ESTIMATION OF PHYSICAL HEALTH STATE OF THE FIRST YEAR SECONDARY PUPILS

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Abstract: It is noticed in modern researches that schoolchildren are influenced several factors that lead to negative effects on their health. One of these factors is the deficit of motive activity since limited exercises increase the possibility of facing diseases. This study shows the interconnection level between the somatic health level and level of adaptive and reserve capabilities of the body of the first year secondary students.

Keywords: Physical health, secondary students, somatic health, physical training

Introduction

Modern researches reveal a considerable worsening of the people's health state for the last decades: especially among children and young people. Along with such factors as a genetic inclination, abnormal social and ecological conditions, the schoolchildren's health is considerably influenced by the factors directly related to the educational process at school. Those are intensification and inefficient organization of educational process, disparity of educating methodologies to the age-related and psychological features that cause up to 40% of different children's diseases [1].

In the opinion of specialists, one of the main factors which have negative influence on the state of children is the deficit of motive activity, which is already revealed in a mid-childhood [4]. Some researchers regard the limited exercise as the leading factor of the origin of diseases [11].

According to some authors, when a child begins going to school after kindergarten, he or she undergoes the fall-off of motive activity that causes the considerable decline of health [1]. The specialists of World Health Organization recommend increasing the motion activity of children to minimum 120 minutes a day. In their opinion, it will help maintain their health and faster adjust themselves to the social and economic life conditions [9].

The study of the health state of children and young people along with the physical training is the foundation to developing prophylaxis and health promotion programs, determination of the system of physical exercises for health improving of the younger generation [4].

The analysis of the literature suggests the determination of health level and the body adaptive capabilities of first year secondary school students.

Objective of the study:

The study aims at defining the physical health level and the body adaptive and reserve capabilities of the of first year secondary school students.

Tasks of the study:

Conducting the complex estimation of physical health, defining Robinson index, results of functional tests, muscle activity tone and correspondence of the pupils' body weight to their height.

Defining the level of students' adaptation to the environmental conditions and the conditions of school educating.

Setting the interconnection level between the somatic health level and level of adaptive and reserve capabilities of the body of first year secondary school students.

Materials and methods of the study:

The object of the study is the physical health characteristics of 55 first – grade pupils (28 girls and 27 boys). The method by G. L. Apanasenko [1] was used to determine the physical health level. The method by S. V. Gozak and O.T. Yelizarova [2] was used to estimate the adaptation-reserve abilities of the body of the first year secondary school students.

The choice of methods is conditioned by their availability for practical application and sufficient informing for prognostication of children's morbidity, which gives the opportunity to take prophylactic and health strengthening measures in the physical training system.

Results of the study and discussion:

During the study, the body length and weight parameters were determined, chest volume at rest, vital capacity of lungs (VC), heart rate (HR), systole and diastole arterial blood pressure (BP), dynamometry of the strongest hand, timed inspiratory capacity on inhalation (Stange test) and on exhalation (Gench test).

One of important parameters of physical development of a pupil is the general weight to height ratio [7]. The method of chest perimeter estimation showed that 70.4% boys and 39.3% girls have harmonic physical development. The high values of chest perimeter are found in 3.6% girls and for 11.3% boys. Parameters above average were found in 14.4% girls and 3.7% boys. Parameters below average were detected in 17.8% girls and 17.4% boys. The low chest volume parameters in relation to the body length were found in 7.4% boys and 17.8% girls. 7.1% girls have very high chest volume parameters with somatoscopically detected obesity.

Using the perceptual method of chest perimeter estimation depending on the body length it was found that the percentage ratio of boys that have a harmonic body structure is considerably higher than that of girls. The girls of that age probably have a considerably lower level of motive activity.

It was determined that in most first-grade pupils' HR values according to V.K.Tatochenko (1997) are within the limits of the age-related norm (57.1% girls and 55.5% boys). Insignificant bradycardia was found in 7.1% girls and 18.5% boys, moderate tachycardia – in 3.7% boys and considerable tachycardia – in 7.1% girls [3].

The vital capacity parameters of lungs were estimated in correlation with normative values calculated by Louis formula. In most pupils (63.4% girls and 88.9% boys) VC exceeded the norm rate; that is the evidence of high functional level of lungs. At the same time, in 35.7% girls and 11.2% boys the VC values were below the normal rate [4].

Average Stange and Gench tests are below the physiological norm both in boys and girls.

The analysis of the findings of the study showed that most physical condition parameters of children aged 6 – 7 have no reliable statistical sex-relevant distinctions (Table 1).

Table 1:

Average group parameters of physical condition of the first year secondary school students.

No.	Indexes	Boys (n=27)		Girls (n=28)		t	t_{gr+}
		$\overline{x}$	σ	$\overline{x}$	σ		
1.	Length of body, cm	120.9	5.9	122.75	5.2	1.24	2.06
2.	Body weight, kg	23.1	3.2	23.5	3.7	0.43	2.06
3.	Chest volume, cm	59.2	3.1	58.5	4.0	0.72	2.06
4.	HR, beats per minute	88	8.8	92	9.6	2.12	2.06

5.	BP systole, mm Hg	90	9.9	87	7.8	1.63	2.06
6.	BP diastole, mm Hg	57	9.3	57	7.6	0	2.06
7.	Vital capacity of lungs, ml	1399	229	1377	186	2.47	2.06
8.	Dynamometry of the strongest hand, kg	13.7	4.7	12.6	4.8	0.81	2.06
9.	Stange test, seconds	20.8	4.5	21.4	7.0	0.40	2.06
10.	Gench test, seconds	12.9	3.9	14.5	4.9	1.23	2.06

Five parameters were determined for complex estimation of physical health: Ruffier and Robinson index values, vital and power indexes, according to the body weight and length. The study found that the first-grade pupils have the best parameters in power, and the worst ones in the Ruffier indices for both boys and girls. It shows that most first – grade pupils have a low level of physical capacity. Thus, the materials of the study prove the necessity of athletic and prophylactic measures to be taken for these children.

Materials of the study show the percentage ratio of pupils depending on the level of functional parameters (Table 2).

Table 2:

First year secondary school pupils' rate by the level of functional indexes (%).

N⁰	Level	Boys (n = 27)				Girls (n = 28)			
		VI	PI	Robinson index	Ruffier index	VI	PI	Robinson index	Ruffier index
1.	High	7.4	44.4	25.9	0	3.6	50	28.6	0
2.	Above average	18.5	7.4	25.9	0	39.3	3.6	17.8	0
3.	Average	48.2	7.4	14.8	14.8	39.2	10.7	28.6	7.1
4.	Below average	14.8	14.9	14.8	59.3	17.8	7.1	10.7	64.3
5.	Low Level	11.1	25.9	18.6	25.9	0	28.6	14.3	28.6

During the study it was determined that most schoolchildren have low, below the average and average physical health level. Only 3.6% girls and 11.1% boys have the above average health level. An average health level was found in 57.1% girls and 37% boys, below average – in 17.9% girls and 33.3% boys. The low level of health was found in 21.4% girls and 18.6% boys. No pupils with high health level were determined.

The analysis of the materials of the study showed that 96.4% girls and 88.9% boys belong to the group of risk. Additional studies determining the degree of adaptation of children to the environmental conditions were performed in this connection.

It was ascertained that 100% girls and 92.6% boys who study in the first grade of the secondary school feel the tension of their adaptation mechanisms. Thus, only 7.4% boys have the high level of adaptive reserve capabilities of the body, and 85.7% girls and 70.4% boys have an average level. Critically low level of adaptation has been defined in 14.3% girls and 22.2% boys.

The high level of cross-correlation relation between the level of adaptive reserve capabilities and somatic health level was determined: $r = 0.60$ in boys and $r = 0.69$ in girls.

Conclusion:

Determination of the level of physical development, somatic health and adaptation character enables to individualize the process of physical training for school children.

During the study, the findings of some authors were confirmed that the state of somatic health of most first year secondary school pupils is below the critical level. Absolute majority of the first – grade pupils are in the group of risk, which reduces their health level. Therefore these children require athletic and health strengthening measures that will assist the increase of health and adaptive reserve capabilities.

References

1.	G.L.Ananasenko	Sanology (Medical a Aspects of Valeology (Science of Health)	G.L. Ananasenko, L.A.Popova, A.V.Maglevaniy//Tutorial for students of postgraduate education; Lvov, 2011; p 303.
2.	S.V.Gozak	For a Question of School – Age Children' Organism Adaptive Reserve Capability in Hydienic Researches	S.V. Gocak, O.T. Elizarova//Hydiene of the populated places; 2012; $N^0 59$, pp. 285 – 293
3.	T.V.Kapitan	Propaedeutics of Children's Illnesses with Child – Care	Educational book for students of higher medical establishment
4.	T.Yu.Krutcevich	Control in the Physical Education of Children, Teenagers and Youth	Study guide T.Yu.Krutcevich, M.I.Vorobiev, G.V.Bezverhnaya// Olympic Litterature, Kiev, 2011; p.224
5.	L.S.Mihno	Physical Training Technology for Younger Schoolboys with the Use of Yoga-Aerobics, which Forms their Health	L.S. Mihno// Sports Bulletin of the Dnieper region// 2014. $N^0 2$ pp. 102 – 107
6.	S.Trachuk	Physical Activity and Saving the Health of Children in the Physical Education Process	S. Trachuk// Theory and methodology of the physical education and sport// 2008.$N^0 1$ pp. 69 – 71.
7.	V.D.Chebotareva	Propaedeutic Pediatrics: Educational Book for Students of Higher Educational Medical Establishments	V.D.Chebotareva, V.G. Maidanik// Kiev, 1999, 578 pp.

8.	Armstrong N.	Physical Activity, Physical Fitness, Diet and the Health in Young People	Neil Armstrong, Sulin Cheng, J. Larry Durstine // Journal of sport and health science. 2012. – Vol 1. – pp. 129 – 130.
9.	Capio M.	Fundamental Movement Skills Training to Promote Physical activity in Children With and Without Disability	A pilot study [-2014. Electronic resource]// Catherine M., M. Caprio, Gindy, H.P. Sit, Kathlynne F.Eguia, Bruce Abernethy, Richard S.W. Masters// Journal of Sport and health science. http//www.schiencedirect.com/science/article/pii/s209525461400021
10	Chen A.	Motor Skills Matter to Physical Activity – At Least	Ang Chen// Journal of sport and health science. 2013 – vol.2 – pp. 58 – 59.
11.	World Health Organization	Global Recommendations on Physical Activity for Health	Geneva. Switzerland: World Health Organization; 2010 – 60 p.