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Assessment of the participation of students in physical activities during the pandemic of Covid-19

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Abstract

Objective: The purpose of this study was to assess level of physical activity adolescents before and during pandemic of COVID_19. **Methods**: The research included 717 students, 422 females and 297 males, aged 10-15 years from the main regions of Kosovo. The research was conducted during June 2020 as in the previous months there were more stringent restrictions on movement during the day, while in June the restraint measures were released and most of the day the movement was free. An abbreviated version of the IPAQ-SF questionnaire was used. **Results**: The average body height of students aged 10-15 is 162.01cm, while bodyweight is 53.59kg. Students sit for an average of 2.79 hours a day. In terms of moderate physical activity, students are active 3.67 days a week and 32.85 minutes during the day. Students do a strenuous physical activity about 3 days a week (3.27), while during the day they do 25.45 minutes. **Conclusion**: Moderate and vigorous activities do not meet the required criteria, so it can be said that Kosovar children during the pandemic did a below-average physical activity. Of course, the Covid-19 pandemic has resulted in decreased student physical activity given movement limitations and the development of online learning which has reduced mobility requirements.

Keywords: Physical activity, adolescents, questionnaire, metabolic equivalent of task.

Introduction

Physical education aims to prepare students with the basic knowledge and skills to have a healthy lifestyle and a certain level of fitness that guarantees better health. Physical activity is any bodily movement produced by skeletal muscle that requires energy expenditure - including activities undertaken while working, playing, doing household chores, traveling, and engaging in recreation (Vuori, 2018). Through the teaching of physical education, it is intended to achieve the creation of

awareness about the role and importance of physical activities for health, so that students practice it even outside the classroom. The interest in having physical health and well-being of people is also in the public interest as practicing physical activities affects the prevention of many health problems and diseases, the treatment of which greatly burdens the public budget of a state.

Participation in physical activities is seen as an ideal tool for promoting regular physical activity and educating an active learning lifestyle. It is also known that physical education, sports, and health, help students develop the necessary knowledge, skills, attitudes, and competencies, which ensure the well-being of their mental, emotional, physical, and social health, to cope successfully the challenges of the present and future life. Students in Kosovo are handicapped in terms of regular physical activity as only two hours per week of physical education are assigned to the curriculum, which is less than in any other country in the region and beyond.

This situation has been further aggravated by the covid-19 pandemic, especially at the time of total closure, which has been undertaken to prevent the spread of the disease. It is expected that even children will not be spared from the consequences of the pandemic. Different methods and techniques are used to assess students' participation in physical activities (Westerterp, 2009), such as behavioral observation, questionnaires physiological markers like heart rates, calorimetry, and motion sensors. Accelerometry and doubled water are considered the most objective methods, but they require special equipment and are more difficult to use with children, especially on a larger scale. Questionnaires are often the only feasible method of assessing habitual physical activity in large populations because they are easy to administer, relatively inexpensive, and noninvasive (Friedenreich et al., 2006; Shephard, 2003). To assess the impact of the pandemic on students' physical activity, the IPAQ-C questionnaire (Kowalski et al., 2004) on the pre-pandemic status and the IPAQ (Pate et al. 1995) questionnaire on realized online through a Google form, as the most appropriate technique in pandemic conditions due to the inability to contact respondents physically. Online questionnaires have become a recent practical tool for research and with acceptable validity and reliability (De Vera et al., 2010).

Methods

The research included 719 students, 422 females and 297 males, aged 10-15 years from the main regions of Kosovo. The research was conducted during June 2020 as in the previous months there were more stringent restrictions on movement during the day, while in June the restraint measures were released and most of the day the movement was free. The link to the questionnaire via Google form was sent to the physical education teachers, who were randomly selected. The teachers provided the necessary explanations to the students during the online physical education class and forwarded the link via Facebook. Students, voluntarily, had completed the questionnaires and upon completion were automatically sent to the drafters of the questionnaire. The study was conducted in accordance with the principles of the Declaration of Helsinki. Two types of the

questionnaire were used: English short version of the IPAQ-ch questionnaire was used to assess student activity before the pandemic (Kowalski et al., 2004), but the same questionnaire could not be used during the pandemic due to that the children did not go to school, therefore, the short form of IPAQ-SF was used (Pate et al.1995).

In the IPAQ-ch questionnaire, the first question contains the list of 22 common recreational and sports activities as well as the option to add two more activities. The first question was rated from 1 to 5. Questions from 2-7 assessed the physical activity of students, during the physical education class, after returning from school, in the evening, during the weekend, the frequency of activity during 7 days of the week, and physical activity during a week for every day. The total score of this questionnaire is calculated by adding the average of the results of all questions.

Results

Demographic characteristics of participants

Table 1 gives the demographic characteristics of the participants. Out of a total of 719 participants, 297 were boys and 422 were girls. The initial sample included 922 participants, but during the condensation of the data 223 respondents left as their answers were not adequate. The result of the body mass index shows that 66.67% of boys are with normal body weight, while for girls this value is 67.44%. In terms of overweight, the scores of boys (33.33%) are higher than those of girls (24.88%). In general, the values of the body mass index match the results of Kosovar children found in the work of Tarp et al. (2018).

Table 1. Demographic characteristics of the sample.

Variables		boys	%	Girls	%
BMI	Participants	295	32.56	422	67.44
	Normal	198	66.67	317	75.12
	Overweight	99	33.33	105	24.88

BMI: Body mass index

Physical Activity before pandemic

Table 2 presents the basic statistical parameters for IPAQ-ch for 719 participants from schools around Kosovo. The average body height of students aged 10-15 is 162.01cm, while body weight is 53.59kg. Regarding the participation of students in various sports activities, it can be seen that their participation is below average (mean = 2.07). In all other activities they are more active starting from the total weekly activity (mean = 2.68), after returning from school 2.90, in the evening 3.04, in the weekend 3.47, and most activities are during the physical education class with 4.53. Total physical activity during the week before the pandemic was 3.08 which is average.

Table 2. Physical activity before the pandemic.

	Girls			Boys			
	N	Mean	St.dev.	N	Mean	St.dev.	P
Weight	422	49.80	10.91	297	53.05	14.58	.017
Height	422	157.96	10.51	297	162.31	13.88	.000
Spare-time activity: sports	422	159.47	12.30	297	160.11	12.06	.439
Activity during physical education classes	422	2.04	0.70	297	2.10	0.69	.160
After-school activity	422	4.53	0.80	297	4.53	0.90	.427
Evening activity	422	2.89	1.49	297	2.92	1.51	.776
Weekend-activity	422	3.01	1.01	297	3.08	1.12	.281
Activity frequency during the last 7 days	422	3.42	1.03	297	3.52	1.05	.145
Activity frequency during each day last week	422	2.88	1.16	297	3.20	1.24	.001
Total activities	422	2.64	1.41	297	2.74	1.46	.335

P <.05*Physical Activity during pandemic*

Table 3 presents the data of the abbreviated IPAQ questionnaire that shows the physical activity of students during the pandemic. From the results presented in Table 2, it can be seen that students sit for an average of 2.79 hours a day. In terms of moderate physical activity, students are active 3.67 days a week and 32.85 minutes during the day. Students do a strenuous physical activity about 3 days a week (3.27), while during the day they do 25.45 minutes. Student physical activity is also converted into expended energy (Ainsworth, 2000). The obtained results show that the amount of energy expended with moderate physical activity is only 531.16 MET/min/week, while with moderate physical activity it is 762.62 MET/min/week. The total energy consumed was 1293.78 MET/min/week. Gender differences were calculated with Man Whitney test while all variables were not normally distributed. Tables 2 and 3 shows that there are a very few differences between boys and girls. Boys body weight is greater than in girls (p=.000) and boys are taller than girls (p=.017). While in activities before pandemic, boys did more frequent physical activities during a week than girls (p=.001), during pandemic there are no any differences in physical activities between girls and boys.

Table 3. Physical activity during pandemic.

		Girls			Boys			
		N	Mean	St.dev.	N	Mean	St.dev.	P
	Sitting	422	2.82	1.51	297	2.77	1.43	.800
	Days/week	422	3.73	1.78	297	3.57	1.69	.244
MPA	min/week	422	33.72	18.09	297	31.62	16.89	.224
	MET/week	422	555.78	454.11	297	494.01	410.62	.149
	Days/week	422	3.22	1.87	297	3.32	1.83	.422
VPA	min/week	422	25.77	16.43	297	24.97	15.56	.682
	MET/week	422	777.25	813.36	297	737.51	699.46	.815
	Total/MET	422	1333.03	1149.21	297	1231.52	991.62	.633

MPA: Moderate physical activity; VPA: Vigorous physical activity; P<.05

Discussion

Students aged 10-15 in some regions of Kosovo in the pre-pandemic conditions have stated that they are moderately active (3.08) in terms of physical activity. Less active are in leisure sports activities. Their participation in physical activities is above average as they return from school and are most active during the weekend (3.47), while they are most physically active during the physical education classes (4.53). When teaching physical education, students seek relaxation from other subjects, but it can also be as a result of the teacher's request to be active during the class as participation and activity can also result in grading.

As expected, during the pandemic, children's physical activity was lower. Based on students' self-assessment, the values obtained prove that sitting students stay close to three hours a day. During a week of moderate physical activity, students do more than 3 days, while during the day they develop activity a little more than half an hour. These values do not correspond to the recommended values according to the guide of the IPAQ Test (Craig et al., 2003), where to be considered moderate activity must do strenuous physical activity, at least 3 times a week or at least 20 minutes per day, or 5 or more days per week moderate activity and or walking at least 30 minutes a day.

A similar estimate was obtained even after the values of daily activity per week and hours per day were converted to metabolic equivalent of task (MET) values for measuring energy consumption. Students during the week do not spend more than 531 MET/minute of moderate activity (below the minimum required value 600MET/minutes/week), while for strenuous activity the expenditure has reached 762.62 MET/minute per week (below the required value 1500MET/minutes per week). The total energy expended by the students was 1293.79 MET/minute/week which is far from the required minimum value of 3200 MET/minute/week. Similar research in Kosovo has so far been conducted by Gjaka et al. (2021) who has found that the physical activity of adult

populations during the pandemic has decreased significantly compared to the period before the pandemic.

Moderate and strenuous activities do not meet the required criteria, so it can be said that Kosovar children during the pandemic did a below-average physical activity. Decreased physical activity in children is a global phenomenon (Goran et al., 1999).

Thus in Belgium, Health behavior in school-aged children study (Currie et al., 2009) showed that in 2010 only 10 to 30% of children aged 11, 13, and 15 were moderate to vigorous physically active during one hour per day. Of course, among other causes, in the low level of physical activity of our sample could have impact the pandemic which has been permeated by various movement restrictions and learning has been developed online which has reduced the requirements for movement. This condition can have its consequences as it is known that children have been deprived of movement in the right amount for two and a half months, before the easing of restrictive measures and when children have started to return to school benches with a schedule shortened.

Regarding gender differences in physical activities before pandemic, boys were more frequent active than girls, while during pandemic there were no differences.

Conclusion

Kosovar students do moderate physical activity, under normal conditions (before the pandemic), while during the COVID-19 pandemic their level of physical activity has dropped significantly below average. The reasons for such a decline have come due to the change in the usual rhythm of their lives, as they have not been able to go to school for several months in a row, which would make them part of the usual daily activity, but also due to restrictions on free movement whether to walk or to engage in recreational and sports physical activities in groups. There were no significant differences between girls and boys in physical activities during pandemic.

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