

Effect of recreation-oriented tourism program on physical health of middle school-aged children

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Abstract:

Problem statement. Experts recommend to implement to the school physical education the modern recreation technologies. Today the issue of direct influence of recreation activities on the level of physical health of middle school children is not enough illuminated in the literature. **Objective.** To determine the influence of recreation-oriented tourism program on the level of middle school children physical health. To achieve these objectives we used the following *methods*: theoretical analysis of scientific and methodological sources; educational experiment; H. Apanasenko's physical health index, methods of mathematical processing. **Material:** 149 middle school-aged children participated in the study, including 75 girls and 74 boys. For nine months, children in addition to physical education classes were involved in the extra-curricular groups: 39 boys and 37 boys - in the volleyball group, 36 girls and 37 boys - in the recreational tourism group. **Results.** It was proved that through special means used in tourism the number of children involved in the recreational tourism group with average physical health level is much bigger than the children involved in the volleyball group among male and female.

Conclusion. Physical education on the basis of the use of contemporary recreational tourism technologies is one of the most effective methods of increasing the physical health. According to the received information recreational tourism training may be the key to forming and maintaining the proper health of the middle school-aged children.

Key words: middle school-aged children, physical health, recreation, tourism

Introduction

Health is the highest value for a person that directly depends on lifestyle and behavior, especially this is the case of the youth, when habits and behavior stereotypes are formed (Cojocariu, 2014-2015). Its level is directly depends on physical education at school, participation in a specially-organized and independent physical education activities during non-school hours (Bolotin & Bakayev, 2015; Brusseau & Hannon, 2015; Brusseau, Hannon & Burns, 2016; Pochtar, 2010).

The literature analysis determined that almost all scientists in their research used the following indicators to assess children physical health: physical health index, body weight, chest circumference, hand dynamometry, heart rate, arterial pressure, lung vital capacity and indicators of physical fitness. Even in the most favorable conditions in practice the educational institutions are unable to provide the volume of physical activity that is required in order to maintain and preserve students' physical health (PH), and specially organized physical activity is limited to an average of 30 minutes per day in the majority of school students (Gaetano, 2012; Gaetano, 2016; Scruggs, 2013). The traditional PE classes as a form of education, which is the main in Ukrainian schools, do not provide in full neither optimum health effect nor the formation of sustainable habit to follow a healthy lifestyle, so the other forms of classes conducted outside the school or during non-school hours are necessary (Ivashchenko, et al., 2016; Ivashchenko, et al., 2017; Yarmak et al., 2017; Yarmak, Galan, Hakman, Dotsyuk & Teslitskyi, 2017). For this purpose, experts recommend to implement to the process of students' physical education the modern recreation-oriented technologies that include the use of hiking, games, outdoor exercise, leisure activities, etc. (Andrieieva, Galan, Hakman & Holovach, 2017; Butenko, Goncharova, Saienko & Tolchieva, 2017; Galan, Zoriy, Briskin & Pityn, 2016). There are also scientific papers on the ways to increase a motor activity of schoolchildren (Brusseau & Kulinna, 2015; Burns, Brusseau & Fu, 2017; Piccinno & Colella, 2014), on influence of physical activities on the posture in schoolchildren (Balkó, Š., Balkó, I., Valter, Jelínek, 2017; Nosko, Razumeyko, Iermakov & Yermakova, 2016; Tomenko et al., 2017).

But despite the existing publications today it is insufficiently covered the issue of the direct influence of various recreation activities on the level of physical (somatic) health of students of middle school grades. It is the

search for the new approaches to determine the effect of recreational tourism training on the formation of the proper physical health level of the middle school age children that is urgent today.

The objective of the study is to determine the influence of recreation-oriented tourism on the level of middle school-aged children physical health.

Material

Data were collected on a convenience sample of 149 sixth and seventh grade students from PE classes recruited from Sumy schools number 15 and 25 located in Sumy region (Ukraine). There were 75 female and 74 male middle school-aged children who participated in experimental study to verify the effectiveness of the program of health-recreation oriented tourism, which included hiking and biking trips in warm months and skiing trips in winter (the mean age of the sample was 12.8 ± 0.9 years). Structuring of the intervention and control groups was carried out on the basis of sexual characteristics of the studied cohort (boys: IB and CB – 37 person in each; and girls: IG - 36 person and CG - 39 person). Written assent was obtained from the students and written consent was obtained from the parents prior to data collection. The Sumy Region Educational Board approved the protocols used in this study.

All *data collection* took place over an entire school year and involved a total of 105 PE classes. Each PE class was approximately 115 minutes in duration after excluding transition times for changing in and out of uniforms. Experimental PE classes were held 3 days a week in accordance with an experimental program. The curriculum involved a combination of bicycle, step and ski tourism and health related recreational activities. Students in control groups were trained in accordance with the current application physical education (PE) program and attended classes of volleyball. The amount of time allotted for educational and extra-curricular work in intervention and control groups was the same.

Research was conducted in accordance with the plan of scientific work of Sumy State Pedagogical Makarenko University on theme “Optimization of the training and education process of different groups of population”, approved by the department of state registration of the Ukrainian Institute of Scientific Information.

Methods

We used theoretical analysis of scientific and methodological sources; educational experiment; H.Apanasenko’s physical health index (PHI), methods of mathematical processing. The level of physical health was determined by the physical health index, consisting of the amount of points of Mass index, Life index, Power index, Ruff’e test and Robinson index. H. Apanasenko identifies five levels of physical health (PHL): low, below average, average, above average and high.

Data Analysis

Means and standard deviations were calculated for the intervention and control groups. SPSS was used to analyze data. Independent samples t tests were used to examine differences between groups.

Results

As a result of our research we have worked out the program of health-recreation oriented tourism, which included hiking and biking trips in warm months and skiing trips in winter. In the result of experiment it was recorded the multidirectional changes of the indexes of students’ physical health in control and intervention groups (Table 1). In the control group of boys (CB) the physical education was provided in accordance with the curriculum and also they attended classes of volleyball. The level of physical health in this group had no changes and remained below the average both as at the beginning of the experiment and as the end. In September 2017 a physical health index of boys was 3.58 ± 0.17 points, and in May 2018 it was 3.62 ± 0.23 points, but the percentage difference of improvements in physical health of children in control group was of a random nature ($p > 0.05$) and amounted to only 0.13%.

Table 1. Changes of physical health level young boys of intervention and control groups

	beginning of the experiment			end of the experiment			Difference (%)	t-Value	P
	¹ PHI		² PHL	¹ PHI		² PHL			
	mean	⁵ SD		mean	⁵ SD				
³ IB (n=37)	3.69	0.15	below average	4.8	0.13	average	17.7	4.69	<0.05
⁴ CB (n=37)	3.58	0.17	below average	3.62	0.23	below average	0.13	0.04	>0.05

Notes: ¹PHI - physical health index; ²PHL - physical health level; ³IB - intervention group of boys; ⁴CB - control group of boys; ⁵SD - standard deviation

Unlike the control group, after the implementation of the content of classes of recreational tourism the level of boys physical health in intervention group significantly increased by 18.7% ($p < 0.05$) and reached the

average level. At the beginning of the experiment a physical health index was 3.69 ± 0.15 points, and in May 2018 it was 4.8 ± 0.13 points.

In control and intervention groups of girls the changes of indexes of individual health had the similar nature (Table 2). In control group (CG) the girls attended classes of physical education, sections of team sports and athletics. Their level of physical health during the experimental study had no statistically significant changes ($p > 0.05$) and was below the average. Physical health index at the beginning of the experiment (September 2017) was 4.5 ± 0.22 points, but at the end of experiment (May 2018) it was 4.73 ± 0.24 points. In percentage, the physical health of girls in control group increased only by 2.1%. As well as the boys of intervention group, the girls, engaged in physical education in line with the proposed experimental program, had statistically significant improvement ($p < 0.05$) of the level of physical health. Physical health index at the beginning of the experiment was 3.76 ± 0.28 points, but at the end – 4.76 ± 0.24 points and positive changes composed 21%.

Table 2. Changes of physical health level young girls of intervention and control groups

	beginning of the experiment			end of the experiment			Difference (%)	t-Value	P
	¹ PHI		² PHL	¹ PHI		² PHL			
	mean	⁵ SD		mean	⁵ SD				
³ IG (n=36)	3.76	0.28	below average	4.76	0.24	average	21	2.21	<0.05
⁴ CG (n=39)	4.6	0.22	below average	4.73	0.24	below average	2.1	0.7	>0.05

Notes: ¹PHI - physical health index; ²PHL - physical health level; ³IG - intervention group of girls; ⁴CG - control group of girls; ⁵SD - standard deviation

Increase of time for sports and recreation activities influenced on the improvement of components of physical health index: mass, life and power indexes, Ruf'ye test, that led to the potential improvement of physical health in these groups. There was a statistically significant improvement of two components of physical health index (mass and life indexes) in the intervention group of boys ($p < 0.05$). The improvement of mass index was due to weight reduction; and life index – due to the reduction of weight and increase of the vital lung capacity of students of intervention group. Mass index at the end of the experiment increased by 12% and life index increased by 29.6% at the end of the experiment. Girls of IG under the influence of experimental activities had statistically significant changes in the life and power indexes and Ruf'ye test ($p < 0.05$) by improving anthropometric parameters (weight reduction, increase of vital capacity of lungs, growth of hand dynamometry results) and functionality of cardiovascular system. In the beginning of the experiment the girls of IG had life index equal to 53.1 ± 4.2 ml/kg, but at the end 57.5 ± 3.91 ml/kg (increased by 7.65%). The power index in the intervention group increased by 3.72% at the end of experiment. Results of Ruf'ye test had also statistically significant increase (17.6%) during the experiment in the groups of girls (Table 3). The above changes of PHI components together influenced the statistically significant increase in the physical health index of boys and girls of intervention groups.

Table 3. Changes of physical health index components young girls of intervention group

Components of ¹ PHI	beginning of the experiment		end of the experiment		Difference (%)	P
	mean	² SD	mean	² SD		
Mass index (kg/m ²)	24.52	2.8	20.36	2.64	16.96	<0.05
Life index (ml/kg)	53.1	4.2	57.5	3.91	7.65	<0.05
Power index (%)	50.76	3.32	52.72	2.6	3.72	<0.01
Robinson index	78.29	4.23	70.71	4.34	9.68	<0.05
Ruf'ye test	12.5	1.06	10.3	1.01	17.6	<0.05
¹ PHI	3.76	0.28	4.76	0.34	21	<0.05

Notes: ¹PHI - physical health index; ²SD – standard deviation

Discussion and conclusion

Experimental results determine the potential positive changes of PHL of middle school-aged children (boys and girls) of intervention groups who were engaged in recreation-oriented tourism ($p < 0.05$). In contrast to intervention in control groups, where students attended classes of physical education and sports classes in

volleyball according with the curriculum, we have not observed statistically significant positive changes in the level of physical health ($p>0.05$).

These results have a logical explanation. After the implementation of the main tasks of developed by us experimental program of recreation-oriented tourism, the children of intervention groups had increased levels of motor activity during the day, the interest in keeping and strengthening of their health increased, a stable motivation to regular physical training and sports was formed; and the priority of a healthy lifestyle was acknowledged. In accordance with literature data, of high priority is a further research in the development of technologies for the application of recreation-oriented measures to increase a level of physical health and physical activity on high school-aged students (Chen & Housner, 2013; D'Isanto & Di Tore, 2016; Di Tore, Schiavo, D'Isanto, 2016).

In conclusion, under the influence of the experimental program focused on recreation-oriented tourism, which included hiking and cycling in warm months of academic year (spring, autumn) and skiing trips in winter, there was a significant increase of the children physical health in intervention groups ($p<0.05$). Index of physical health in intervention group of boys increased by 17.7%, and reached the average level. The same was observed in the intervention group of girls, where the index rose by 17.9%. The level of physical health of students in control groups remained below the average level, and changes during the period of the experiment, in terms of mathematical statistics, were accidental ($p>0.05$). Index of physical health in control group of boys at the end of the experiment increased only by 0.13%. In control group of girls the improvement constituted 2.1% and also had no statistically significant nature.

Physical education on the basis of the use of contemporary recreational tourism technologies is one of the most effective methods of increasing the physical health. According to the received information recreational tourism program may be the key to forming and maintaining the proper physical health of the middle school-aged children.

Conflicts of interest. Authors have not any conflicts of interest to declare.

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