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The Internet addiction among students of primary schools and lower and upper secondary schools and its relation to their level of physical activity

Katarzyna Zuń¹, Magdalena Zych¹, Marcin Stanisław Rząca³, Katarzyna Kocka⁴

¹Students scientific association, Chair of Oncology and Environmental Health, Medical University of Lublin, Poland

¹Studenckie Koło Naukowe, Katedra Onkologii i Środowiskowej Opieki Zdrowotnej, Uniwersytet Medyczny w Lublinie, Poland

²Department of Oncology, Chair of Oncology and Environmental Health, Medical University of Lublin, Poland

²Zakład Onkologii, Katedra Onkologii i Środowiskowej Opieki Zdrowotnej, Uniwersytet Medyczny w Lublinie, Poland

³Department of Family Medicine and Community Nursing, Chair of Oncology and Environmental Health, Medical University of Lublin, Poland

³Zakład Medycyny Rodzinnej i Pielęgniarstwa Środowiskowego, Katedra Onkologii i Środowiskowej Opieki Zdrowotnej, Uniwersytet Medyczny w Lublinie, Poland

Abstract

Introduction: Physical activity is an important part of a healthy lifestyle, which significantly affects the development of children and youth. Unfortunately, students take less and less physical activity devoting much more time to surfing the Internet.

Aim: Determining the relationship between the degree of the Internet addiction and the level of physical activity of primary school students and lower and upper secondary school students.

Material and methods: The study covered 463 students in the fifth and sixth grades of primary schools and the second and third classes of lower and upper secondary schools. The research was carried out from February 2017 to April 2017 in schools in Lublin, Radom and nearby villages. The applied research method was a diagnostic survey, and tools: the Internet addiction test, Dr. Kimberly Young and the authors' self-designed survey containing questions about physical activity.

Results: Dr. Young test pointed out the addiction in 53 out of 463 tested pupils (11.4%). The dependence concerned 12 primary school students (7.9%), 26 lower secondary school students (16.0%) and 15 upper secondary school students (10.0%). In contrast, the risk of addiction occurred in 33 (7.1%) students. Moderate physical activity during the last week for a minimum of 10 minutes 88.8% of respondents declared.

Conclusions:

1. Internet addiction affects the level of physical activity.
2. The least time for physical activity have those diagnosed with addiction.
3. It is advisable to undertake educational and activative actions on the forms of leisure time for pupils at all stages of education.

Key words: students, school, the Internet addiction, physical activity

Introduction

Physical activity is an important part of a healthy lifestyle, significantly affects the development of somatic, emotional and psycho-social children and adolescents. A regular effort should be adjusted to the individual needs and abilities of the individual, which allows for proper development, maturation and helps maintaining good health in later life [6,12,18].

There are different types of physical activity. Among them are daily activities and planned activities. Daily (spontaneous) physical activity is connected with the day-to-day activities that we perform automatically. These are e.g. walking, sitting, talking and hygienic duties. Planned activity is related with the performance of specific exercises that are designed to increase efficiency of the organism. It can be: swimming, cycling, dancing, and team games. Regularity, frequency, intensity, type and duration of exercise are important in this type of activities [4,6].

Due to the significant influence of physical activity on optimal functioning of the organism, lack of willingness to take up any of physical activity by young people is worrying. Students not only avoid participating in additional sports activities, but are also less likely to practice on PE classes [6].

One of the reasons for this phenomenon is the continuous development of new technologies that allowed access to mobile devices and computer thus offering unlimited access to the Internet [15]. Net holism may cause behavioral disorders of young people manifested by neglect of learning, the loss of contact with relatives, as well as sedentary lifestyle. Young people more and more often choose static type of rest in front of a computer screen. This contributes to a significant reduction in outdoor time among peers and the maintenance of interpersonal relationships in the virtual world. All of these components negatively affect the bio-psycho-social state of the teenagers [12,18]. Conducting a sedentary lifestyle affects the development of postural defects and civilization diseases, which include: obesity, cardiovascular diseases, stroke, type 2 diabetes, and hypertension. There is also an evidence that the lack of physical activity may be associated with the risk of cancer [21].

These unfavourable changes which take place in Polish society, especially among children and young people, generate the need to undertake actions that promote an active lifestyle. It is important to involve parents in shaping their school environment and mass media. The knowledge gained by young people will improve overall health and quality of life [18,21].

Purpose of research

The aim of the study was to determine the relation between the degree of the Internet addiction and the level of physical activity of students in primary and secondary schools.

Materials and research methods

The study covered 463 students in grades fifth and sixth primary, second and third classes of lower and upper secondary schools. The surveys were carried out using two tools: the authors' self-designed questionnaire composed of 10 specific questions, an examination of the physical activity level of the students and a questionnaire the Internet Addiction Test Young. In the authors' self designed questions of the questionnaire semi - open cafeterias were used allowing the respondents to provide their own response, which was not specified in the proposed variants. Some questions could be answered more than one answer. The authors' self-designed questionnaire included questions concerning the socio-demographic characteristics of the respondents, time devoted to additional sports activities and daily physical activity of varying intensity and the factors influencing behavior associated with it. The survey was anonymous, and participation in the study was voluntary.

The diagnostic survey was approved by the Bioethics Committee of the Medical University of Lublin (number KE-0254/104/2017) and the written consent of the headmasters of research institutions.

STATISTICA 12 PL was used for statistical analysis. The results are presented as percentages and cardinality. Interrelation between the groups is determined by the compatibility test Pearson Chi square, accepted at $p < 0.05$.

Results

Among the respondents was 151 (32.6%) primary school students, 162 (35%) of lower secondary school students and 150 (32.4%) of upper secondary school students. Most were girls / women 60.5% ($n = 280$), there were fewer boys / men 39.5% ($n = 183$). A large majority of 68.3% ($n = 316$) of students living in the city, 31.7% ($n = 147$) came from the countryside.

The Internet Addiction Test Young pointed to the occurrence of addiction in 53 out of 463 surveyed students (11.4%). The Internet addiction occurred in 12 (7.9%) primary school students,

26 (16%) lower secondary schools and in 15 (10%) of upper secondary schools. The risk of addiction occurred in 33 (7.1%) students.

The education level of the subjects was not significant with addiction to the Internet and addiction risk ($p = 0.110$). Most respondents (40.6%) stated that they spent 2-3 hours a day on the Internet. Significantly more time (6 or more hours per day) on the use of the Internet spend addicted people (52.8%) while the lowest are non-dependents (10.3%) ($p < 0.001$).

In the study group rated children's behavior in the context of physical activity and the degree of the Internet addiction.

The majority of respondents (83.3%) declared that in the past week they had been exercising for at least 10 minutes. Of this 85.1% were non-Internet users, 79.2% were addicts, and the smallest part of the respondents (75.8%) were people at risk of addiction. This relationship was not statistically significant ($p = 0.236$). (Tab. 1).

Table 1. Exercising 10 minutes of intense physical effort by the students during the week taking into account the occurrence of Internet addiction.

	Together		Level of addiction					
			Addiction		Risk of addiction		No addiction	
	N	%	N	%	N	%	N	%
Yes	388	83.8	42	79.2	25	75.8	321	85.1
No	75	16.2	11	20.8	8	24.2	56	14.9
Altogether	463	100	53	11.5	33	7.1	377	81.4
Statistics (Chi ²), "p"	-		p = 0.24					

88.8% of respondents declared to exercise moderate physical activity during the last week for at least 10 minutes. Of these, 90.2% were not Internet addicts, 83.0% were addicts, and 81.8% were at risk of addiction. ($p = 0.128$) (Tab. 2).

Table 2. Exercising 10 minutes of moderate exercise by the students during the week taking into account the occurrence of Internet addiction.

	Together		Level of addiction					
			Addiction		Risk of addiction		No addiction	
	N	%	N	%	N	%	N	%
Yes	411	88.8	44	83	27	81.8	340	90.2
No	52	11.2	9	17	6	18.2	37	9.8
Altogether	463	100	53	11.5	33	7.1	377	81.4
Statistics (Chi ^ 2), "p"	-		p = 0.13					

The majority of respondents (43.6%) declared that they devote from 11 to 30 minutes for physical activity in the form of walking or marching a day . 22.2% devote for this activity 31-60 min., 19.0% - over an hour - 15.1% - up to 10 min. The less time students devote to this type of physical activity, the more often they were addicted to the Internet, the statistically insignificant ($p = 0.103$).

Attitude towards physical activity can be expressed by willingness to participate in physical education (PE). Significantly more non-Internet people (66.6%) declared that they like practicing in physical education classes, fewer because (50.9%) addicts declared that they actively take part in PE, and at the risk of addiction (48.5%). Declaration of reluctant participation in physical education classes was more often made by people who were dependent (15.1%) than non-dependent 6.1%. Those with a risk of addiction did not respond and its statistically significant correlation ($p < 0.001$). (Tab. 3).

Table 3. The ratio of all students leaving physical education classes in general and taking into account the occurrence of Internet addiction.

	Together		Level of addiction					
			Addiction		Risk of addiction		No addiction	
	N	%	N	%	N	%	N	%
I like to practice on PE lessons	294	63.5	27	50.9	16	48.5	251	66.6
PE is indifferent to me	80	17.3	6	11.3	10	30.3	64	17.0
I do not like to practice	31	6.7	8	15.1	0	0.0	23	6.1
I exercise almost on every classes	58	12.5	12	22.6	7	21.2	39	10.3
Altogether	463	100	53	100	33	100	377	100
Statistics (Chi ^ 2), "p"	-		p < 0.001					

The frequency of dropping PE classes by students shows their attitude towards physical activity. A significant proportion of respondents (67.0%) declared that they practiced on almost every PE class. Of this 70.6% were non internet dependant students, 54.7% were addicts and 45.5% - with the risk of addiction. This relationship is statistically significant, $p < 0.01$. (Tab. 2).

Table 4. Frequency of leaving PE classes by the students in general and with regard to the occurrence of Internet addiction.

	Together		Level of addiction					
			Addiction		Risk of addiction		No addiction	
	N	%	N	%	N	%	N	%
In general I do not practice for physical education classes	31	6.7	2	3.8	4	12.1	25	6.6
I leave a couple of times a month	61	13.2	12	22.6	6	18.2	43	11.4
I leave once a month	61	13.2	10	18.9	8	24.2	43	11.4
I exercise almost on every class	310	67.0	29	54.7	15	45.5	266	70.6
Altogether	463	100	53	100	33	100	377	100
Statistics (Chi ^ 2), "p"	-		$p < 0.01$					

The lack of time (57.2%), lack of interest in sport (33.1%), lack of accompanying persons (28.3%) and unwillingness to exercise (22.8%) were the main reasons for lack of additional physical activity.

There was no significant correlation between the average amount of time during the day spent on physical activity beyond PE classes and the degree of addiction to the Internet, $p = 0.166$. (Tab. 3).

Table 5. The average amount of time per day spent on physical activity beyond PE classes for pupils in general and with regard to the Internet addiction.

	Together		Level of addiction					
			Addiction		Risk of addiction		No addiction	
	N	%	N	%	N	%	N	%
To 20 minutes	130	31.1	18	35.5	13	48.1	99	29.1
21 - 40 minutes	101	24.2	13	25.5	7	25.9	81	23.8
41 - 60 minutes	58	13.9	10	19.6	3	11.1	45	13.2
1 - 2 hours	81	19.4	5	9.8	4	14.8	72	21.2
More han 2 hours	48	11.5	5	9.8	0	0.0	43	12.6
Altogether	418	100	51	100	27	100	340	100
Statistics (Chi ^ 2), "p"	-		$p = 0.166$					

In the case of the frequency of exercising during the last week in leisure time, it was observed that students addicted to the Internet more frequently (30.2%) declared no physical activity than non addicts (19.4%). Among the respondents of additional regular practice of physical exercise (4-6 times per week) versus non-dominated individuals - 20.7% ($p = 0.138$).

Most addicted students use the Internet to listen to music and watch movies (86.8%), communicate with peers using social networking sites (81.1%) and online chats (64.2%). In addition, 40.1% addicts use it to make purchases over the Internet. These activities may affect the limitation of physical activity of the respondents since they involve the sedentary lifestyle.

Discussion

Today the Internet is an integral part of the daily life of the majority of population. It is hard to imagine a world without the Internet and the possibility to use it for finding information, communication and entertainment [5,8,15,23]. Unfortunately, it is becoming more and more popular for a young generation to replace active leisure activities with sedentary activities, including a great amount of time devoted to the network [17,18].

In published studies, it is noted that the amount of time spent on the web increases. It can be also seen that as a result of this phenomenon we have to deal with the ever-growing percentage of people addicted to the Internet [3].

In our own study it was found that 11.4% of the students were addicted to the Internet, and 7.1% had a risk of addiction. Most often young people devote 2-3 hours a day surfing the net. It was observed that significantly more than half of the addicts were more likely to spend 6 or more hours often on the Internet than non addicts. Opielak and partners found that people spending 4-6 hours in a day may be at risk of the Internet addiction, and at 7 hours they are already networkhols. According to so-defined criteria, high school students were found to have 82% risk of developing addiction (they spent in the network up to four hours per day) and 13% of them showed a high potential for addiction (5-8 hours in a day) [11]. Other data provided by Kirwil indicated that over the past year in Poland from 18% to 38% of teenagers from 11 to 16 years noticed at home symptoms of the Internet addiction. 9% reported all symptoms in the questionnaire, while 41% did not notice any disturbing signs of network related illness [9].

In our own studies, there was no statistically significant relationship between the intensity of physical activity undertaken outside school and the Internet addiction.

According to Białokoz-Kalinowska and partners spending more than 20 hours per week on the Internet is associated with a number of consequences including: reduction of time spent on exercise, physical and mental tiredness, which greatly affects the willingness to take physical activity. Even among younger and younger age groups, there is the phenomenon of limiting active leisure activities for sedentary activities [1]. According to Ćwirlej and co-authors reports, only 33.7% of 10-year-old children are physically active for an hour per day [2].

In our study we demonstrated that the majority of respondents take both intense and moderate physical activity. According to reports of the Central Statistical Office in Krakow, young people are more likely to perform activities requiring moderate physical activity (66.9%) than the intensive one (33.9%) [19]. Research conducted by the Institute of Mother and Child indicate that Polish students show a deviation from the recommendations regarding physical activity. Only one in ten satisfies the assumptions of intense and moderate physical activity. It is also noted that with age, the level of physical activity among young people decreases [6]. The most common form of movement of young people is walking. Declaration of making this kind of activity has made 81.2%. Its duration was more than one hour [19]. In our survey, the majority of the respondents spent 11-30 minutes a day.

The comparison of the willingness to participate in physical education classes and the degree of the Internet addiction with the data of other authors is difficult because of the use of different methods of data collection and the lack of connection between netoholism and active participation in PE classes.

The studies found that the non-Internet users often declared that they like to practice physical education classes than addicts and those at risk of addiction. The research carried out by the employees of the Branch Teacher Training Center in Olecko in primary and lower secondary schools of Olecko shows that their students like to practice on PE classes. Accordingly 87% of primary school pupils and 72% of junior high school students [14]. According to data presented by the Mother and Child Institute, only 2/3 of the students showed willingness to participate in PE lessons. Physical education classes are often the basic form of activity undertaken by the students. Positive perception of these lessons is associated with greater involvement in physical activity in their free time, which in turn will keep it at the appropriate level in the subsequent

stages of life [6,16]. In addition, it is disturbing that in Poland with age and subsequent stages of education, the number of people actively involved in these activities reduces, which is a significant problem [6].

Physical education is for the vast majority of students the basic form of planned physical activity [6]. In a study conducted among students, it was shown that a significant proportion of people who exercise on PE classes are non-Internet users. However, a large percentage of respondents were also students who did not practice at all or leave PE classes a few times a month. In this group, people with the current addiction or risk of it occur. Based on the analyzes conducted by the Institute of Mother and Child [6], employees of the Branch Teacher Training Center in Olecko [14] and B. Woynarowską [22] it can be observed that more and more children and youth resigns from participation in physical education classes. According Woynarowska only 73.8% of the students participated in all PE classes [22], while Wojtyła - Bucior stated that 89% of high school students practice in physical education classes [21]. Based on studies by other authors, the relationship between the degree of the Internet addiction and absenteeism in physical education classes can not be determined. However, it is noticeable that more and more students leave the planned lessons or do not exercise, and only half of the students practice in almost every class [4].

Own studies as well as analysis of the Mother and Child Institute, show that lack of additional activity students often justify lack of time, lack of space and appropriate conditions for taking up activities or lack of companionship [6,16].

In our own studies, there were no significant correlation between the degree of dependence on the Internet and the average amount of time during the day spent on physical activity. According to some authors, it is not possible to clearly describe the relationship between time spent in front of your computer screen and physical activity, as part of the youth replaces additional activity with the Internet, but there are also students who are able to combine these both forms of leisure time [2,6,7]. The results of our own research confirm the analysis of other authors. According to A. Ćwirlej and co-authors, only 33.7% ten-year-olds are physically active for about an hour a day, 4-5 times a week, the overwhelming part of them regularly use a computer [2]. According to internal research among students of primary and secondary schools, more than half perform additional activities from 20 to 40 minutes a day.

Unfortunately, studies by other authors have shown that students are increasingly choosing passive forms of relaxation for example: watching television, playing computer games or using the Internet [10,17,20].

In the study of other authors, there is no relationship between the Internet addiction and the level of physical activity among students. On the basis of this, it can be only concluded that a significant percentage of young people do not take the extra physical activity or take it rarely and for a short time [4,14,20,21]. Wojtyła - Buciora points out that only 22% of the high school students take additional physical activity [21]. In our study, the most frequent and the longest additional physical activity is taken by non-Internet users. Among the addicted students, 30.2% declare no additional physical activity.

Respondents declared that they most often use the Internet to listen to music, watch movies or communicate with peers. In addition, 40.1% of students use the Internet for shopping, which can significantly reduce their primary physical activity. The results of research conducted by Białokoz-Kalinowska and co-authors and the Higher School of Social Sciences in Warsaw indicate that students have used the Internet for the same purposes according to many other authors, further adding to the list playing online games and the desire to obtain information [1,13,15] . According to research by Sz. Juza higher level of addiction is shown by students who use the Internet for communication than those who watch documentaries or seek information [8].

The preferred form of leisure activities in front of the computer screen is associated with the reduction of time devoted to physical activity [14]. From an early age children shape their lifestyle, which affects their future adult life and future health, so it is very important to develop in youth the need for physical activity, which prevents many diseases of adulthood [2].

Conclusions

1. The Internet addiction affects the level of physical activity among students of primary and lower and upper secondary schools.
2. People with the Internet addiction are the least likely to participate in physical activities.
3. It is advisable to undertake educational and activating actions in the field of leisure activities for students at all stages of education.

Literature:

1. Białokoz-Kalinowska I, Klerus K, Nawrocka B, Piotrowska- Jastrzębska J D. Internet Addiction (netoholism) among high school students - health consequences and psychosocial. *Pediatrics and Family Medicine*. 2011; 7 (4): 372-377.
2. Ćwirlej A, Walicka-Cupryś K, Gregorowicz-Ceślik H. Physical activity 10-year-old children during leisure time. *Overview of the Medical University of.* , 2005; 3: 262-266.
3. Dubois-Wiśniewska MA, Bażydło M, Kotwas A. Evaluation of the factors influencing the occurrence of Internet addiction. *Medical & HealthSciencesReview*, 2017; 3 (1): 22-27.
4. Grzegorzczak J, Mazur E, Domka E. Evaluation of physical activity of two selected junior high schools Podkarpaciu. *Overview of the Medical University of*. 2008; 3: 226-234.
5. Gursztyn J. NASK Internet in the lives of young people - an outline of selected threats., The Education Development Center,
https://www.ore.edu.pl/attachments/article/6244/Internet%20w%20zyciu%20mlodych%20ludzi_J.Gursztyn.pdf(Access: 2017.08.01)
6. Mother and Child Institute: Physical activity of school students aged 9-17 years. Current indicators, trends of their changes and selected external and internal conditions. Final Report Vol. I: Quantitative research., Warsaw, 2013, https://s3-eu-west-1.amazonaws.com/fs.siteor.com/msport/files/badania%20i%20analizy/dzieci/aktywnosc_9-17_ilosciowy.pdf?1438846009 (Access: 2017.08.01)
7. Jodkowska M, Tabak I, Oblacińska A, Stalmach M. Sedentary lifestyle Polish 13-year-olds and its connection with selected health behaviors, practices and parental body mass. *Developmental Medicine Period*. 2013; 17 (2): 165-173.
8. JuzaSz, Kloc T. Entangled in the network. Patterns of Internet activity in the context of Internet addiction and social maladjustment of children and youth. *Psychological innovations*. 2012; 1 (1): 9-27.
9. Kirwil L. (2011). Polish children on the Internet. Risks and safety - Part 2. Partial research report EU Kids Online II trials among children aged 9-16 years and their parents. Warsaw: Social Psychology - EU Kids Online - EN.

10. Nałęcz H. Physical activity adviser. In: Mazur J, (ed.). Health and health behavior of children and youth in Poland compared to selected sociodemographic conditions, results of the HBSC Research 2014; 119 - 125.
11. Opielak G, Nadulska A, Piotrkowicz J, Szeszko Ł. The computer and the Internet in the lives of students. *Human and Health*. 2013; 4 (7): 3 - 7.
12. Ponczek D, Olszowy I. Youth lifestyle and its impact on health. *Problems Higieny i Epidemiology*. 2012; 93 (2): 60-268.
13. The problem of addiction among children and adolescents - the scale of the phenomenon in Podlaskie. Regional Social Policy Center in Białystok Social Inclusion Observatory, Białystok, 2011.http://www.rops-bialystok.pl/wwwois/wp-content/uploads/2013/03/4.-RAPORT_Uzaleznienia-22.08.2011.pdf (Access: 2017.08.01)
14. The audit report prepared by the staff of the Branch Teacher Training Center in Olecko conducted in public primary schools and junior high schools in the commune Olecko. Physical education in the opinion of students and their parents. December 2013.
15. Ombudsman for Children. NASK. Teens to the Internet. PEDAGOGICUM. College of Social Sciences; 2014.
16. Skibińska K. Physical activity of high school students. *Physical Culture*. , 2002; ½: 23-24.
17. Stupnicki R, Kulma A, Zygmunt D, Baśkiewicz A. Evaluation of physical activity junior high school students using a questionnaire IPAQ. *Scientific Papers WSKFiT*. 2014; 9: 69-74.
18. Świdorska-Kopacz J, Marcinkowski JT, Jankowska K. Health behavior of junior high school students and the selected conditions. Vol. V. Physical activity. Health problems and Epidemiology. 2008; 89 (2): 246 - 250.
19. Statistical Office in Krakow. Health of children and youth in Poland in 2009. Cracow; , 2011.http://stat.gov.pl/cps/rde/xbcr/gus/zo_zdrowie_dzieci_mlodziemy_w_polsce_2009.pdf (Accessed 2017.08.01).
20. Witana K, Szpak A. Socio-economic physical activity school students in Białystok. *Problems of Hygiene and Epidemiology*, 2009; 90 (1), pp. 42-46.
21. Wojtyła Buciora P, Marcinkowski JT. Physical activity in the opinion of high school students and their parents. *Problems of Hygiene and Epidemiology*. 2010; 91 (4): 644-649.

22. Woynarowska B, Mazur J, Oblacińska A. Participation of students in physical education classes in schools in Poland. *Hygeia Public Health*. 2015, 50 (1): 183-190.
23. Wójcik Sz. Using the Internet for Polish youth - study using grounded theory. The results of the study EU NET ADB. *Abused Child. Theory, research, practice*. 2013; 12 (1): 13-33.