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Features of physical development of athletic girls who specialize in gymnastics and aerobics comparative assessment

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Abstract: The article talks about a comparative assessment of the characteristics of physical development of athletic girls who specialize in gymnastics and aerobics. Our study was conducted among athletes 3-5 years old and a girl 14-20 years old. the conclusions drawn from the article can be used to train gymnastic girls.

Key words: Aerobica, gymnastic, health, child,girls.

Introduction. It is generally recognized that the physical development of children is one of the informative indicators of the level of health of the population. The characteristic of health is, on the one hand, the correspondence of somatometric indicators according to age-related centile scales, and on the other, a certain ratio of physical development parameters [1, 3, 6]. First of all, this concerns the correspondence of body weight to body length [2, 3, 5]. Despite the fact that the definition of normative indicators, characterizing the physical development of a healthy child, a large number of works have been devoted, but so far this question remains relevant. In recent years, domestic researchers have increasingly used normative nonparametric (centile) tables to assess the individual physical development of children, which allow to unify the methodology for assessing the most important anthropometric indicators. The centile tables are simpler to work with, they can be used to assess the harmony of the physical development of children and adolescents, allow us to assess the pace of individual development of a child in ontogenesis [2, 6]. Growth processes have maximum rates at the 1st year of life, at the age of 5-7 years and 13-15 years. In general, an increase in linear dimensions with age allows, normally, by the end of the puberty period, to achieve definitive body sizes. It has been proved that body weight is a labile indicator, therefore it is an indicator of the current state of the body, unlike growth, which does not immediately change under the influence of various conditions and is a more constant and stable indicator [3, 5, 6]. Body weight can change under the influence of constitutional features, neuro-endocrine and somatic disorders; it also depends on exogenous causes (nutrition, regime). The increase in body weight is especially intense in the first quarter of the year and in the puberty period. By comparing an individual child with a basic population group, three indicators of the achieved level of physical development can be calculated: body weight for a given age, height for a given age and body weight for a given height. Scientists believe that body weight for a given length is a more accurate indicator of acute risk than body weight for a given age, and therefore this indicator is of great value for identifying children in need of alimentary treatment [3, 4, 6]. A child with a low body weight for a given age may lag behind in growth and have a relatively normal body weight for a given height. In children in older age groups, it will be accompanied by low growth for this age [3, 5]. Currently, much attention is paid to children who are engaged in a particular sport, and it is believed that uncontrolled physical activity negatively affects the health of the child. It is proved that from an early age a person experiences motor hunger, and this leads to inactivity, violation of many components of health, decreased physical and mental performance, insufficient development of the muscular frame, impaired coordination of movements [3]. All this forms the biological and physiological immaturity. In our society, most people are motor-inert, they know that they need to walk in the fresh air, do exercises, but, what's next, passivity, laziness and indifference. Full-fledged health is impossible without physical culture, but most educational organizations are aimed at the development of creative, intellectual abilities and little at the upbringing of a physically healthy person [3, 5, 6]. V.N. Chernyshov, N.V. Voshchinskaya N.V. (2002), S.N. Simonov, P.M. Gritskov, O.V. Tegeneva, A.M. Fetisov (2003) found that the characteristic of health is, on the one hand, the correspondence of somatometric indicators according to age-related centile scales, and with another, a certain ratio of mass to body length [3].

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The available literature does not disclose issues related to the level of physical development of girls who are engaged in sports and rhythmic gymnastics. Therefore, the aim of the work was to study the level of physical development of teenage girls engaged in sports and rhythmic gymnastics for the development of timely corrective measures both in polyclinic conditions and in educational organizations of various directions. Materials and methods. The object of the study was adolescent girls (n=100). Of these in 1 the main observation group included 25 girls engaged in gymnastics for more than 3 years. The second main group consisted of 25 girls of the same age engaged in rhythmic gymnastics. The comparison group included girls who are not engaged in sports activities (n=50). Anthropometric indicators were evaluated at
120 conducting direct medical examinations and when copying from medical documentation (forms 112 / y and o26 /y). Statistical processing of the obtained data was carried out using a standard software package using parametric and nonparametric criteria.

The results of the study and their discussion. Before classes in the sports section, girls of both observation groups more often had average indicators of the level of physical development (88.0% and 84.0%), less often below average (4.0% and 4.0%) and above average (8.0% and 12.0%). After 3 years, the level of physical development in 12.0% of girls of the 1st main observation group fell within the range of 90-97 percentiles, which is 4.0% more often than before gymnastics. In 80.0%, physical development indicators were in the range of 25-90 percentiles and in 8.0% in the range of 10-25 percentiles. In the 2nd main group, the level of physical development in 4.0% of girls fell within the range of 90-97 percentiles, in 80.0% in the range of 25-90 percentiles and in 16.0% in the range of 10-25 percentiles. In this observation group there was a tendency to decrease in the growth index in 12.0% of girls, while in the 1st main group there was an increase in the growth parameter in 4.0% of respondents. In the comparison group, indicators of the level of physical development both before and after the study were more often in the range of 25-90 percentiles (80.0% and 88.0%), which is 8.0% more than in the 1st and 2nd main observation groups. In 8.0% of girls, physical indicators corresponded to 90-97 percentile, which is 4.0% less than the previous three years, 4.0% less than in the 1st main group and 8.0% more than in the 2nd main observation group. It was noted that girls engaged in gymnastics were 3 times more likely to have a level of physical development above average than their peers engaged in rhythmic gymnastics, and 1.5 times more likely than girls who did not play sports. Girls who are not engaged in sports activities are 2 times more likely to have a level of physical development above average than girls engaged in rhythmic gymnastics. Before classes in sports school, the number of girls with deviations in the harmony of physical development was 24.0% in the 1st main observation group, 20.0% in the 2nd main group and 26.0% in the comparison group. Such data are mainly due to excess body weight of the I degree (8.0%, 4.0% and 20.0%, respectively, $p<0.05$) or its deficiency (8.0%, 12.0% and 0.0%, respectively, $p<0.05$). Three years after sports, girls 1st and 2ndthe activity of the main observation group has not been recorded overweight. They were more likely to have a degree I body weight deficit (12.0% and 16.0%). While girls from the comparison group were more likely to have excess body weight (24.0%) than its deficiency (4.0%, $p<0.05$).

Growth studies (transverse and longitudinal) revealed that the total increase in body length in children aged 11-12 years in the comparison group was 17.5 cm, in the 1st in the main group - 18.0 cm, in the 2nd main group - 16.0 cm.

Up to the age of 16, the increase in body length in girls from the comparison group was 16.0 cm, in respondents from the 1st main group - 11.5 cm, in girls of the 2nd main group - 9.0 cm. Consequently, the girls from the comparison group have a body length 4.5 cm longer than the girls of the 1st main group and 5 cm longer than the girls of the 2nd the main observation group. The girls from the 1st main group had a body length 2.5 cm longer than the girls from the 2nd main observation group. The increase in body length over the period of 16-17 years in girls from the 1st main group did not exceed 4.5 cm, which is 7.5 cm less than in the previous period, 2.5 cm less than in peers from the 2nd main group and the comparison group, their increase was 6.0 cm (Table 1). But the total increase over the entire study period was 17.0 cm in the 1st main group, 15.0 cm in the 2nd main group, and 16.0 cm in the comparison group.

To determine a more accurate definition of the functional health of gymnasts, we translated the absolute indicators of physical development into indices, as a result, it was found that 8-year-old gymnasts have a decrease in the percentage of people with average indicators due to their compliance with the high

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zone. So, if 12.1% were in the high zone at the age of 7, then at the age of 8 — 21%. There is a high percentage of people who got into the low and below average level in terms of life among 9 and 13-year-old gymnasts: 33.3 and 42.3%, respectively.

The factor of well-being was the cardiological index (CI), which characterizes aerobic capabilities and, hence, the level of somatic health. According to the indicators of CI, most of all gymnasts corresponded to the high zone at 8 years: 63.6%, in 12-year-olds, compared with 11-year-old gymnasts, this indicator sharply decreases, respectively, from 54 to 23%. Gymnasts of all age groups have a fairly low level of hand strength. In the middle zone, the percentage of persons varies from 7.1 to 15.8%.

Only 14-year-old athletes have a higher percentage of people who got into the above average and high zone —53%, this figure is slightly lower for 12-year—old gymnasts - 42.8%, which indicates the shortcomings of the content gymnasts' training programs and the need for purposeful development of hand strength.

Conclusions:

1. The physical development of young gymnasts occurs in waves, which corresponds to the literature data.

The most intensive development is observed in 8; 14 and 20 at the age of 14, with a slight decrease in the adaptive capabilities of the cardiovascular system.

2. A comparison of the dynamics of physical development and the main indicators of the level of health showed a close relationship between them, which follows

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