Original Article

Physical condition of primary school children in school year dynamics

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Abstract:
The publication covers the issues of primary school-aged children's physical condition, the analysis of somatometrical, somatoscopical and physiometric parameters of primary school-aged children's physical condition during the school year allows for the conclusion that the indices of children's physical development and its balance are mainly located within average indices. The indices of cardiovascular system functioning in primary school-aged children are as well within average values, which is proved by the results of analyzing the indices of adaptive and potential capacity of children's bodies. Poor indices of respiratory system functioning, as well as the indices of physical efficiency and physical fitness in primary school children were revealed. The survey of disease incidence in primary school children indicated that over half of children have non-contagious diseases, with the highest rate of musculoskeletal disorders. Psychoemotional responses to study load of the majority of children are close to negative ones. The data, received as the research result, indicates the necessity to conduct fitness and health recreation activity for the primary school-aged children as a part of physical education, aiming to improve the indices of their physical conditions.
Key words: physical condition, primary school children, physical education.

Introduction

The initial and the most important need of a person is health, which means sufficient level of physical condition (Kashuba et al, 2010b, Butenko, 2016). It contributes to all-round and harmonious development of the individual, ability to work and creative ability. Physical condition characterizes human's personality, his/her medical status, body built and body type, body's functional abilities, physical efficiency and physical fitness. Thus, physical condition is defined as a system of morphological, physical and functional indices of a human body's development and condition, his/her physical qualities and abilities, determined by the internal factors of adapting to living conditions (Kashuba et al, 2010a).

The problem of increasing the level of health and physical condition in the younger generation has recently been of big topicality, and its solution – the high-priority task of modern society. To solve this extremely complicated task there must be a holistic scientific approach, which provides complete understanding of stages, peculiarities, laws of building health, factors and conditions of increasing the level of physical condition.

Schoolchildren, along with gaining knowledge and skills, which is provided by the framework program in physical education, must have high level of physical condition, be developed harmoniously. The level of physical condition of school-aged children has recently been causing big concern. Numerous scientists note the tendency towards steady deviation in schoolchildren's health status, caused by the increase of study load alongside with decrease of physical activity, which is quite typical for a modern school (Zakrajsek et al, 2003, Goncharova et al, 2016). The tendency of children's health deterioration looms large and gives evidence of necessity to redouble attention to preventing diseases (Baranov et al, 2008, Futornyi, 2011, Tyazhka et al, 2011). There are many factors that adversely affect the level of schoolchildren's physical condition and health, among which are curriculum intensification, reduction of physical activity level, growth of psychoemotional tension, and as a result – disbalance in physiological processes of a growing body, negative changes in social and economic standards of living, inadequate nutrition (Gaetano, 2016). The system of some of the factors or all of

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them leads to children's over fatigue, which requires intensification of their adaptive and potential capacity (Aleksandrova et al, 2003, Saienko, 2009, Dubovoi et al, 2013).

Physical education of primary school-aged children must be oriented to health strengthening, harmonious physical development, development of physical qualities, advanced development of body's morphological and functional abilities, formation and improvement of vital motor skills and corresponding knowledge (Tolchieva, 2009, Andrieieva et al, 2017, Butenko et al, 2017). And efficiency and effectiveness of organizing physical education process are closely connected to diagnostics and assessment of physical condition level in school-aged children (Ivashenko et al, 2015, Svietlova et al, 2016).

Material & methods

163 schoolchildren of 2-4 forms from comprehensive school (82 boys and 81 girls) participated in the ascertaining experiment which was performed during school year. The children were divided into groups according to the age and gender: 7-year-old (n=36) – 20 boys and 16 girls, 8-year-old (n=40) – 21 boys and 19 girls, 9-year-old (n=50) – 22 boys and 28 girls, 10-year-old (n=37) – 19 boys and 18 girls. On medical evidence, at the beginning of school year medical status of all children allowed visiting physical education classes with full and reduced exercise load.

The following research methods were used for comprehensive study of the components of primary school-aged children's physical condition: theoretical analysis and compilation of the data both from scientific and methodology resources and documental records; pedagogical research methods (observation, experiment, testing); anthropometric research methods; physiological research methods; the method of identifying the level of children's body resistance to advert environment factors; the method of express-estimation of the rate of physical health; psychological research methods; methods of mathematical statistics.

Results

Physical development is one of the most objective indices of children's physical condition and one of the most meaningful criteria of the age rate of healthy body growth. Physical development includes the system of morphofunctional body indices:

Somatometrical, somatoscopical and physiometric values

The following anthropometric indices were analyzed in order to study the peculiarities of morphological status of children under survey: body length (BL), body weight (BW), chest circumference (CC).

Comparative analysis of anthropometric indices with the age norm reveals that deviation from the norm in the children under survey of all age and gender groups in BL (cm), BW (kg) and CC (cm) is within one regression sigma ($\pm 1\sigma$), which corresponds to the average level of children's physical development.

Considering the mentioned indices individually, we can say as follows: in the age-gender group of 7-10-year-olds most of the children have average level of physical development in three indices (BL – 72,39% (n=118), BW – 71,17% (n=116), CC – 78,53% (n=128)). Below average level of physical development in indices BL – 13,5% (n=22), BW – 14,72% (n=24) and CC – 13,5% (n=22) was revealed in primary school children. Above average level of physical development in indices BL – 12,27% (n=20), BW – 7,98% (n=13) and CC – 3,07% (n=5) was found in schoolchildren. High level of physical development in indices BL – 1,23% (n=2), BW – 5,52% (n=9) and CC – 4,29% (n=7) was shown by the children. Low level of physical development was found in three girls in three indices.

Making a comparison between boys and girls, we can say that the number of boys with average indices is bigger than the number of girls. Such status is kept in all three indices: BL (boys – 75,61% (n=62), girls – 69,14% (n=56)), BW (boys – 73,17% (n=60), girls – 69,14% (n=56)) and CC (boys – 85,36% (n=70), girls – 71,61% (n=58)).

The opposite tendency is observed regarding the number of boys and girls with below average level of physical development in all indices: (BL: boys – 12,19% (n=10), girls – 14,82% (n=12); BW: boys – 12,19% (n=10), girls – 17,24% (n=14); CC: boys – 7,32% (n=6), girls – 19,76% (n=16)). In the above average values this relation is observed in the indices BL (boys – 10,98% (n=9), girls – 13,58% (n=11)) and CC indices (boys – 2,44% (n=2), girls – 3,70% (n=3)). There were no children with the low values in major anthropometric indices among boys, but three girls had low level of BL, BW and CC indices.

It was reasonable to conduct comparative analysis of average parameters of anthropometric indices at the beginning of a school year and at the end of it in order to study the dynamics of somatometrical values in children under survey:

- the biggest growth in BL index is observed in 8-year-old girls ($\overline{x}$=3,92 cm; S=0,63 cm), in 7, 9, 10-year-old girls the index growth in average varies from $\overline{x}$=3,19 cm; S=0,48 cm to $\overline{x}$=3,68 cm; S=0,39 cm;

- the biggest growth in BW index during the year is observed in 10-year-old boys ($\overline{x}$=3,03 kg; S=0,87 kg), at this there is an age dynamics of gradual of body weight growth in 7-year-old boys ($\overline{x}$=2,2 kg; S=0,16 kg), 8-year-old ones ($\overline{x}$=2,33 kg; S=0,25 kg), 9-year-old ones ($\overline{x}$=2,95 kg; S=0,36 kg);

- the biggest growth in CC index is observed in 9-year-old boys ($\overline{x}$=4,87 cm; S=1,29 cm), average growth of CC indices in 7, 8, 10-year-old boys varies from $\overline{x}$=1,97 cm; S=0,04 cm to $\overline{x}$=2,9 cm; S=1,34 cm.

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Thus, in the average number of children under survey in all age and gender groups the indices comply with an average age norm.

BW and CC indices in reference to BL within one regression sigma ($\pm\sigma R$) indicate harmonious development of children under survey. The analysis of indices in defining the balance of physical development of children under survey allows for the following conclusions: there are 74,23% (n=121) children with harmonious physical development (75,61% (n=62) boys and 72,84% (n=59) girls), 21,47% (n=35) primary school-aged children with inharmonious physical development (19,51% (n=16) boys and 23,46% (n=19) girls) and 4,3% (n=7) children with extremely inharmonious physical development (4,88% (n=4) boys and 3,70% (n=3) girls).

Among the children with inharmonious and extremely inharmonious physical development under survey (n=42) there is a following deviation from the age norm: CC below standard is observed in 11,90% (n=5) children; CC above standard is observed in 11,90% (n=5) children; BW below average is observed in 28,57% (n=12) children with deviations in physical development; BW above standard is observed in 14,29% (n=6) children; downward deviation together in two indices BW and CC is observed in 11,90% (n=5) children; above standard BW and CC is observed in 21,43% (n=9) children. Thus, the most of deviations that lead to inharmonious physical development are caused by BW deficiency in children. The situation does not change significantly at the end of school year.

In order to study more objectively physical development of primary school-aged children we examined body posture of children under survey, which is considered to be not only one of the factors of a child's body natural position in space, but a significant index of physical condition and health in primary school-aged children. The indices of body posture were taken from school children's medical records, while additional examination together with the surgeon was conducted.

The data analysis proves that among primary school-aged children the deviations in body posture both in sagittal and coronal planes are observed. Significant difference between the body posture of boys and girls in different age groups is not revealed.

The most common posture fault in coronal plane in primary school-aged children is scoliotic posture, which is observed in 22,22% (n=8) of 7-year-old, 25% (n=10) of 8-year-old and 28% (n=14) of 9-year-old children.

The most common posture faults in sagittal plane are round-shouldered back (5,56% (n=2) are observed in 7-year-old children, 7,5% (n=3) – in 8-year-old ones, 10% (n=5) – in 9-year-old ones), and rounded upper-back (in 7-year-old children this disorder is observed 11,11% (n=4), in 8-year-old ones – 7,5% (n=3), in 9-year-old ones – 8% (n=4)). There fewer cases of scoliotic posture are observed in 10-year-old children, compared to other age groups (10,81% (n=4)), but the number of children with round-shouldered back is higher (18,92% (n=7). Such posture faults as flat back is observed much more rarely compared to the ones mentioned above. The highest number of such cases (6% (n=3)) is observed in 9-year-old children. A few cases of kyphotic-lordotic posture are observed. Military posture is not observed in children under survey. The cases of mixed posture disorders both in coronal and sagittal planes are observed. There are 2 such cases (5,55%) in 7-year-old children, 4 cases (10%) in 8-year-old children, 6 cases (12%) in 9-year-old ones and 4 cases (10,81%) in 10-year-old ones.

The largest number of children with normal body posture is discovered in the age group of 7-year-old children (50% (n=18)), the smallest one – in the age group of 9-year-old children (34% (n=17)).

In the age-gender group of 7-10-year-old children body posture faults in accordance with the number of cases are distributed in the following way: scoliotic posture – 22,09% (n=36); round-shouldered back – 10,43% (n=17); combined posture disorders – 9,82% (n=16); rounded upper-back – 8,59% (n=14); flat back – 3,68% (n=6); kyphotic-lordotic posture – 1,84% (n=3). This means that in the children under survey there are 56,44% (n=92) children with posture disorders, and 43,56% (n=71) ones with normal posture.

The level of physiological condition of the main body systems in primary school-aged children is defined with the help of analyzing the values of cardio-vascular and respiratory system indices, as well as their changes dynamics during school year. The level of cardio-vascular system (CVS) functioning in children under survey is defined by resting heart rate (RHR, beats per minute (BPM^{-1})) and blood pressure (systolic blood pressure (SBP) and diastolic blood pressure (DBP), millimeter of mercury (mm Hg)).

Data analysis allows for the following conclusions:

- RHR in most children under survey is close to the upper limit of age norm and is decreasing irregularly in age dynamics: from $\overline{x}$=95,95; S=7,28 BPM^{-1} to $\overline{x}$=88,16; S=7,28 BPM^{-1} in boys, from $\overline{x}$=97,63; S=4,92 BPM^{-1} to $\overline{x}$=89,89; S=3,46 BPM^{-1} in girls. Girls in all age groups have higher RHR than boys, and in the age groups of 9 and 10-year-old children this difference is statistically significant on the rate p<0,01;

- SBP and DBP in all age and gender groups is increasing gradually in age dynamics, and the difference between boys and girls is the most obvious in 9 and 10-year-old children.

Thus we can make conclusion that the values of the indices that characterize CVS activity in children under survey are within age norm.

While defining quality-quantity characteristics of study and physical load, it is necessary to take into account peculiarities of adaptive and potential capacity (APC) of children.

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At the beginning of school year children were distributed according to APC level as follows: high level – 1,23% (n=2) (boys 2,44% (n=2), girls were not found); medium level – 85,89% (n=140) (boys 87,80% (n=72), girls 83,95% (n=68)); low level – 2,45% (n=4) (boys 1,22% (n=1), girls 3,70% (n=3)); extremely low level – 10,43% (n=17) (boys 8,54% (n=7), girls 12,35% (n=10)).

At the end of school year we can see the following: high level – 3,07% (n=5) (boys 4,87% (n=4), girls 1,23% (n=1)); medium level – 87,73% (n=143) (boys 86,59% (n=71), girls 88,89% (n=72)); low level – 1,23% (n=2) (boys 1,22% (n=1), girls 1,23% (n=1)); extremely low level – 7,97% (n=13) (boys 7,32% (n=6), girls 8,64% (n=7)).

Using the method of screening assessment, we can draw conclusion that primary school-aged children are in general characterized by moderate tension of regulation mechanism, though body functional capabilities at rest do not decrease. It corresponds to average APC level in most of primary school-aged children. Boys are characterized by higher average indices values, which is the evidence of better condition of their CVS functional reactivity compared to girls.

Along with CVS, respiratory system is one of the leading systems that determine aerobic and anaerobic body performance. Comparative analysis of the values of vital lung capacity (VLC, ml) in children under survey proved that in comparison with age norms in boys in all age groups this index value is apocryphally lower than statistical norm. VLC index value is increasing in age (7-10 years) dynamics in boys from $\overline{x}$=1365,00 ml; S=163,11 ml to $\overline{x}$=1615,79 ml; S=149,12 ml, in girls – from $\overline{x}$=1231,25 ml; S=136,47 ml to $\overline{x}$=1463,89 ml; S=189,28 ml.

A low level of respiratory system functional condition, imperfect mechanisms of breathing regulation is supported by the analysis of the results of Stange-Hench test in children under survey.

The analysis of the results of Stange test revealed a small number of children with the value of tests within the norm – 12,27% (n=20) of children under survey succeeded in performing this functional test. We must say that boys succeeded a bit better in performing this test 13,41% (n=11)), compared to girls (11,11% (n=9)). 87,73% (n=143) of primary school children failed to perform the test.

The analysis of the results of Hench test revealed a bigger number of children with the index value within the norm, compared to Stange test – over the half of children (52,76% (n=86)) succeeded in performing Hench test. In this case girls are leading in the number of children succeeded (60,49% (n=49)), compared to boys (45,12% (n=37)). 47,24% (n=77) of primary school children failed to perform the test.

Considering the indices of functional tests in time dynamics we can say that at the end of school year, compared to its beginning, there are quantity changes involving increasing the number of children with the index value within the norm: in the index of Stange test it is 33,13% (n=54), in the index of Hench test – it is 69,94% (n=114). Thus, age dynamics of the main CVS and respiratory system indices in primary school children under survey correspond to general biological laws of development in the given period of ontogenesis.

Physical efficiency is a complex concept which in the restricted sense is understood as physiological condition of the main body systems. As a result of the analysis of Ruffier test indices the following peculiarities are found out: high physical efficiency is not discovered in either any age-gender group, or time dynamics during school year; medium physical efficiency was performed by 16,56% (n=27) primary school children (20,73% (n=17) boys and 12,35% (n=10) girls); most of primary school-aged children have satisfactory physical efficiency (76,69% (n=125)) – 73,17% (n=60) boys and 80,25% (n=65) girls; low physical efficiency is observed in 6,75% (n=11) children (6,10% (n=5) boys and 7,41% (n=6) girls).

Physical efficiency of children under survey has an age tendency upwards. 15,34% (n=25) primary school children have increased their level during school year, 9,20% (n=15) children have decreased their one, 75,46% (n=123) primary school children have not changed their level of physical efficiency. The indices of physical efficiency in girls are prevalently lower than in boys. Based on the above stated, we can say about unsatisfactory level of physical efficiency of primary school-aged children.

Physical fitness, as one of the parameters of children's physical condition, characterizes the level of physical qualities development and the rate of motor skills formation as a result of physical education. The analysis of the results of pedagogical testing of primary school-aged children shows the following results: high level of physical fitness is not discovered in any age-gender group, neither at the beginning of school year, nor at the end of it; sufficient level of physical fitness was shown by 1,23% (n=2) primary school-aged children, at the end of school year pedagogical testing revealed increase of the number of school children with sufficient level of physical fitness up to 2,45% (n=4) (2,44% (n=2) boys and 2,47% (n=2) girls); 25,77% (n=42) primary school-aged children (24,39% (n=20) boys 27,16% (n=22) girls) had medium level of physical fitness at the beginning of school year, at the end of school year number of children with medium level of physical fitness has increased up to 30,68% (n=50) (29,27% (n=24) boys and 32,10% (n=26) girls); overwhelming majority of children under survey have low level of physical fitness – 73% (n=119) (73,17% (n=60) boys and 72,84% (n=59) girls). In time dynamics at the end of school year we observe slight decrease in number of children with low level of physical fitness – 66,87% (n=109) (68,29% (n=56) boys and 65,43% (n=53) girls). Based on the above mentioned, we can say that the level of physical fitness in primary school-aged children is not satisfactory and demands significant increase.

We studied medical records of primary-aged school children under survey in order to analyze their disease rate. According to the results of medical examination, fewer than half (46,01% (n=75)) of primary school children are considered apparently healthy – 47,56% (n=39) boys and 44,44% (n=36) girls. Correspondingly, 53,99% (n=88) children with different kinds of health disorders are discovered (52,44% (n=43) boys and 55,56% (n=45) girls).

In age dynamics there is a tendency to gradual decrease in number of apparently healthy children: from 58,33% (n=21) in 7-year-old children to 40,54% (n=15) in 10-year-old children. In other words, number of children with deviation in health status is growing with age.

The analysis of disease rate in primary-aged school children revealed the following peculiarities of distributing children with deviation in health status, according to ICD, apart from children with several diagnosis: musculoskeleton disorders are the most common in primary-aged school children (17,18% (n=28)), of which 15,85% (n=13) boys and 18,52% (n=15) girls; the following one in number of incidence in primary-aged school children is eye and appendages disorders – 8,59% (n=14), of which 4,88% (n=4) boys and 12,34% (n=10) girls; various cases of respiratory system disorders – 4,29% (n=7), of which 4,88% (n=4) boys and 3,70% (n=3) girls and CVS – 4,29% (n=7), of which 7,32% (n=6) boys and 1,24% (n=1) girls, are the next group of ICD disorders according to occurrence in children under survey; 3,68% (n=6) primary-aged school children (1,22% (n=1) boys and 6,17% (n=5) girls) have immune system disorders; 2,46% (n=4) primary-aged school children (2,44% (n=2) boys and 2,47% (n=2) girls) have lymphatic system disorders; there are three cases (1,84%) (2,44% (n=2) boys and 1,24% (n=1) girls) of digestive and genitourinary systems disorders.

The analysis of children's body resistance to advert environment factors was conducted on the base of data from lesson attendance records and sick leaves and revealed that: number of days of sick leave in 100 children – 968,10 days (1032,93 days in boys and 902,47 days in girls); disease incidence in 100 children – 209,82 cases (206,10 cases in boys and 213,58 cases in girls); number of children who have not been ill during a school year – 15,95% (n=26) (15,85% (n=13) boys and 16,05% (n=13) girls); number of children who have often been ill during a school year – 20,86% (n=34) (23,17% (n=19) boys and 18,52% (n=15) girls).

As a result of the analysis of primary-aged school children's body resistance to advert environment factors, we can draw the following conclusions: dynamics of the value of the index of the number of days on sick leave in 100 children has a well-defined age tendency – the lowest one was discovered in the age group of 7-year-old children (913,89 days), the highest one – in the age group of 10-year-old children (989,19 days); the highest disease incidence in 100 children is registered in the age group of 9-year-old children (214 cases), the lowest one – in the age group of 7-year-old children (200 cases); the biggest number of children who have not been on sick leave during school year belong to the age group of 7-year-old children (22,22% (n=8)), the smallest one – in the age group of 9-year-old children (10% (n=5)); the biggest number of children who have often been ill during a school year is found in the age group of 9-year-old children (26% (n=13)), the smallest one – in the age group of 7-year-old children (8,33% (n=3)).

Estimation of the rate of physical health (RPH) was carried out by G. L. Apanasenko technique. The analysis of the values of five indices, and their point assessment proved that over half of children under survey (55,21% (n=90)), of which 48,78% (n=40) boys and 61,73% (n=50) girls belong to low RPH. At the end of school year the number of children with low RPH is decreasing – 53,37% (n=87) (46,34% (n=38) boys and 60,49% (n=49) girls).

34,97% (n=57) of primary-aged school children (40,24% (n=33) boys and 29,63% (n=24) girls) have RPH below average. At the end of school year the number of children with such RPH slightly decreased – 31,29% (n=51) (35,37% (n=29) boys and 27,16% (n=22) girls).

Medium RPH was revealed in 9,82% (n=16) of primary-aged school children (10,98% (n=9) boys and 8,64% (n=7) girls). By the end of school year the number of children with medium RPH increased up to 14,73% (n=24), and the increase in number of children with such RPH was observed both in boys (17,07% (n=14)), and girls (12,35% (n=10)). RPH above average was revealed only in one boy at the end of school year (0,61%). We did not find any single child with high RPH among the children under survey.

During school year 18,41% (n=30) children (23,17% (n=19) boys and 13,58% (n=11) girls) increases their RPH. RPH has not changed in 68,71% (n=112) primary-aged school children (in 64,63% (n=53) boys and 72,84% (n=59) girls). RPH has decreased compared to the beginning of school year in 12,88% (n=21) primary-aged school children (12,20% (n=10) boys and 13,58% (n=11) girls).

Assessment of psychological condition of children under survey was conducted with the help of WAM test (wellbeing, activity, mood). The results of the test showed that the indices of wellbeing, activity, and mood in children under survey do not correspond to the norm and are gradually decreasing in age dynamics: in 7-year-old children these indices are within favorable condition zone (wellbeing $-\overline{x}$=4,29 points; S=0,93 points, activity $-\overline{x}$=4,47 points; S=1,01 points, mood $-\overline{x}$=4,07 points; S=0,94 points); WAM indices in 8-year-old children go down to lower limit values of favorable condition (wellbeing $-\overline{x}$=4,04 points; S=1,01 points, activity $-\overline{x}$=4,05 points; S=0,89 points, mood $-\overline{x}$=4,16 points; S=0,87 points); in 9-year-old children WAM values are located in unfavorable condition zone (wellbeing $-\overline{x}$=3,94 points; S=0,83 points, activity $-\overline{x}$=3,96 points; S=0,78 points, mood $-\overline{x}$=3,79 points; S=0,99 points); the analysis of the index values in 10-year-old

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children also revealed low WAM assessment, which correspond to unfavorable condition zone (wellbeing $-\overline{x}$ =3,87 points; S=1,05 points, activity $-\overline{x}$=3,79 points; S=1,10 points, mood $-\overline{x}$=3,74 points; S=0,96 points) both in boys and girls; in age-gender group of 7-10-year-old children there are lower limit values of favorable condition zone in the indices of wellbeing ($\overline{x}$=4,03 points; S=0,96 points) and activity ($\overline{x}$=4,03 points; S=0,96 points), but the values of mood indices are already within unfavorable zone ($\overline{x}$=3,94 points; S=0,97 points). All three WAM indices are within favorable condition zone in boys, but in girls the indices of wellbeing and mood go down to unfavorable condition zone.

Thus, express assessment of psychological condition proves the low level of psychoemotional response to study load in most of children, which indicates the increase of primary-aged school children's fatigue.

Discussion

The process of physical education of children involves solving one of the main Pedagogics tasks – protecting and strengthening children's health. Physical condition is a complex concept where the level of physical health is one of the components. Nowadays, health status of primary-aged school children is causing great concern, which is growing into social problem that requires immediate solution. Along with that, the indices of primary-aged school children's physical efficiency and physical fitness are also unsatisfactory. And the most of children have the indices of physical development at the average level.

The effectiveness of physical education, directed at strengthening children's health is possible with constant control over indices of physical condition components: anthropometric indices, indices of the level of major body systems' functioning (cardio-vascular and respiratory) physical fitness and physical efficiency, and timely adequate correction of physical education in order to increase healthcare effect.

Conclusions

As a result of the ascertaining experiment we established that the values of BW, BL and CC indices in primary-aged school children mainly correspond to average values (74,85% (n=122)) according to age standards, most of children have harmonious physical development (74,23% (n=121)).

The analysis of children's systems' activity allows for saying that indices of CVS functioning are within age norm, and the ones of respiratory system are characterized by decreased values of VLC and unsatisfactory results of hypoxic test. Assessment of APC of children under survey mainly corresponds to average one (85,89% (n=140)).

Most of children have satisfactory physical efficiency (76,69% (n=125)). Low level of physical fitness was presented by 73% (n=119) primary-aged schoolchildren.

The survey of disease incidence in primary school children revealed 53,99% (n=88) children having different diseases, with the highest rate of musculoskeletal disorders. Over half of children under survey have low RPH (55,21% (n=90)).

Evaluation of psychological condition indicates increase of fatigue in most of children, resulting in low level of psychoemotional response to study load.

The data, received as the research result, indicates the necessity to conduct fitness and health recreation activity for the children of the mentioned age group as a part of physical education, aiming to improve the level of physical conditions.

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