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Original article

Examining the Involvement of Teenagers in Physical Activities throughout the COVID-19 Pandemic

Abedin Bahtiri [1ABE] Agon Saiti[2BD*]

[1]*University for Business and Technology (UBT), Faculty of Sport and Movement Science, ORCID: 0000-0002-9099-7961, abedin.bahtiri@ubt-uni.net, Kosovo.*

[2]*Mother Teresa University, Faculty of Social Sciences, Sport and Sport's Science, ORCID: 0000-0003-2608-0136, agon.saiti@unt.edu.mk, North Macedonia.*

**Corresponding author: agon.saiti@unt.edu.mk*

Authors' Contribution: A: Study design, B: Data collection, C: Data analysis, D: Manuscript preparation, E: Discussion and conclusion

ABSTRACT

Study aim(s): The aim of the study is to examine the involvement of teenagers in physical activities throughout the COVID-19 pandemic, and compare the involvement level to their peers living in other countries in the same conditions.

Methods: The research included 175 students, 105 females and 71 males, aged 16-19 years from Pristina. The research was conducted in June 2020, two and a half months after the start of the COVID-19 pandemic which caused severely restricted measures including restrictions in free moving known as lockdown. The SPSS 26 packet was used; the descriptive statistics and Man Whitney method were applied. The short-form version of the IPAQ questionnaire was used.

Results: A normal body weight is shown in 72.5% of boys and 62.9% of girls. Overweight, boys (22.5%) girls (37.1%). Regarding the average of physical activity, students are active 3.87 days a week and 41.20 minutes during the day. The amount of energy spent with moderate physical activity is 1776.90 MET/min/week, while with vigorous physical activity; it is 734.64 MET/min/week. The total energy consumed was 1268.73 MET/min/week. Girls sit an average of 3.08 hours a day. In terms of moderate physical activity, girls are active 3.58 days a week and 27.24 minutes during the day. The obtained results show that the amount of energy expended with moderate physical activity is 1065.71 MET/min/week, while with vigorous physical activity; it is 821.71 MET/min/week.

Conclusion: Adolescents from Pristina, during the COVID-19 pandemic, although under the Government's restrictive measures, showed good values in terms of moderate physical activity, and in terms of vigorous physical activity are significantly below the minimum recommended requirements. In terms of gender, boys are shown to be more active in moderate physical activity, while girls are better than boys only in vigorous physical activity during the day.

Keywords: Physical Activity, Assessment, Students, Questionnaire, MET

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INTRODUCTION

Any body movement produced by skeletal muscles that requires the expenditure of energy including activities undertaken during work, play, doing housework, traveling, and engaging in recreational activities - is physical activity [1]. Physical activity has many beneficial effects in terms of health, regardless of age. People who lead healthy lives and exercise regularly are less likely to be attacked by chronic diseases such as diabetes, cardiovascular disease, cancer, or mental illness [2]. Regular physical activity also enables the maintenance of body weight compared to inactive persons.

Assessing student participation in physical activities is an integral part of the educational process both in Kosovo and in European countries and beyond. People's awareness of the value and need for physical activity is on the rise thanks to the numerous promotions made to this phenomenon in the numerous print and electronic media [3]. Exercising physical activities affects the prevention of many health problems and diseases, the treatment of which greatly burdens the public budget of a country, for this reason, the interest in having physical health and well-being of people is also in the public interest. Participation in physical activities is seen as an ideal tool for promoting regular physical activity and fostering an active learning lifestyle. It is also known that physical education, sports, and health help students develop the knowledge, skills, attitudes, and competencies necessary to ensure the well-being of their mental, emotional, physical, and social health to successfully face the challenges of life in the present and the future [4]. The best possible method for assessing habitual physical activity in large populations is questionnaires because they are easier to administer, relatively inexpensive, and non-invasive [5].

Lifestyle interventions can improve well-being, mood, anxiety, cognition, and overall functioning, as well as improve physical health, cardiovascular condition, and weight gain caused by antipsychotics [6].

From this point of view, this problem addressed in this case to some extent, will contribute to the real assessment of the participation of students in upper secondary education in achieving the goals of a healthy mind and body. Similar research in Kosovo has so far been carried out by a different author, Gjaka, M. Et al (2021) has found that the physical activity of the adult population during the pandemic has decreased significantly compared to the period before the pandemic [7]. Berisha, M. & Thaqi, A. (2021) in their research with 16-year-old children, observed a statistically significant decline in motor skills such as power (explosive strength) from 2019 to 2020 as a result of the lockdown [8]. According to the WHO recommendation, children and adolescents aged 5-17 years should do at least 60 minutes of daily physical activity with moderate to high intensity and should include activities that strengthen muscles and bones, at least 3 times a week.

The aim of the study is to examine the involvement of teenagers in physical activities throughout the COVID-19 pandemic and compare the involvement level to their peers living in other countries in the same conditions during a pandemic. Any body movement produced by skeletal muscles that requires the expenditure of energy - including activities undertaken during work, play, doing housework, traveling, and engaging in recreational activities is considered a physical activity and it was analyzed in this study.

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METHODS

Study sample

The research included 175 students, 105 females and 71 males, aged 16-19 years from Pristina. The research was conducted in June 2020, two and a half months after the start of the COVID-19 pandemic which caused severely restricted measures including restrictions in free moving known as lockdown.

Data collections tools

The short-form version of the IPAQ questionnaire was used. Also, a Whitney test was used. [7]. The questionnaire link via Google form was sent to the schools, exactly to the teachers of physical education. Teachers were randomly selected. The teacher has provided explanations to the adolescents during online classes and forwarded the link via Facebook. Adolescents were free to complete the questionnaires. Upon students' completion of the questionnaire automatically they went back to the drafters of the questionnaire.

Data analysis

The SPSS 26 packet was used in the data analysis. Based on the results of the normality tests the non-parametric analysis has been used. The descriptive statistics and Man Whitney method have been applied.

RESULTS

Table 1. Demographic characteristics of the sample

Variable	Level	♂	%	♀	%
BMI	Participants	71	40.34	105	59.66
	Normal	55	77.5	66	62.9
	Overweight	16	22.5	39	37.1

♀: female, ♂: male

Table 1 gives the demographic characteristics of the participants. Out of 171 participants, 71 were boys and 105 were girls. The BMI result shows that 72.5% of boys have normal body weight, while for girls this value is 62.9%. Regarding overweight, the results of boys (22.5%) are lower than those of girls (37.1%). In general, the body mass index values match the results of Kosovar children and adolescents found in the work of [9, 10].

Table 2. Physical activity during the pandemic – boys

Activity level	N	Minimum	Maximum	X̄±SD
Siting	71	1	6	2.94±1.66
Day moderate		0	6	3.87±1.75
Hour moderate		10	60	41.20±18.86
Days vigorous		1	2	1.62±.489
Hour vigorous		10	60	30.77±18.96
Moderated MET		100.00	4320	1776.90±1161.30
Vigorous MET		80.00	2880	734.64±698.57
Total MET		80.00	4320	1268.73±1078.37

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Table 2, presents the data from the short form of the IPAQ questionnaire that shows the physical activity of adolescents during the pandemic. From the results presented in Table 2, it can be seen that boys sit for an average of 2.94 hours a day. In terms of moderate physical activity, students are active 3.87 days a week and 41.20 minutes during the day. Students do a vigorous physical activity about 2 days a week (1.62), while during the day they do 30.77 minutes. Student physical activity is also converted into expended energy [11]. The obtained results show that the amount of energy expended with moderate physical activity is 1776.90 MET/min/week, while with vigorous physical activity, it is 734.64 MET/min/week. The total energy consumed was 1268.73 MET/min/week.

Table 3. Physical activity during the pandemic – girls

Activity level	N	Minimum	Maximum	X̄±SD
Siting	105	1	6	3.08±1.43
Day moderate		1	6	3.58±1.73
Hour moderate		10	60	27.24±14.43
Days vigorous		1	2	1.89±.31
Hour vigorous		10	60	21.68±13.22
Moderated MET		80.00	4320	1065.71±913.90
Vigorous MET		80.00	2880	821.71±796.36
Total MET		120.00	4320	1330.09±3.28

Table 3, presents the data from the short form of the IPAQ questionnaire that shows the physical activity of girls during the pandemic. From the results presented in Table 3, it can be seen that girls sit for an average of 3.08 hours a day. In terms of moderate physical activity, girls are active 3.58 days a week and 27.24 minutes during the day. Girls do a vigorous physical activity about 2 days a week (1.89), while during the day they do 21.68 minutes. Girl's physical activity is also converted into expended energy [12]. The obtained results show that the amount of energy expended with moderate physical activity is 1065.71 MET/min/week, while with vigorous physical activity, it is 821.71 MET/min/week. The total energy consumed was 1330.09 MET/min/week.

Table 4. Man-Whitney test-Mean ranks

Activity level	Gender	N	Mean Rank	Sum of Ranks
Siting	♀	105	91.23	9579.00
	♂	71	84.46	5997.00
Day moderate	♀	105	84.85	8909.00
	♂	71	93.90	6667.00
Hour moderate	♀	105	74.02	7772.50
	♂	71	109.91	7803.50
Days vigorous	♀	101	77.02	7779.00
	♂	71	99.99	7099.00
Hour vigorous	♀	104	97.75	10165.50
	♂	71	73.73	5234.50
Moderated MET	♀	105	75.19	7895.00
	♂	71	108.18	7681.00
Vigorous MET	♀	105	91.56	9613.50
	♂	71	83.98	5962.50

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Total MET	♀	105	90.46	9498.50
	♂	71	85.60	6077.50

♀: female, ♂: male

Table 4.1 Man-Whitney test-statistics

Activity level	Siting	Day moderate	Hour moderate	Days vigorous	Hour vigorous	Moderated MET	Vigorous MET	Total MET
Mann-Whitney U	3441.0	3344.0	2207.5	2628.0	2678.5	2330.0	3406.5	3521.5
Wilcoxon W	5997.0	8909.0	7772.5	7779.0	5234.5	7895.0	5962.5	6077.5
Z	-0.88	-1.18	-4.71	-3.06	-4.31	-4.22	-0.97	-0.62
Asymp. Sig. (2-tailed)	.377	.239	.000	.002	.000	.000	.332	.534

Tables 4 & 4.1 show the differences between boys and girls in doing physical activities during a pandemic. Differences were verified through the Whitney Test for non-parametric data. There are statistical differences in for variables: moderate physical activity per hour, vigorous physical activities per day and hour, and moderate physical activities converted in MET energy.

Girls showed higher values than boys in vigorous physical activity during the day (Mean rank = girls 97.75; boys 73.73; sig = .002). In the other three variables, boys had the best values: hours per day with moderate activity (Mean rank = 74.02 girls, 109.91 boys; sig = .000), in vigorous physical activity during the week (Mean rank = 77.02 girls, 99.99 boys, and in the amount of energy expended for MET during moderate physical activity (Mean rank = 75/19 girls, 108.18 boys).

DISCUSSION

Adolescents aged 16-19 years from Pristine, in terms of body mass index, have values that are consistent with similar research conducted in Kosovo [13, 14]. In this paper, boys have better values than girls in normal body mass by about 10%, this may also be related to the fact that girls are generally less physically active than boys, as expected, adolescents have been less active due to incapacity due to frequent closure. Based on adolescents' self-esteem, boys have been sitting for less than 3 hours a day and girls for a little over 3 hours. In terms of moderate physical activity, boys engage in physical activity for more than 3 hours, while girls do slightly less than boys. SE 30 minutes, are less than the wines ordered by the IPAQ test guide [15,16] which requires vigorous physical activity, at least 3 times a week or at least 20 minutes a day, or 5 or more days a week moderate activity or walking, at least 30 minutes a day.

To measure the energy expended during physical activity that adolescents have developed the days and hours spent with physical activity are converted to MET values. Male adolescents during the week spent 1777 MET, which is above the recommended minimum value, while girls 1065 MET which is also within the recommended values The required minimum is 600MET / minute/per/week). Meanwhile, with vigorous activities, adolescents have reached the values: of 734.64 boys and 821.71 girls, which is much less than the recommended value (1500 MET/minute/week). The total energy consumed has reached the values: of 1268 MET/minutes / per week for boys and 1330.09 MET/minutes / per week for girls, which is significantly less than the recommended values (3200 MET minutes / per week.

Thus, adolescents in Pristina meet the recommended criteria for moderate physical activity

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but are significantly lagging in meeting the requirements for vigorous activity. However, the phenomenon of physical activity in children is on a global scale [17]. In our case, one of the causes may be the situation created by the pandemic where young people have been deprived of opportunities to do enough physical activity because they have been in lockdown for almost 3 months until the start of restrictive measures and when children have returned to part-time schools.

Systematic differences between boys and girls in the practice of physical activity were confirmed through the non-parametric Mann-Whitney test, as all variables had abnormal distributions confirmed by the Kolmogorov-Smirnov criterion.

Differences have been established between girls and boys, in favor of boys who have achieved higher values in moderate physical activity, as well as in vigorous activities during the week, while girls have done more minutes of vigorous physical activity during the day.

CONCLUSION

Adolescents from Pristina, during the Covid-19 pandemic, although under the Government's restrictive measures, showed good values in terms of moderate physical activity, and in terms of vigorous physical activity are significantly below the minimum recommended requirements. In terms of gender, boys are shown to be more active in moderate physical activity, while girls are better than boys only in vigorous physical activity during the day. One of the reasons for not meeting the minimum recommended requirements for physical activity, especially vigorous ones, may also be sought in the impact that the virulent pandemic that has permeated free movement restrictions has had.

So, to face pandemics like COVID-19, the level of physical activity must be raised even when we are not at risk from it. The initiation of prevention after the pandemic spread on people is late and will probably be unsuccessful.

CONFLICT OF INTERESTS

The authors reported no potential conflict of interest.

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