?

Table 2. Have you ever wanted to gain weight?

Gender	Have you ever wanted to gain weight?		Gender differentiation
	Yes	No	
Girls	2 (3.2%)	60 (96.8%)	$\chi^2=9.84$ p=0.0017*
Boys	14 (15.9%)	74 (84.1%)	
Total	16 (10.7%)	134 (89.3%)	



Value of Chi test square of Pearson: $\chi^2=9,84$ p=0,0017*

*-significant differences with p<0,05

Figure 2. Have you ever wanted to gain weight?

Nutrition-related behaviour

Nutrition-related behaviour by gender has been shown in Table 3. In the girls' group, 81.4% of them were characterized as controlling the food intake, while 18.6% were not controlling it. The ratio among boys and girls was similar (no significant differences). Among boys 89.5% claimed to take control over the intake of food and 10.5% claimed otherwise. The fear of gaining weight was significantly more often present among girls (76.3%) than boys (50.5%). Nutritional habits that involved forcing vomiting were residual and appeared only among 1% of respondents. Avoiding eating occurred only among several percent of respondents and was not found to be different according to gender. The indicator of irregular nourishment occurred among 25.2% of students, and despite the fact that it was higher among boys (30.5%) than girls (19.6%) the difference was not statistically significant (Tab. 3).

Table 3. Nutrition-related behaviour by gender

Losing control over the food intake			
Gender	No	Yes	Statistics
Girls	81.4%	18.6%	X ² =2.68 p=0.1018
Boys	89.5%	10.5%	
Total	85.6%	14.4%	
Fear of weight gain			
Gender	No	Yes	Statistics
Girls	23.7%	76.3%	X ² =14.39 p=0.0002*
Boys	49.5%	50.5%	
Total	37.1%	62.9%	
Forcing vomiting			
Gender	No	Yes	Statistics
Girls	99.0%	1.0%	X ² =0.26 p=0.6080
Boys	98.1%	1.9%	
Total	98.5%	1.5%	
Avoiding eating			
Gender	No	Yes	Statistics
Girls	88.7%	11.3%	X ² =1.38 p=0.2400
Boys	82.9%	17.1%	
Total	85.6%	14.4%	
Irregular nourishment			
Gender	No	Yes	Statistics
Girls	80.4%	19.6%	X ² =3.17 p=0.0751
Boys	69.5%	30.5%	
Total	74.8%	25.2%	

*-significant differences with p<0,05

Agents used to improve shape

In the girls' group 88.7% exercised in order to lose body weight, while 11.3% did not do such exercises. Boys statistically significantly less frequently exercised in order to lose body weight – only 16.2% of them did so. The opposite regularity was present among genders in case of exercising in order to increase body weight. Boys significantly more frequently performed such exercises (90.5%) than girls (12.4%). Among other types of agents used to improve shape there were very little values: weight control medication and diuretics – 3.5%, laxatives – 2.5%, body weight increase medication – 1.5%, anabolic steroids – 0.5%. The low results of the above indicate a good trend among the students and prove that they are aware about their own health (Tab. 4).

Table 4. Agents used to improve shape by gender

Physical exercises done in order to lose body weight (eg. running, cycling, fitness)			
Gender	No	Yes	Statistics
Girls	11.3%	88.7%	X ² =105.96 p<0.0001*
Boys	83.8%	16.2%	
Total	49.0%	51.0%	

Physical exercises done to increase muscle mass (eg. exercise at gym)			
Gender	No	Yes	Statistics
Girls	87.6%	12.4%	X ² =123.47 p<0.0001*
Boys	9.5%	90.5%	
Total	47.0%	53.0%	
Weight control medication			
Gender	No	Yes	Statistics
Girls	94.9%	5.2%	X ² =1.59 p=0.2071
Boys	98.1%	1.9%	
Total	96.5%	3.5%	
Muscle mass increase medications			
Gender	No	Yes	Statistics
Girls	99.0%	1.0%	X ² =0.26 p=0.6080
Boys	98.1%	1.9%	
Total	98.5%	1.5%	
Laxatives			
Gender	No	Yes	Statistics
Girls	96.9%	3.1%	X ² =0.29 p=0.5872
Boys	98.1%	1.9%	
Total	97.5%	2.5%	
Diuretics			
Gender	No	Yes	Statistics
Girls	95.9%	4.1%	X ² =0.24 p=0.6229
Boys	97.1%	2.9%	
Total	96.5%	3.5%	
Anabolic steroids			
Gender	No	Yes	Statistics
Girls	100.0%	0.0%	X ² =0.93 p=0.3353
Boys	99.0%	1.0%	
Total	99.5%	0.5%	

*-significant differences with p<0.05

The amount and frequency of eaten meals

In the girls' group 52.6% ate 4 and more meals a day, while 42.3% ate 3 meals, and only 5.2% ate 1-2 meals a day. In the boys' group 3 meals (48.6%) a day dominated, however differences in the amount of meals eaten per day were not statistically significant (Tab. 5).

Table 5. The amount of eaten meals by gender

The amount of eaten meals daily				
Gender	1-2	3	4 and more	Statistics
Girls	5.2%	42.3%	52.6%	X ² =1.72 p=0.4226
Boys	7.6%	48.6%	43.8%	
Total	6.5%	45.5%	48.0%	
Frequency of eating breakfast				
Gender	Everyday	Few times a week	I don't eat	Statistics
Girls	82.5%	8.3%	9.3%	X ² =5.43 p=0.0661
Boys	90.5%	7.6%	1.9%	
Total	86.6%	7.9%	5.4%	
Frequency of eating dinner				
Gender	Everyday	Few times a week	I don't eat	Statistics
Girls	84.5%	11.3%	4.1%	X ² =1.39 p=0.4985
Boys	89.5%	6.7%	3.8%	
Total	87.1%	8.9%	4.0%	

Frequency of eating supper				
Gender	Everyday	Few times a week	I don't eat	Statistics
Girls	80.4%	12.4%	7.2%	X ² =13.66 p=0.0011*
Boys	96.2%	3.8%	0.0%	
Total	88.6%	7.9%	3.5%	

*-significant differences with p<0,05

Place of eating meals

In the girls' group, 91.5% were characterized as eating their first meal at home, while 8.5% were eating outdoors. Dinner was eaten outdoors by 75%, while 25% ate at home. Supper was eaten by 85.6% girls at home, while 14.4% ate outdoors. In the case of boys, 93.3% were characterized as eating their first meal at home, while 6.7% ate outdoors. Dinner was eaten by 76.5% outdoors, while 23.5% ate at home. Supper was classified as being eaten at home by 87.1% of students, while 12.9% ate it outdoors. There were no significant gender differences in either of places of eating meals (Tab. 6).

Table 6. The place of eating meals by gender

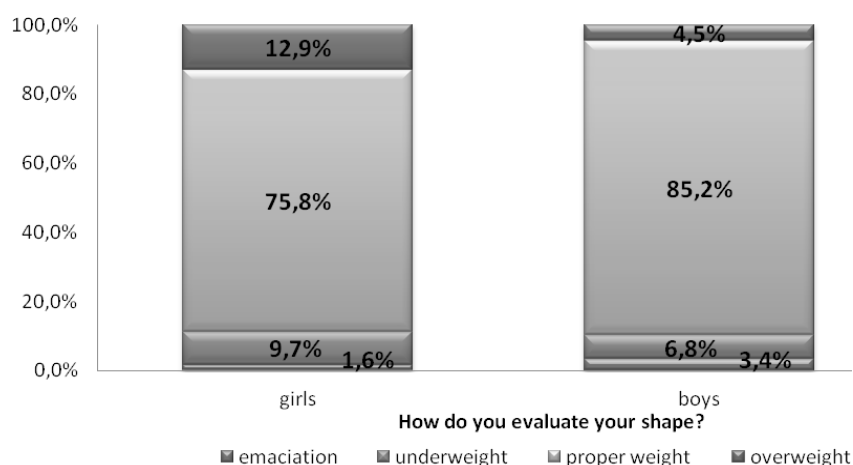
Where do you eat breakfast?			
Gender	At home	Outdoors	Statistics
Women	91.5%	8.5%	X ² =0.22 p=0.6365
Men	93.3%	6.7%	
Total	92.4%	7.6%	
Where do you eat dinner?			
Gender	At home	Outdoors	Statistics
Women	25.0%	75.0%	X ² =0.06 p=0.8093
Men	23.5%	76.5%	
Total	24.2%	75.8%	
Where do you eat supper?			
Gender	At home	Outdoors	Statistics
Women	85.6%	14.4%	X ² =0.41 p=0.5241
Men	88.6%	11.4%	
Total	87.1%	12.9%	

Self-evaluation of shape

In the girls' group 75.8% think about their own shape as normal, while 12.9% feel overweight, 9.7% underweight and one student felt (1.6%) emaciation. In the boys' group 85.2% perceived their own shape as normal, 6.8% felt underweight, 4.5% overweight and 3 people felt (3.4%) emaciation. There were no significant differences present among genders in terms of self-evaluation (Tab. 7, Fig. 3).

Table 7. Self-evaluation of shape by gender

Gender	Emaciation	Underweight	Proper weight	Overweight	Gender differentiation
Women	1 (1.6%)	6 (9.7%)	47 (75.8%)	8 (12.9%)	X ² =5.66 p=0.1291
Men	3 (3.4%)	6 (6.8%)	75 (85.2%)	4 (4.5%)	
Total	4 (2.7%)	12 (8.0%)	122 (81.3%)	12 (8.0%)	



Value of Chi test square of Pearson: $\chi^2=5,66$ $p=0,1291$

Figure 3. Self-evaluation of shape by gender

Meals-related behaviours

Meals-related behaviours have been presented in Table 8. In the girls' group half of them (50.5%) have snacks between meals. Significantly fewer boys have snacks between meals (25.7%). The difference in this kind of behaviour is statistically significant. Around 20% of respondents eat at nights and this kind of habit is similar in both genders. Respondents in a clear majority tend to feel satiety (74.8%) and this is no different either among boys or girls. Consequently, only 15.3% claimed that they feel hunger every day. Similarly, in this behaviour there were no significant differences among genders. Where it comes to surfeit of food, most of the students (52%) claimed to feel that way less than once a week. This feeling occurred only among 3%. Similarly in this kind of habits there were no significant differences among boys and girls. (Tab. 8).

Table 8. Meals-related behaviours by gender

Do you have snacks between meals?					
Gender	No	Yes	Statistics		
Women	49.5%	50.5%	$X^2=13.22$ $p=0.0003^*$		
Men	74.3%	25.7%			
Total	62.4%	37.6%			
Are there days when you are snacking at nights?					
Gender	No	Yes	Statistics		
Women	82.5%	17.5%	$X^2=0.38$ $p=0.5376$		
Men	79.1%	21.0%			
Total	80.7%	19.3%			
How many times a week do you feel satiety?					
Gender	Less than once	1-2 times	3-4 times	Everyday	Statistics
Women	1.0%	7.2%	20.6%	71.1%	$X^2=6.88$ $p=0.0758$
Men	4.8%	7.6%	9.5%	78.1%	
Total	3.0%	7.4%	14.9%	74.8%	
How many times a week do you feel hunger?					
Gender	Less than once	1-2 times	3-4 times	Everyday	Statistics
Women	51.6%	21.7%	10.3%	16.5%	$X^2=0.45$ $p=0.9304$
Men	53.3%	20.0%	12.4%	14.3%	
Total	52.5%	20.8%	11.4%	15.3%	
How many times a week do you feel surfeit of food?					
Gender	Less than once	1-2 times	3-4 times	Everyday	Statistics
Women	54.6%	35.1%	6.2%	4.1%	$X^2=1.89$ $p=0.5947$
Men	49.5%	42.9%	5.7%	1.9%	
Total	52.0%	39.1%	5.9%	3.0%	

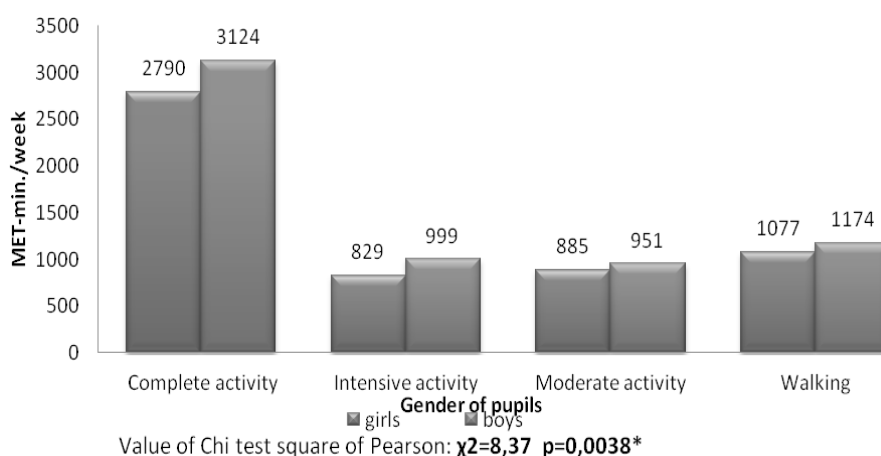
*-significant differences with $p<0,05$

2. Students' physical activity

Boys are significantly more physically active – 3124 MET, than girls – 2790 MET. Boys tends to have higher values in each area of activity than girls, respectively: intensive activity 999 MET to 829 MET (statistically significant), moderate 951 MET to 885 MET, walking 1174 MET to 1077 MET. (Tab. 9-10, Fig. 4).

Table 9. Means and standard deviations of physical activity areas depending on the gender of respondents (in MET-min/week.).

Amount of physical activity	Girls	Boys	Total
Complete activity	2789.9±776.7	3124.0±968.1	2963.6±895.0
Intensive activity	828.7±508.6	999.2±530.0	917.4±525.5
Moderate activity	884.5±346.2	950.9±473.7	919.0±417.7
Walking	1076.7±366.8	1173.9±504.1	1127.2±445.1



*-significant differences with $p<0,05$

Figure 4. Areas of physical activities of students by respondents' gender

Table 10. Differentiation of areas of physical activities of students by respondents' gender

U Mann-Whitney's Test		
Amount of physical activity	Z	p
Complete activity	-2.74	0.0062*
Intensive activity	-4.19	0.0000*
Moderate activity	-0.05	0.9596
Walking	-1.89	0.0587

*-significant differences with $p<0,05$

Discussion

According to the results of scientific research it is assumed that nutritional habits and physical activity are vital elements of a lifestyle. Among nutritional habits one ought to emphasize, among others, the role of quantity and regularity of meals taking an optimal number of them as 4-5 times a day [3]. In case of examined students only a little more than half of female students (52.6%) and less male students (43.8%) consume this number of meals. Similar results were obtained among the youth of Świętokrzyskie voivodeship [28]. It is stressed out that the most important meal should be a nutritious breakfast that will cover 20-25% of daily body energetic requirement [3]. The frequency of eating the main three meals per day among the respondents was similar and was around 90%. In the breakfast case the indicator of whole-day nourishment was higher among boys (90.5%) than girls (82.5%), and these are rather favourable results when compared to the results received from Silesia voivodeship's youth in Poland [8].

Among other nutritional habits it is worth mentioning that significant differences in willingness to lose weight are favourable among girls and to increase weight (improving muscles) are favourable among boys. When it comes to agents used to improve shape, girls significantly more often exercise in order to lose body

weight, however boys significantly more often exercise to increase body weight (musculature). The analyzed behaviours prove that girls take care of their health more. A positive phenomenon is that both genders use very little such agents as a weight control medication, diuretics and anabolic steroids. In general terms, one might note that Latvia's youth are characterized by proper nutritional habits taking into account gender differences.

Furthermore, physical activity was measured by widely acknowledged in studies International Physical Activity Questionnaire [29] and the results are more favourable among boys, which is a confirmation of the previous national [13,14,15,16] and foreign [17,18,23,24] research among the school youth.

To sum up, one may state when it comes to health-promoting behaviours, female students are characterized by more favourable nutritional habits, and boys are better at physical activity, which is a confirmation of research of Poznań schools students [30].

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