

PHYSICAL ACTIVITY IN LIFESTYLE OF ADOLESCENTS AND THEIR HEALTH STATUS

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Abstract

Increasing prevalence of lifestyle diseases brings attention to prevention issues related to health and lifestyle. That is why the research aimed to find out the current status of selected determinants of the lifestyle of secondary school students with the focus on physical activity and health. The experimental group comprised 294 secondary school students from three towns in Slovakia, including 145 girls, whose average age was 16.7 years, and 149 boys, whose average age was 17.1 years. Primary data acquisition method was a standardised questionnaire, which was distributed from January to March 2017. The results significantly ($p < 0.01$) point to the decline in physical activity among girls in comparison to boys both within and outside of school time. We found out that a lot of students still use motorised transport to get to and from school. Computer games are played significantly more by the boys in both age categories than the girls ($p < 0.01$). Physician office visits among younger age groups were approximately one-third less frequent ($p < 0.05$) than among older age groups. Somatic problems occur more frequently in girls than boys ($p < 0.01$).

Key words: physical activity, prevention, health, secondary school student

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Introduction

The basic source and prerequisite for optimal human functioning is health, which is demonstration of balance and harmony between physical and mental well-being. In the past, health was determined by biological factors. However, it is now being increasingly influenced also by social factors. Health cannot be obtained as genetically determined and unchangeable condition. The genetic basis is only a biological potential that can develop in a positive or a negative way. One of the primary tasks of all human beings is to take care of their health. In contrast to the past, more and more emphasis is being placed on personal responsibility for our own health and health of people in our care (Bendíková 2016).

There is a close connection between physical activity and quality of life, lifestyle and health (Bendíková 2014). Nevertheless, the lifestyle with lack of physical activity has become a major issue, including the lifestyle of children and adolescents.

Physical activity presents the most effective element of the movement routine, including its intentional and organised as well as spontaneous forms. Health, recreational and performance objectives can be accomplished only if the movement routine is optimised according to children's and adolescents' attitudes and interests (Telama – Yang 2000, Labudová – Nemček – Antala 2012, Müller et al. 2013, Fyodorov – Erlikh 2016).

At the beginning of the new millennium, physical fitness and health issues became one of the major problems of our modern society. Human health and prevention of lifestyle diseases are based on a certain degree of fitness of individual body systems (cardiovascular, respiratory, metabolic, endocrine, digestive, renal, nerve, immune), which participate in maintaining homeostasis disruption of which affects the quality and status of our health. Influenceable risk factors (smoking, bad eating habits, insufficient physical activity, excessive alcohol use, psychosocial stress) of chronic non-communicable diseases, which are directly related to lifestyle, have a profound impact on health status of the population. There is a close connection between these risks and overweight, obesity, (diabetes mellitus DM), metabolic syndrome or hypertension. Therefore, these risks must be minimised by means of primary prevention, which is possible only if people are interested in and take care of their health. In this regard, it is necessary to focus on movement routine, which is becoming an essential part of our lifestyle and has a great impact on our health.

Aim

An increasingly comfortable lifestyle leads to occurrence of lifestyle diseases, the number of which is dramatically rising. These diseases are caused by an inappropriate lifestyle. The aim of the research was to determine the current status of selected determinants of the lifestyle of secondary school students with the focus on physical activity and health.

Methods

The research was conducted from January to March 2017 in three towns of the Central Slovak Region: Liptovský Mikuláš, Ružomberok and Žilina. The experimental group consisted of 294 secondary school students, including 145 girls, whose average age was 16.7 ± 1.3 years, and 149 boys, whose average age was 17.1 ± 1.6 years. Table 1 presents the primary characteristics with average values (Table 1).

Table 1 Characteristics of monitored group (n = 294)

Gender/ somatic indicators	Height/(cm)	Weight/(kg)	BMI
Girls (n = 145)	172.6 + 6.6	61.3 ± 6.3	23.11 ± 1.6
Boys (n = 149)	183.9 + 7.9	80.6 ± 8.9	24.26 ± 2.9

Legend: BMI – body mass index

The primary data acquisition method was the standardised questionnaire CINDI, which covered six areas, including physical activity and health. The qualitative and quantitative data that we obtained were processed using the frequency analysis and the chi-squared test (at 1 %, $p < 0.01$ and 5 % $p < 0.05$ significance level) so that we could assess the significance of differences between the answers to individual questions. We analysed and presented the data also by means of tables, using logical analysis and synthesis as well as induction and deduction methods.

Results and discussion

Following the partial aim and assignments, we present the part of our results that require further and more exact monitoring and analysis. The presented results cannot be generalized. They need to be perceived as orientation and source data for organisation of health-oriented physical activity in the lifestyle of adolescents. Physical activity is essential in maintaining our health; however, it must be adequate and regular. That is why we focused our attention on the following aspects.

The total weekly amount of sports and recreational physical activity done by the boys in our experimental group was 3 hours and 36 minutes, while the girls spent only 2 hours and 10 minutes a week doing physical activity. This means the significant difference ($\text{Chi} = 6.999$; $p < 0.01$) and the time difference equal to 1 hour and 26 minutes, which means that the time the girls dedicated to physical activity per week was 86 minutes shorter in comparison to the boys (Table 2). The boys are more active, which is probably connected with the fact that they need to relax and regain their energy in an active way doing sports and recreational activities.

Table 2 Average weekly amount of sports and recreational activity among students (n = 294)

Gender	Weekly amount of sport/recreational activity	difference
Girls (n = 145)	2 hours, 10 minutes	1hour, 26 min.
Boys (n = 149)	3 hours, 36 minutes	

Proportion of physical and sport education class time in relation to the total amount of physical activity done by the girls was only 30 minutes on average, while the boys spent 83 minutes in physical and sport education classes, which is more than two times higher. Both girls and boys spend the remaining time doing extracurricular activities either at school or at leisure time centres, sports clubs or gyms (Table 3). As far as physical and sport education is concerned, the boys prefer sports games, whereas the girls are more interested in dancing and choreography. This means that girls prefer aesthetic forms of exercise accompanied by music that are focused on body culture development. Such exercises include an emotional component – a motive that stimulates movement. On the other hand, boys prefer dynamic physical and sports activities.

Table 3 Proportion of physical and sport education class time in relation to the total amount of PA done by students (n = 294)

Sports activities	gender	time/per week
Physical and sport education	girls (n = 145)	30 min.
	boys (n = 149)	83 min.
Sports activities	girls (n= 145)	79 min.
	boys (n= 149)	159 min.

Legend: PA – physical activity

The amount of physical activity done by the girls within five working days was 109 minutes, including 30 minutes spent in physical and sport education classes. The girls use 79 minutes doing different sports activities. There was a significant difference ($p < 0.01$) between the girls and the boys, who devoted much more time to physical activity. Their amount of physical activity during working days was 173 minutes. The girls spend on average only 27 minutes doing physical activity at weekends, while the boys devote to sports more than twice as much time (69 minutes) ($p < 0.01$) (Table 4).

Table 4 Weekly movement routine of secondary school students in individual days (n = 294)

Total amount of physical activity among girls and boys						
Days/gender	Girls (n = 145)			Boys (n = 149)		
Time	minutes	hours	daily	minutes	hours	daily
Monday - Friday	109	1:49	0:22	173	2:53	24.5
Saturday - Sunday	27	0:27	0:14	69	1:09	10.0
Week Σ	136	2:16	0:19	242	4:02	34.5

As a whole, the amount of sport and physical activity done by the boys (242 minutes) per week was significantly ($p < 0.01$) higher than the amount performed by the girls (136 minutes). The most popular day for doing physical and sport activities among both girls and boys is Wednesday, followed by Thursday, Tuesday, Monday, Friday, Sunday and Saturday. The popular time is between 16.30 and 19.30. We suppose that these findings are connected with the beginning of the week, school timetable and other activities that students do.

The World Health Organisation suggests that a healthy adult aged from 18 to 65 years should spend at least 30 minutes of moderate physical activity at least five days per week. Schoolchildren and adolescents should do physical activity of moderate or higher intensity 60 or more minutes per day. Physical activity is greatly affected also by active transport – walking. It is available to anyone regardless of their age, gender or financial situation. What is more, it has a lot of positive impacts on human health. Therefore, we wanted to find out how students travel to school and back home. Most of the students (44.9%) travel by bus (n = 132), regardless of gender or age. 29.59% of the students (n = 27) walk to school and 31.97% of them walk home after school (n = 94). We can say that both girls and boys from higher age groups walk to school more often than younger students, including 9.18% of the girls who walk to school (n = 27), 9.86% of the girls who walk back home after school, (n = 29), 9.86% (n = 29) of the boys walking to school and 8.84% (n = 26) of them walking back home after school. What is more, 5.1% (n = 15) of younger boys go to school by car and 5.78% (n = 17) go home also by car. Most of younger girls go to school by bus. 5.78% (n = 17) of them prefer going on foot to school and 7.14% (n=21) of younger girls walk home after school. The results in our experimental group were satisfactory (Table 5, 6) as 29.59% (n = 87) of the students, 14.62% (n = 43) of boys and 15.96% (n = 44) of girls, go to school and back home on foot. Travelling or walking to school lasts from 15 to 30 minutes in each group, including both genders and all ages. Reduction of the recommended amount of physical activity is one of the

reasons why health status of children and adolescents is getting worse.

Table 5 Travelling to school (n = 294)

Means of transport	to school/from school			
gender/age and factor	on foot	by train	by bus	by car
Boys (15 – 16 years old)	4.76%	1.70%	15.31%	5.10%
	6.12%	1.36%	13.61%	5.78%
Boys (17 – 18 years old)	9.86%	1.36%	7.48%	5.10%
	8.84%	1.70%	8.16%	5.10%
Girls (15 – 16 years old)	5.78%	2.72%	10.54%	3.06%
	7.14%	2.38%	10.20%	2.38%
Girls (17 – 18 years old)	9.18%	2.04%	11.56%	4.42%
	9.86%	1.70%	12.93%	3.06%

Table 6 Time spent travelling to school (n = 294)

gender/age and factor	Up to 15 minutes	15 – 30 minutes	30 – 60 minutes
Boys (15 – 16 years)	7.48%	10.54%	8.84%
Boys (17 – 18 years old)	6.80%	8.84%	8.16%
Girls (15 – 16 years old)	6.46%	7.82%	7.82%
Girls (17 – 18 years old)	10.20%	11.56%	3.44%

Furthermore, we focused our attention on how much time the students spend watching TV, DVDs, playing computer games, surfing the Internet or playing slot machines. 15.99% of the students (n = 47) do not watch TV or DVD and 47.62% (n = 140) of them do not play PC games, 13.95% (n = 41) of the students do not chat on the Internet and 97.96% (n = 288) of them do not play slot machines. Only two younger boys play slot machines half an hour or an hour per day. One older boy and two older girls admitted playing gaming machines only for a short time, which is 2.04% (n = 6) of all the students. Online chatting is very popular with older students as both girls and boys chat between half an hour and an hour per day, including 12.93% of the girls (n = 38) and 10.54% (n = 31) of the boys. However, online chatting is even more popular with younger students, who spend two or three hours daily chatting on the Internet. There was a significant difference between the two genders (Chi = 7.366; p < 0.01) because 11.9% (n = 35) of the younger boys and 7.14% (n = 21) of the younger girls like online chatting. Watching TV or DVDs is most popular with the 17-year old and 18-year old boys, which means 14.29% (n = 42), who spend from half an hour to an hour daily watching TV/DVDs. This activity is also popular among 15 and 16 years old girls, 9.52% (n = 28) of whom spend 2 to 3 hours daily watching TV or DVDs. Computer games are more popular with the boys than the girls in both age categories (Chi = 6.923; p < 0,01) (Table 7).

Table 7 Amount of time boys and girls (n = 294) spend watching TV, DVDs and on PC

Factor and gender	Boys (15 – 16 years old)			Boys (17 – 18 years old)		
	0.5 – 1 hour	2 – 3 hours	5 hours and more	0.5 – 1 hour	2 – 3 hours	5 hours and more
TV and DVDs	9.18%	8.50%	4.42%	14.29%	5.78%	0.68%
PC games	7.82%	7.82%	3.74%	5.78%	7.48%	2.38%
Online chatting	7.82%	11.90%	3.06%	10.54%	7.14%	2.38%
Slot machines	0.68%	0.00%	0.34%	0.34%	0.00%	0.00%
Factor and gender	Girls (15 – 16 years old)			Girls (17 – 18 years old)		
	0.5–1 hour	2 – 3 hours	5 hours and more	0.5 – 1 hour	2–3 hours	5 hours and more
TV and DVDs	6.12%	9.52%	4.76%	9.52%	8.84%	2.38%
PC games	6.80%	2.38%	0.34%	5.10%	1.70%	1.02%
Online chatting	2.04%	7.14%	9.52%	12.93%	8.50%	3.06%
Slot machines	0.00%	0.00%	0.00%	0.68%	0.00%	0.00%

Another thing we were interested in was how many times our respondents see their doctor per year as the frequency of physician office visits is connected with the health condition of adolescents. An increasing number of these visits implies deterioration of their health. Table 8 presents the number of visits to general practitioners, specialists, dentists as well as the number of hospitalisations.

The results show that how frequently both genders see their general practitioners, dentists and specialists depends on their age (Table 8).

The older students get, the more frequent their visits get. The highest percentage occurred among the 17 and 18 years old boys (21.43%, n = 63) and among 17 and 18 years old girls (19.73%, n = 51) as far as visits to general practitioners are concerned. The number of hospitalisations was approximately the same in all the groups and in both genders. The older boys tend to visit specialists more often than younger boys (13.27%, n = 39). The younger students visit the aforementioned offices and doctors one-third less frequently (Chi = 5.993; p < 0.05).

There was no significant difference between the girls' and the boys' answers regarding hospitalisation (p > 0.05). In terms of visits to general practitioners, however, there was a significant difference between the older boys and the younger girls Chi = 5.839; p < 0.05). What is more, we found a significant difference between older boys and younger girls as far as dental visits are concerned (Chi = 7.311; p < 0.01).

Table 8 Physician office visits in the past year (n = 294)

Gender/age and factor	Hospitalisation	General practitioner	Specialist's office	Dentist's office
Boys (15 – 16 years old)	5.78%	6.80%	5.78%	9.86%
Boys (17 – 18 years old)	3.74%	19.05%	13.27%	21.43%
Girls (15 – 16 years old)	4.42%	11.56%	12.24%	12.59%
Girls (17 – 18 years old)	3.74%	19.73%	11.22%	17.35%

The most common health problems that the respondents have had in the past year are as follows. As far as male students are concerned, 20.8% (n = 61) of them have suffered from tiredness and 20.4% (n = 60) of the boys mentioned also bad mood. Other problems were backache (18%, n = 53) and nervousness (17.7%, n = 52). Only 5.8 % (n = 17) of 149 boys have suffered from asthenia. Furthermore, we found out that the most common health problem among the girls was tiredness as 25.8% (n = 76) of the total 145 girls have suffered from it. Other common problems included a headache mentioned by 23.8% (n=70), nervousness mentioned by 22.1% (n = 65) and bad mood in 15% (n = 62) of the girls. The 17 and 18 years old girls have most suffered from tiredness (13.9%, n = 41), then nervousness (11.6%, n = 34) and bad mood (12.6%, n = 37). As far as 15 and 16 years old girls are concerned, 12.2 % (n = 36) have had a headache and 11.9% (n = 35) have suffered from tiredness. Asthenia was the least common somatic symptom among all the students. The most frequent health problem among the 17 and 18 years old boys was nervousness (11.2% (n = 33) followed by bad mood (10.2%, n = 30), tiredness (9.9%, n = 29), backache (10.5%, n = 31) and stomach ache (7.8%, n = 23). It can be said that most of the health problems increase with age. More girls than boys suffer from health problems (Chi = 6.933; p < 0.01). These problems are related to mental hygiene, which is a part of the lifestyle (Table 9).

Table 9 The most common health problems among students (n = 294)

Gender/age and factor	headache	backache	pain in neck and shoulders	stomach ache	bad mood	nervousness	sleep problems	asthenia	tiredness
Boys (15–16 years old)	6.1%	7.5%	10.9%	10.9%	4.1%	10.2%	5.4%	3.4%	10.9%
Boys (17–18 years old)	8.2%	10.5%	5.8%	7.8%	10.2%	11.2%	9.2%	2.4%	9.9%
Girls (15 – 16 years old)	12.2%	7.1%	4.1%	7.5%	8.5%	10.5%	5.8%	3.4%	11.9%
Girls (17 – 18 years old)	11.6%	10.2%	5.4%	7.5%	12.6%	11.6%	5.8%	4.8%	13.9%

Younger girls (15 and 16 years old) are satisfied with their health conditions as 12.24% (n = 36) of them regard their health status as good, while only 7.82% (n = 23) of the 17 and 18 years old girls find their health condition good. As far as younger girls are concerned, 3.40% (n = 10) of them find their health condition quite good and none of them thinks it is bad. On the other hand, 10.20% (n = 30) of the older girls regard their health status as quite good and 0.34% (n = 1) of them find it even bad. The boys from our experimental group are content with their health status, especially the older boys, 11.22% (n = 33) of whom consider it to be good. The younger boys mostly think their health condition is quite good (12.59%, n = 37). Similar to the girls, the boys found their health condition bad least frequently (only 0.34% of the 15 and 16 years old boys, n = 1, and 0.68% of the 17 and 18 years old boys, n = 2).

Table 10 Assessment of students' health status (n = 294)

gender/age and factor	good	quite good	average	rather bad	bad
Boys (15 – 16 years old)	5.44%	12.59%	6.46%	2.04%	0.34%
Boys (17 – 18 years old)	11.22%	8.84%	2.38%	0.68%	0.68%
Girls (15 – 16 years old)	12.24%	3.40%	5.78%	0.68%	0.00%
Girls (17 – 18 years old)	7.82%	10.20%	5.78%	3.06%	0.34%

We can say that life satisfaction among adolescents is affected by the specific features of this phase of human development, including changes in thinking as well as emotional and physical development. We also believe that the higher quality of life among boys might be connected with the fact that they experience negative feelings less frequently and are able to control their emotions better than girls. What is more, boys are less focused on human relationships than girls. The girls may be less satisfied also because they do less physical activity and they are bored more often.

Conclusion

Physical activity focused on improvement of health and physical condition of secondary school students is not sufficiently applied. The situation is worse with the girls, with a significant difference ($p < 0.01$). The girls do less physical activity than the boys both within and outside of school time. We found out that more and more students use motorised transport to get to and from school. Computer games are played significantly more by the boys in both age categories ($p < 0.01$). Physician office visits among younger age groups were approximately one-third less frequent ($p < 0.05$) than among older age groups. Somatic problems occur more frequently in girls than boys ($p < 0.01$).

Sports and recreational activities, which belong to important social phenomena, play an important role in prevention and stabilisation of health (Bánhidi-Hamilton-Dobay 2005, Bánhidi-Dobay-Szalóki 2006, Dobay 2007, Edginton-Chen 2009, Uvinha 2010, Cardon et al. 2012, Bácsné Bába 2015a, 2015b). Children and adolescents should be engaged in these activities in their free time for several objective and subjective reasons regarding social development and their health (Bendíková-Pavlović 2013), including sport and physical education (Szököl 2015, 2016, Rozim-Marko 2015; Ghyppo-Tkachov-Orlenko 2016, Madarász-Bácsné Bába 2016, Müller et al. 2016, Nagy-Müller 2016).

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