

Physical activity and sense of security in schoolchildren during the Covid-19 lockdown period

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Abstract.

The aim of the present study was to observe the relationship between limitations of the opportunities for engaging in selected forms of physical activity during the COVID-19 lockdown period and the sense of personal security of the study participants. Material: A total of 598 students aged fifteen, sixteen, and seventeen participated in the study. A physical activity questionnaire and the Security Experience Questionnaire were used to determine the relationship between variables. The adopted hypotheses were verified using basic descriptive statistics, one-way ANOVA, and Tukey's post hoc test, and the results are presented in tabular form. Results: In the variable of the sense of personal security of the study groups, a moderate level among fifteen and sixteen-year-old students and a moderately low level among seventeen-year-old students were found. During the COVID-19 lockdown period, fifteen-, sixteen-, and seventeen-year-old students felt the most the inability to go to the gym, attend traditional physical education classes, swimming classes, and at the same time did not feel uncomfortable with the lack of school sports club classes. Adolescent perceptions of psychological discomfort, manifested, among other things, by a moderate sense of personal security, were therefore influenced by the second wave of the COVID-19 pandemic, which contributed to the closure of schools and facilities designed for physical activity as a result of lockdown. This is because the students lost their natural opportunity to relieve tension and develop physical culture, which is so important in adolescence. Conclusions: Based on the research, it can be concluded that with the limitations caused by the COVID-19 lockdown, it becomes necessary for adolescents to intensify their physical activity at home. In particular, it would be advisable to set up joint training groups on the Internet, which, with the provision of professional coaching, can encourage regular physical exercise and increase motivation for engaging in sports.

Key words: physical activity, personal security, schoolchildren, COVID-19

Introduction

Physical activity is one of the most important factors influencing not only the proper physical and mental development of young people, but also their health status and quality of life. Physical activity includes all types of muscular activity that significantly increase energy expenditure. It represents a physically regular and organized subset of physical activities performed for a specific purpose (Shephard, 2003). Engaging in physical activity may therefore include a variety of activities involving movements caused by skeletal muscles, resulting in an energy expenditure that is higher than at rest. These activities include activities associated with performing a specific exercise, e.g. lifting, swimming, walking, running, and cycling (Ward, Saunders, Pate, 2007). Physical activity can therefore include activities that aim to improve fitness, health, mental well-being, and social interaction (Armstrong, Bauman, Davies, 2000). As a result of the activity, endorphins are released, resulting in a feeling of relaxation and well-being (Muhsen, Muhsen, 2020). In addition, physical activity increases self-confidence and facilitates internal self-control. Researchers on this topic also indicate that physical activity may

not only be effective in alleviating psychological well-being but may also prevent symptoms of mental health disorders such as depression and anxiety (Scully, Kremer, Meade, & Dudgeon, 1998; Fox, 1999; Cooney, Dwan, Greig, & Mead, 2013). Regular physical activity can increase self-esteem (Biddle, Asare, 2011), improve cognitive performance, and reduce symptoms associated with attention deficit disorders (Wooley, Pattacini, Somerset-Ward, 2009). People who engage in physical exercise benefit not only from improved physical health status, but also from better memory, mood, sleep, and overall mental health. Therefore, physical activity has a great potential to provide physical and mental health to an individual (Liddle, Deane, Vella, 2017; Al-Qahtani, Shaikh, 2018).

It is important that physical activity should be a regular part of a pupil's daily life, from walking or cycling to school, activating games and playing during school breaks, to physical education classes at school (Solving the problem of childhood obesity within a generation, 2010). It should be noted, however, that recently the opportunities for schoolchildren to engage in physical activity have been greatly reduced by the worldwide spread of the coronavirus (SARS-CoV-2) causing the disease known as COVID 19 (Marcel, Christian, Richard, & Low, 2020). For the time of a pandemic, patterns of behavior that regulate ways of doing things are often changed due to institutional restrictions. They are adapted to circumstances requiring special care (Bar-Tal, 2000; Braithwaite, 2009). The introduced restrictions (stressful duties, orders, and bans, burdensome psychological stimuli), especially in lockdown situations, cause changes not only in the quality and frequency of interpersonal communication but also limit human physical activity (Fox, 1999; Hagell, 2016). This situation also applies to schools in which classes, including physical education classes, have been defined by strict procedures limiting direct contact and are conducted mainly online (Hellewell, Abbott, Gimma, & Edmunds, 2020; Korol, Hrypach, Osinchuk, 2021). There is not only a limited possibility to conduct physical education classes in groups but also to use gyms and swimming pools (Guo, Cao, Hong, 2020; Hellewell, Abbott, Gimma, & Edmunds, 2020). Therefore, the introduction of lockdown has not only changed the quality and frequency of interpersonal contacts but also the physical activity of students. Such a situation may have an effect on lowering the level of the sense of security and psychological discomfort of schoolchildren. Classes in schools are conducted online. Physical education, which, due to its specificity, is a subject particularly limited by remote teaching, has been also affected by the restrictions. Opportunities to engage in extracurricular physical activity were also limited (Burke, Midgley, Dratch, & Holshue, 2020; Chan, Yuan, Kok, 2020; Korol, Hrypach, Osinchuk, 2021). Such a situation may have an impact on lowering the level of students' sense of personal security and making them feel psychological discomfort (World Health Organisation, 2020). A. H. Maslow (2006) identified the sense of personal security of an individual in the group of basic needs determining the accomplishment of higher needs, at the top of which is the need for self-actualization. Furthermore, Maslow indicated a group of needs that can generally be classified as safety needs. This includes the need for stability, independence, care, structure, order, law, freedom from fear, anxiety, chaos, and limitations, support of a caregiver, etc.

Safety and security, viewed from the perspective of the individual, are therefore one of the most important needs of every human being (Braithwaite, 2009; Schwartz, 2012). The importance of personal security was also pointed out by G. Evans, J. Newnham (1998), who take the position that security is a term that simply means the absence of threats to the individual's core values. Safety and security are one of the most important categories to describe the context of life and how human beings function (Bar-Tal, Jacobson, 1998; Schwartz, 2012). Hence, they appear in many different scientific fields concerning human life. However, the problem of security does not exist in isolation from the individual's perception and personal experience (Bar-Tal, 2000). In the case of a lack of security, there may also be psychological discomfort, which in the literature is often referred to as psychological pain, originating from a broad set of causes accompanied by significantly intensified unpleasant emotions. E. Shneidman (2005) defines this phenomenon as a state of mental suffering accompanied by feelings of shame, humiliation, despair, loneliness, and fear. It is therefore important in the case of school children to investigate the relationship that may exist between limitations during the COVID-19 lockdown period and a sense of security and discomfort due to the inability to engage in selected forms of physical activity.

The following research hypotheses have been formulated:

1. There are no significant differences in the intensity of the sense of security in different age groups of adolescents surveyed during the COVID-19 lockdown period.
2. There are no significant differences in the degree of psychological discomfort experienced by different age groups of adolescents studied due to the inability to engage in physical activity in the form of swimming during the COVID-19 lockdown period.
3. There is little difference in the degree of perceived psychological discomfort in different age groups of adolescents studied due to the inability to engage in physical activity in the form of physical education classes during the COVID-19 lockdown period.
4. The degree of perceived psychological discomfort due to the inability to engage in physical activity in the form of fitness exercises at the gym is similar during the COVID-19 lockdown period for different age groups of adolescents studied.

5. The degree of perceived psychological discomfort in the case of particular age groups of adolescents studied, due to the inability to engage in physical activity within the activities of the school sports club (SKS) during the COVID-19 lockdown period shows similar intensity.

The purpose of this study was to observe the relationships between limitations of physical activity during the COVID-19 lockdown period and school children's sense of personal security and psychological discomfort.

Materials and methods

Participants. A total of 598 students aged between 15 and 17 were invited to participate in the study. Respondents were divided into the following age groups: (A) - students aged 15 years; (B) - students aged 16 years; (C) - students aged 17 years. The examinations were conducted in the period from 5 November to 18 December 2020. Participation in the study was voluntary and the participants were informed about the purpose of the study.

Procedure. The study used a physical activity inventory and Security Experience Questionnaire (KDB) (Klamut, 2015), which represents a self-reporting tool to determine the sense of security. High scores indicate a state of feeling secure, while low scores indicate a lack of satisfying living conditions and a sense of threat, both of which are related to the belief that one is not safe.

Statistical analysis. Statistical processing of the data was carried out on a computer using the standard STATISTICA 7.0 programs. A physical activity questionnaire and the KDB were used to determine the relationship between variables. The adopted hypotheses were verified using basic descriptive statistics, one-way ANOVA, and Tukey's post hoc test, and the results are presented in tabular form. The 0.05, 0.01, and 0.001 levels of probability were used to indicate statistical significance.

Results

The adopted hypotheses were verified using basic descriptive statistics, one-way ANOVA, and Tukey's post hoc test, and the results are presented in tables. Keeping in mind the descriptive statistics in Table 1, it can be noted that during the second wave of the COVID-19 pandemic, the adolescents

Table 1. Sense of personal security in adolescents during the second wave of the COVID-19 pandemic

Study group	N	Min	Max	M	Me	SD	Skewness	Kurtosis
(A)*	244	1.00	5.00	3.93	4	0.78	- 1.012	1.898
(B)**	179	1.00	5.00	3.74	4	0.88	- 0.856	0.948
(C)***	175	1.00	5.00	3.57	4	1.01	- 0.623	- 0.137

Note: *students aged 15 years; KS (D) = 0.338; $p < 0.000$; non-normal distribution; **students aged 16 years; KS (D) = 0.310; $p < 0.000$; non-normal distribution; ***students aged 17 years; KS (D) = 0.274; $p < 0.000$; non-normal distribution

Surveyed showed only a moderate sense of security in the case of students aged 15 and 16, and moderately low among students aged 17. Furthermore, the result of the 17-year old students in terms of SD = 1.01 may be worrying. This means that among the students described, there are some individuals who reported a sense of security well below the moderate degree. Also, the negative skewness suggests that most of the respondents did not achieve the average score. The data show that for adolescents, the period of the COVID-19 pandemic is a time that disturbs their sense of security.

One-way ANOVA analysis of variance (Table 2) showed that the age of the respondents determines their sense of security significantly. After the application of Tukey's post-test (Table 3), it was

Table 2. Results of the analysis of variance for the variable of the sense of security among the adolescents surveyed

Source	SS	df	MS	F test
Between-group	11.63	2	5.81	7.34
Within-group	471.58	595	0.72	
Total	483.22	597		

Note: $p = 0.0007$

Table 3. Tukey's post hoc test

Pair of groups	Tukey HSD Q statistics	p values for Tukey HSD Q	Significance level
(A) vs (B)	2.668	0.143	insignificant
(A) vs (C)	5.400	0.001	** $p < 0.01$
(B) vs (C)	2.562	0.166	insignificant

Note: *(A) - students aged 15 years; (B) - students aged 16 years; (C) - students aged 17 years

found that significant differences existed between students aged fifteen and students aged seventeen, who showed statistically lower levels of the sense of security.

Analysis of the statistical data in Table 4 leads to the following observations: (a) the inability,

Table 4. Descriptive statistics of the degree of perceived inability to go to a swimming pool by adolescents during the second wave of the COVID-19 pandemic

Study group	N	Min	Max	M	Me	SD	Skewness	Kurtosis
(A)*	244	1.00	5.00	2.97	3	1.28	- 0.008	- 1.062
(B)**	179	1.00	5.00	3.02	3	1.35	0.059	- 1.194
(C)***	175	1.00	5.00	2.92	3	1.37	- 0.013	- 1.297

Note: *students aged 15 years; KS (D) = 0.160; $p < 0.000$; non-normal distribution; **students aged 16 years; KS (D) = 0.173; $p < 0.000$; non-normal distribution; ***students aged 17 years; KS(D) = 0.195; $p < 0.000$; non-normal distribution

during the period of the second wave of the COVID-19 pandemic, to use the swimming pool is reported by the adolescents as a problem perceived to a moderate degree; (b) observation of the deviations of the results revealed that there was a group of the respondents that experienced a high level of discomfort because of this situation, which may mean that the adolescents could perform this form of physical activity to an unequal degree outside the period of the pandemic; (c) the greatest differences in descriptive statistics were found in the group of seventeen-year-old students, which means that in the case of the above variable, it turned out to be the least consistent group.

Looking at modern trends, it seems that physical activity in the form of exercising in a gym is crucial for the physical development of young people. However, this is not indicated by the survey results contained in Table 5, where the individual numerical data show that adolescents miss the gym to a

Table 5. Descriptive statistics of the degree of perceived inability to go to the gym by adolescents during the second wave of the COVID-19 pandemic

Study group	N	Min	Max	M	Me	SD	Skewness	Kurtosis
(A)*	244	1.00	5.00	3.081	3	1.34	- 0.109	- 1.173
(B)**	179	1.00	5.00	3.083	3	1.28	0.029	- 1.108
(C)***	175	1.00	5.00	3.24	3	1.45	- 0.233	- 1.347

Note: *students aged 15 years; KS (D) = 0.180; $p < 0.000$; non-normal distribution; **students aged 16 years; KS (D) = 0.170; $p < 0.000$; non-normal distribution; ***students aged 17 years; KS (D) = 0.196; $p < 0.000$; non-normal distribution

moderate degree. Only seventeen-year-old students experienced discomfort at a moderately high level.

School sports clubs (SKS) have the task of developing physical culture among the students attending the school. A major surprise in the study was the data collected from the students surveyed regarding their feelings of not being able to enjoy their SKS activities during the COVID-19 pandemic. In practice, it can be said that most of the respondents do not feel any discomfort about being shut out from such activities. This should certainly encourage people responsible to review previous proposals so that they become more attractive to young people.

Perhaps there are other reasons for this state of affairs. The pandemic period is a time of many worries, unclear information from adults, a time of uncertainty about one's fate and development, and perhaps it is a time when young people, with the multitude of various dilemmas in life, are unable to focus on looking for the strengths of even a school sports club (Table 6).

Table 6. Descriptive statistics of the degree of perceived inability to attend school sports club classes by adolescents during the second wave of the COVID-19 pandemic

Study group	N	Min.	Max.	M	Me	SD	Skewness	Kurtosis
(A)*	244	1.00	5.00	2.45	3	1.11	0.280	- 0.616
(B)**	179	1.00	5.00	2.43	3	1.13	0.372	- 0.402
(C)***	175	1.00	5.00	2.22	2	1.15	- 0.233	- 0.258

Note: *students aged 15 years; KS (D) = 0.198; $p < 0.000$; non-normal distribution; **students aged 16 years; KS (D) = 0.212; $p < 0.000$; non-normal distribution; ***students aged 17 years; KS (D) = 0.199; $p < 0.000$; non-normal distribution

Physical education classes are intended to provide at least a basic level of opportunities for students' physical development. Their quality depends on the competence of the teacher, but also on the sports infrastructure in the school. The research has shown (Table 7) that students, particularly those 15 and 16

Table 7. Descriptive statistics of the degree of perceived inability to attend physical education classes by adolescents during the second wave of the COVID-19 pandemic

Study group	N	Min.	Max.	M	Me	SD	Skewness	Kurtosis
(A)*	244	1.00	5.00	3.10	3	1.35	- 0.157	- 1.261
(B)**	179	1.00	5.00	3.11	3	1.33	- 0.245	- 1.209
(C)***	175	1.00	5.00	2.94	3	1.43	- 0.068	- 1.390

Note: *students aged 15 years; KS (D) = 0.217; $p < 0.000$; non-normal distribution; **students aged 16 years; KS (D) = 0.237; $p < 0.000$; non-normal distribution; ***students aged 17 years; KS (D) = 0.209; $p < 0.000$; non-normal distribution

years old, experience the highest levels of discomfort because they are unable to attend physical education lessons compared to being unable to attend other forms of physical activity. Only 17-year old students ranked discomfort with being unable to use the gym slightly higher, but physical education classes ranked second in their case. In order to find out to what extent the perceived inability to engage in particular forms of physical activity among students aged 15 years might be related to their sense of security, the first step was to analyze the variance of the variables of the selected forms of physical activity to see if there were differences between the perceived inability to engage in specific activities. Both F-value=13.67 and $p < 0.05$ suggest that such differences can be observed (Table 8).

Table 8. Results of the analysis of variance for variables of selected forms of physical activity of students aged 15*

Source	SS	df	MS	F test
Between-group	67.04	3	22.34	13.67
Within-group	1588.28	972	1.63	
Total	1655.32	975		

However, it was only after applying Tukey's post hoc test that it was possible to refine the statement that significant differences existed between perceptions of inability to go to the swimming pool and participate in SKS classes, and between perceptions of inability to go to the gym and participate in SKS classes and ability to use SKS classes and attend PE classes (Table 9). Therefore, in the case of

Table 9. Tukey's post hoc test

Pair of groups	Tukey HSD Q statistics	p values for Tukey HSD Q	Significance level
(S) vs (G)	1.252	0.788	insignificant
(S) vs (SKS)	6.360	0.001	** $p < 0.01$
(S) vs (PE)	1.502	0.688	insignificant
(G) vs (SKS)	7.612	0.001	** $p < 0.01$
(G) vs (PE)	0.250	0.899	insignificant
(SKS) vs (PE)	7.862	0.001	** $p < 0.01$

Note: *(S) - the degree of perceived inability to go to the swimming pool by students aged 15 years; (G) - the degree of perceived inability to go to the gym by students aged 15; (SKS) - the degree of perceived inability to attend school sports club classes by students aged 15 years; (PE) - the degree of perceived inability to attend physical education classes by students aged 15 years

students aged 15, it can be assumed that the greatest relationship with the sense of security can be found in the perception of the inability to engage in physical activity in the form of physical education classes, and the weakest - in the perception of the inability to attend SKS classes.

Similar responses were sought among students aged 16 years. In their case, both F-value=11.54 and $p < 0.05$ suggest that such differences can be observed (Table 10). Tukey's post hoc test revealed that it

Table 10. Results of the analysis of variance for variables of selected forms of physical activity of students aged 16

Source	SS	df	MS	F test
Between-group	56.78	3	18.92	11.54
Within-group	1167.01	712	1.63	
Total	1223.80	715		

was possible to refine the statement that significant differences existed between perceptions of inability to go to the swimming pool and participate in SKS classes and between perceptions of the inability to go to the gym and participate in SKS classes and inability to attend SKS classes and PE classes (Table 11).

Table 11. Tukey's post hoc test

Pair of groups	Tukey HSD Q statistics	p values for Tukey HSD Q	Significance level
(S) vs (G)	0.583	0.899	insignificant
(S) vs (SKS)	6.246	0.001	**p < 0.01
(S) vs (PE)	0.934	0.899	insignificant
(G) vs (SKS)	6.830	0.001	**p < 0.01
(G) vs (PE)	0.350	0.899	insignificant
(SKS) vs (PE)	7.180	0.001	**p < 0.01

Note: *(S) - the degree of perceived inability to go to the swimming pool by students aged 16 years; (G) - the degree of perceived inability to go to the gym by students aged 16; (SKS) - the degree of perceived inability to attend school sports club classes by students aged 16 years; (PE) - the degree of perceived inability to attend physical education classes by students aged 16 years

The sense of security of students aged 16 is most closely related to perceptions of being unable to participate in physical education classes, and are furthest from perceptions of the inability to attend SKS classes.

The final analysis concerned the differences between the perceived discomfort due to being unable to participate in particular forms of physical activity for students aged 17 and sought the relationship of the results to the sense of security of the students. The results obtained for $F=17.68$ and $p\text{-value} < 0.05$ indicate that there are significant differences between the perception of discomfort due to being unable to participate in the described forms of physical activity (Table 12). Tukey's post hoc test revealed

Table 12. Results of the analysis of variance for variables of selected forms of physical activity of students aged 17*

Source	SS	df	MS	F test
Between-group	97.97	3	32.65	17.69
Within-group	1284.80	696	1.84	
Total	1382.77	699		

significant differences between all perceptions (related to going to the gym, swimming pool, and attending PE lessons) and perceptions of inability to participate in school sports club activities. At the same time, the feeling of being unable to go to the gym had the strongest relationship with the sense of security, whereas the weakest relationship was recorded with school sports club activities (Table 13).

Table 13. Tukey's post hoc test

Pair of groups	Tukey HSD Q statistics	p values for Tukey HSD Q	Significance level
(S) vs (G)	3.060	0.134	insignificant
(S) vs (SKS)	6.843	0.001	**p < 0.01
(S) vs (PE)	0.222	0.899	insignificant
(G) vs (SKS)	9.903	0.001	**p < 0.01
(G) vs (PE)	2.837	0.186	insignificant
(SKS) vs (PE)	7.066	0.001	**p < 0.01

Note: *(S) - the degree of perceived inability to go to the swimming pool by students aged 17 years; (G) - the degree of perceived inability to go to the gym by students aged 17; (SKS) - the degree of perceived inability to attend school sports club classes by students aged 17 years; (PE) - the degree of perceived inability to attend physical education classes by students aged 17 years

Discussion

Physical activity is one of the most important factors influencing not only the proper physical and mental development of young people, but also their health status and quality of life. As a result of the activity, endorphins are released, resulting in a feeling of relaxation and well-being (Trudeau, Shephard, Arsenaull, Laurencelle, 2003; Muhsen, Muhsen, 2020). In addition, physical activity increases self-confidence and facilitates internal self-control. Researchers on this topic also indicate that physical activity may not only be effective in alleviating psychological well-being but may also prevent symptoms of mental health disorders such as depression and anxiety (Scully, Kremer, Meade, & Dudgeon, 1998; Fox, 1999; Cooney, Dwan, Greig, & Mead, 2013). Therefore, physical activity has a great potential to provide physical and mental health to an individual (Malina, 2001; Fraser-Thomas, Côté, 2009; Holt, 2016; Al-Qahtani, Shaikh, 2018).

The importance of physical activity in human life makes physical education a compulsory part of the curriculum in most countries, also in Poland and Ukraine. It is assumed that students should engage in moderate to vigorous exercise for at least one hour per day (Strong, Malina, Blimkie, & Trudeau, 2005; Telama, Yang, Viikari, & Raitakari, 2005; Iedynak, Galamandjuk, Kyselytsia, & Chopik, 2017). It should be noted, however,

that recently the opportunities for schoolchildren to engage in physical activity have been greatly reduced by the worldwide spread of the coronavirus (SARS-CoV-2) causing the disease known as COVID 19. Due to the specificity of COVID-19 and the huge scale of this pandemic (World Health Organisation, 2020), it became necessary for individual states to introduce restrictions on functioning in public spaces to minimize the risk of contracting the virus (Burke, Midgley, Dratch, & Holshue, 2020; Hellewell, Abbott, Gimma, & Edmunds, 2020; Li, Guan, Wu, 2020; Marcel, Christian, Richard, & Low, 2020).

This situation also applies to schools in which classes, including physical education classes, have been defined by strict procedures limiting direct contact and are conducted mainly online (Hellewell, Abbott, Gimma, & Edmunds, 2020; Korol, Hrypach, Osinchuk, 2021). There is not only a limited possibility to conduct physical education classes in groups but also to use gyms and swimming pools (Guo, Cao, Hong, 2020; Hellewell, Abbott, Gimma, & Edmunds, 2020). Therefore, the introduction of lockdown has not only changed the quality and frequency of interpersonal contacts but also the physical activity of students (Burke, Midgley, Dratch, & Holshue, 2020; Korol, Hrypach, Osinchuk, 2021). Such a situation may have an effect on lowering the level of the sense of security and psychological discomfort of schoolchildren (Wooley, Pattacini, Somerset-Ward, 2009; Biddle, Asare, 2011). Classes in schools are conducted online. Physical education, which, due to its specificity, is a subject particularly limited by remote teaching, has been also affected by the restrictions. Opportunities to engage in extracurricular physical activity were also limited. Such a situation may have an impact on lowering the level of students' sense of personal security and making them feel psychological discomfort (Bar-Tal, Jacobson, 1998; Braithwaite, 2009; Schwartz, 2012).

A. H. Maslow (2006) identified the sense of personal security of an individual in the group of basic needs determining the accomplishment of higher needs, at the top of which is the need for self-actualization. Furthermore, A. H. Maslow indicated a group of needs that can generally be classified as safety needs. This includes the need for stability, independence, care, structure, order, law, freedom from fear, anxiety, chaos, and limitations, support of a caregiver, etc. But a safety and security are one of the most important categories to describe the context of life and how human beings function (Evans, Newnham, 1998; Bar-Tal, 2000). In the case of a lack of security, there may also be psychological discomfort, which in the literature is often referred to as psychological pain, originating from a broad set of causes accompanied by significantly intensified unpleasant emotions (Shneidman, 2005). It is therefore important in the case of school children to investigate the relationship that may exist between limitations during the COVID-19 lockdown period and a sense of security and discomfort due to the inability to engage in selected forms of physical activity.

The results were related to a set of reasons. One of the main ones was the absence of all the security needs of A. H. Maslow (2006). In particular, the country's quarantine restrictions have increased fear, anxiety, restraint, chaos in older adolescents and reduced parental support due to an increase in the same factors. These factors have made it impossible for adolescents to exercise their physical activity in their usual forms and places of employment.

This is consistent with the information of S. H. Schwartz (2012) that one of the universal values of man is security. It grounded in one or more of three universal requirements of human existence with which they help to cope. These requirements are needs of individuals as biological organisms, requisites of coordinated social interaction, and survival and welfare needs of groups. For security, the defining goal is: safety, harmony, and stability of society, of relationships, and of self. Security values derive from basic individual and group requirements (Maslow, 2006). Some security values serve primarily individual interests, others wider group interests.

Such individual and group interests manifested themselves in the form of features that marked adolescents. Individual characteristics of discomfort associated with the inability to attend school sports clubs in a certain group of 17-year-olds were at a moderately high level. As an example of group interests - it was found that significant differences existed between students aged fifteen and students aged seventeen, who showed statistically lower levels of the sense of security.

A major surprise in the study was the data collected from the adolescents surveyed regarding their feelings of not being able to enjoy their SKS activities during the COVID-19 pandemic. In practice, it can be said that most of the respondents do not feel any discomfort about being shut out from such activities. This should certainly encourage people responsible to review previous proposals so that they become more attractive to young people. Perhaps there are other reasons for this state of affairs. The pandemic period is a time of many worries, unclear information from adults, a time of uncertainty about one's fate and development, and perhaps it is a time when young people, with the multitude of various dilemmas in life, are unable to focus on looking for the strengths of even a school sports club.

Such data are to some extent consistent with the results of other researchers that most adolescents do not show a desire and interest in physical activity in the form of classes in a particular sport (Strong, Malina, Blimkie, 2005; Fraser-Thomas, Côté, 2009; Holt, Neely, Slater, Camiré, 2017; Wiium, Säfvenbom, 2019). This result raises the issue of improving the effectiveness of physical education lessons at school. Physical education classes are intended to provide at least a basic level of opportunities for adolescents physical development. Their

quality depends on the competence of the teacher, but also on the sports infrastructure in the school (Strong, Malina, Blimkie, 2009; Boychuk, Iedynak, Galamanzhuk, Klyus, Skavronsky, 2019). Adolescent perceptions of psychological discomfort, manifested, among other things, by a moderate sense of personal security, were therefore influenced by the second wave of the COVID-19 pandemic, which contributed to the closure of schools and facilities designed for physical activity as a result of lockdown. This is because the students lost their natural opportunity to relieve tension and develop physical culture, which is so important in adolescence. Therefore, an important educational task, in the era of COVID-19 is the promotion of physical activity of schoolchildren in the home environment, which affects the normal physical and mental development during this developmental period.

Conclusion

In conclusion, it should be stated that in the case of the variable of the sense of personal security in the groups of students studied, a moderate level among fifteen and sixteen-year-old students and a moderately low level among seventeen-year-old students were found. Furthermore, fifteen, sixteen, and seventeen-year-old students felt the most during the COVID-19 lockdown period that they could not go to the gym, traditional physical education classes, swimming classes and at the same time did not feel uncomfortable with the lack of school sports club (SKS) classes.

Students' perceptions of psychological discomfort, manifested, among other things, by a moderate sense of personal security, were therefore influenced by the second wave of the COVID-19 pandemic, which contributed to the closure of schools and facilities designed for physical activity as a result of lockdown. This is because the students lost their natural opportunity to relieve tension and develop physical culture, which is so important in adolescence.

Therefore, an important educational task, in the era of COVID-19 is the promotion of physical activity of schoolchildren in the home environment, which affects the normal physical and mental development during this developmental period. It should also be noted that physical activity habits acquired earlier in life may also be present in adulthood and ensure adequate quality of physical and psychosocial functioning at later stages of life.

The remote form of physical education classes should not be limited to teaching theoretical contents. It is useful to motivate students to undertake physical activity that can be performed at home. Appropriately structured online sports activities can improve social and emotional functioning, positively affect health, and enhance protective factors including self-esteem, positive social relationships, and well-being. It is also a good idea to teach such classes using teleconferencing, either using the teacher's knowledge or the skills of students engaged in different sports in clubs.

Furthermore, it would be advisable to set up joint training groups on the Internet, which, with the provision of professional coaching, can encourage regular physical activity and help increase motivation for engaging in sports. This is because organized sports activities have great potential to support mental and physical health.

The aim of such classes would be to comprehensively stimulate the child's development processes, with limited opportunities for physical activity during the pandemic, adaptation of the student's body to physical exercise, and changing environmental conditions, and to counteract adverse developmental phenomena. Such a group form of sports activities also motivates young people to work regularly and to achieve their goals. Participation in the proposed activities may also have an impact on both increasing students' sense of security and decreasing psychological discomfort, both of which are consequences of limitations in physical activity during the COVID-19 lockdown period.

Conflict of interest

The authors state no conflict of interest.

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