

INFLUENCE OF HIKING TRAININGS ON 13 YEARS OLD ADOLESCENTS' HEALTH

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Abstract. *Purpose:* determination of influence of hiking trainings on adolescents' health. *Material:* the research covered adolescents, who train hiking for one year in hiking circles (20 boys and 16 girls) and adolescents, who do not practice hiking trainings (18 boys and 20 girls). Age of participants was 13 years. The following indices were determined: Kettle -2 index, Robinson's index, indices of Skibinskiy, Shapovalova, Ruffiet. *Results:* positive influence of hiking trainings on general health condition of adolescents was determined. It has been recommended to practice hiking at days off, summer holidays and during academic year. It was found that general health of group 2 adolescents (who did not practice hiking) corresponds to level below middle (10-13 points). Adolescents of group 1 (who practice hiking) level of general health reaches middle level (14-18 points). *Conclusions:* it is recommended to assess schoolchildren's health in points. Besides, it is necessary to consider points of every separate index; it will permit to find weak points of adolescents organism's functioning.

Key words: physical health, hiking, adolescents, school, health indices.

Introduction

Health of population is one of main criteria of society's welfare. It is of common knowledge that for the recent 100 years human motor functioning reduced from 94% to 1%. Furmanov A.G. et. al. note that absence of muscular work (muscles make 40% of our organism) is dangerous for our health [8]. Special attention should be paid to schoolchildren's health condition and their reduced motor functioning.

Analysis of special literature shows that schoolchildren's health has being significantly worsened. For example for the recent 10 years morbidity of school age adolescents has increased by 26.8% [10]. As on to day, by statistical data, among first from schoolchildren 30% have different health problems [7, 11, 12, 15, 16, 18, 19, 23]. The most typical of them are problems of muscular skeletal apparatus, eyesight, nervous-mental problems, brain dysfunctions, complexes of chronic diseases and etc. [2]. Among school leavers about 90% have different abnormalities of physical and mental health [7, 11].

In Ukraine 60% of school leavers and graduates are unfit for military service; quantity of schoolchildren and students, who are not able to practice physical culture and are members of special health groups constantly increases [3]. In this connection it is necessary to pay special attention to children's and adolescents' health. The most accessible and the least costly is circle hiking trainings.

Researches of domestic [1, 2, 4, 5, 12, 15, 16] and foreign [13, 20-24] scientists elucidate problems of youth's health and state positive influence of hiking on life quality. Alongside with it youth's health protection with the help of hiking has not been studied sufficiently, considering changing environment and social structure.

Purpose, tasks of the research, material and methods

The purpose of the research is determination of influence of hiking trainings on health of 13 years' old adolescents.

The tasks of the research:

- 1) Analysis of literature sources, devoted to modern adolescents' health.
- 2) Determination of physical health of 13 years' old adolescents, who practice hiking and their peers, who do not practice it.
- 3) Find out and analyze distinctions in health of adolescents, practicing and not practicing hiking.

For solution of the mentioned above tasks we used the following methods: analysis and generalization of scientific methodic literature, determination of indices of Kettle-2, Robinson, Skibinskiy, Shapovalova, Ruffiet and level of physical health; methods of mathematical statistic.

The research covered 13 years' old adolescents, who train hiking for one year in hiking circles of Chuguyev hiking and regional geography district center (group 1, n=36) and their peers, who do not practice hiking (group 2, n=38).

Results of the research

We made assessments in points and by the total sum of points we determined schoolchildren's health condition. However, except general assessment, we considered points for every separate index that permitted to find "weak points" of organism's functioning.

In tables 1 and 2 we can see that most of indicators of group 1 adolescents are better than in group 2. It witnesses about positive influence of hiking on adolescents' health.

Table 1

Level of physical health of 13 years old boys, who practice (n=20) and do not practice \ (n=18) hiking

Indicators		Boys, who do not practice hiking	Boys, who practice hiking
Kettle-2 index	index, kg/m ²	18.4	18.2
	points	3.9	3.7
	assessment of indicator	Harmonious (+)	Harmonious (+)
Robinson's index	Index, conv.un.	108	102.1
	points	2.3	2.7
	assessment of indicators	Below middle	middle
Skibinskiy's index	Index, conv.un.	787	959.6
	points	2.8	3.7
	assessment of indicator	middle	Above middle
Shapovalova's index	Index, conv.un.	77	143
	points	1.3	3.3
	assessment of indicator	low	middle
Ruffiet's index	Index, conv.un.	15.8	15.1
	points	2.4	2.3
	assessment of indicator	Below middle	Below middle
Total of points		12.6	16.0
General assessment of physical health		Below middle	middle

Table 2

Level of physical health of 13 years old girls, who practice (n=16) and do not practice \ (n=20) hiking

Indicators		Girls, who do not practice hiking	girls, who practice hiking
Kettle-2 index	index, kg/m ²	18.8	18.4
	points	3.1	3.8
	assessment of indicator	Harmonious (+)	Harmonious (+)
Robinson's index	Index, conv.un.	105	100
	points	2.4	2.6
	assessment of indicators	Below middle	middle
Skibinskiy's index	Index, conv.un.	723	727
	points	2.9	2.6
	assessment of indicator	middle	middle
Shapovalova's index	Index, conv.un.	88	151
	points	1.6	3.2
	assessment of indicator	low	middle
Ruffiet's index	Index, conv.un.	15.4	15.3
	points	2.8	2.6
	assessment of indicator	Below middle	Below middle
Total of points		12.4	15.0
General assessment of physical health		Below middle	middle

Index Kettle-2 characterizes how harmonious physical condition and body constitution are. The received results witness that in all groups results correspond to harmonious level with bent to stout constitution. However, we see that in group 1 (boys and girls) these indicators are less by 0.2 and 0.4 points accordingly. It witnesses about decreasing of body fat and body mass.

By Robinson's index we can see condition of cardio-vascular system. It is evident that under influence of hiking, adolescents' motor functioning increases. Hiking as one of forms of active leisure, has health related character, positively influences on physical workability and facilitates perfection of human physical qualities. Hiking is practiced mainly in the open air and gives reasonable physical loads that improve cardio-vascular system. For example, indicators of group 2

adolescents correspond to level below middle. In group 1 these indicators, being not very higher, nevertheless reached middle level.

Skibinskiy's index characterizes functional potentials of respiratory system, organism's resistance to hypoxia and will qualities. In average, boys of this age have indicators from 734 to 898 and girls - 630-984 conv.un. The received difference in girls' indicators is not significant. Difference of boys' indicators first of all witnesses about higher will qualities of hikers. It is known that under influence of hiking character of a personality is formed. Specific conditions of hiking functioning facilitate progressing of discipline and commitment of a child, sensitivity and attention to friends and surrounding people, firmness and courage, responsibility and features of organizer.

Shapovalova's index characterizes strength, quickness and speed endurance of back and abdomen muscles. Indicators of adolescents-hikers are nearly 2 times higher than of the rest of adolescents (boys-hikers have 143 conv.un.; girls-hikers – 151 conv.un.; their peers, who do not practice hiking have 77 and 88 conv.un, accordingly) Such difference is conditioned by requirements of hiking to torso muscles: when walking with load on rough terrain, passing technically difficult parts of route muscles of legs, arms and torso take great load during long time.

Ruffiet's index characterizes response of cardio-vascular system to physical load. All adolescents demonstrated level below middle that witnesses about "weakest points" of organism's functioning of 13 years' old schoolchildren. After one year of hiking practicing there is certain improvement of this indicator. Though, it is not sufficient and in process of further this indicator shall be paid special attention to.

Thus, we determined that general level of physical health of group 2 adolescents corresponds to level below middle (10-13 points) nearly not exceeding this level (boys – 12.6; girls – 12.4 points). At the same time, indicators of group 1 approach to middle level (14-18 points).

Discussion

Learning conditions of adolescents influence significantly on their health. Among factors, which influence on health indicators school takes far from the last place. 80% of time child spends in school and during this time he (she) has to be under influence of school factors, which are of combined character [2]. General morbidity of comprehensive schools' pupils in Ukraine is 64% - 71% [4]. For the period of learning at school quantity of pupils – members of special health group- increases nearly 2 times [6]. At the same time, recent years high level of physical health has been found only in 0.32% boys and girls; level "above middle" – in 4.18%, middle – in 27%, "below middle" – in 27%, low – in 41.48% [1].

In opinion of scientists optimal scope of adolescents' motor functioning shall be 12-14 hours per week, providing proper physiological loads are ensured. Though, existing complex program of physical education contains only three lessons every week. That is, motor functioning of modern Ukrainian schoolchild does not exceed 3-4 hours a week and is only 25-30% from hygienic norm [5, 9].

That is why hiking at day off, summer vacations and in academic year is an effective mean of improvement of school children's physical functioning.

The carried out research proved results of other authors [2, 4, 7, 13, 14, 17, 20] related to positive influence of hiking on children's health. Besides, we expanded data of M. Kolesnikova and M. Borisiuk (2012) A. Fedorov and S. Sharmanov (2009) et al. [1, 6, 10, 21, 22, 24] about demand in optimization of schoolchildren's motor functioning. Alongside with it this research showed that it is necessary to consider environmental conditions, when practicing hiking.

Conclusions:

Thus, one year of hiking practicing results in improvement of physical health of adolescents nearly by all indicators that witnesses about positive influence of hiking on adolescents' organism, especially in modern conditions of insufficient motor functioning and weakened schoolchildren's health.

The prospects of further researches imply determination of influence of different kinds of hiking on students' physical health.

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Conflict of interests

The authors declare that there is no conflict of interests.

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