Young athletes and nutritional assessment

Yokutkhon Akhmadjanovna Kamalova
Samarkand State Medical University

Abstract: To study the age characteristics of the physical development of athletes involved in football and individual wrestling, the morphofunctional and bioimpedansometric features of their bodies. Bioimpedance analyzer Inbody 230 (South Korea) was used to determine the parameters of the component composition. The following parameters were determined: body weight, total muscle mass (TMM), body fat tissue mass, total body fluid level (TBF), body mass index (BMI), body fat percentage (BFP), waist / thigh (W / Th), and basic metabolic index. The highest rates were found in children of primary school age involved in football: they have an average body length of 150 cm, body weight - 45.6 kg, waist circumference - 58 cm, hip circumference - 78 cm, relatively low physical development in children involved in football, in wrestling: body length - 128.0-145.0 cm, body weight - 32-45 kg, waist circumference - 58.5-63.3 cm, hip circumference - 68.3-75.6 cm. A statistically significant correlation was found between body length, musculoskeletal mass, cell mass, fat mass and body mass index. Our results confirm that the examination of athletes by the bioimpedance method can be carried out in a short time and with high quality.

Keywords: athletes, bioimpedance analyzer, wrestling, football, morphological and functional indicators

INTRODUCTION: Assessment of physical development includes the measurement of morphological and functional indicators (body weight, height, waist and hip circumference, body mass indicators) [1].

A complete study of the morphofunctional state of the body serves as a basis for the athlete to reduce the amount of physical load given to the body by sports activities and thereby prolong the athlete's life [2].

PURPOSE OF THE RESEARCH: To study the young characteristics of the physical development of football and individual wrestling athletes, as well as the morphofunctional and bioimpedanceometric characteristics of their bodies [1].

MATERIALS AND RESEARCH METHODS: 58 athletes (35 athletes engaged in football and 23 athletes in individual wrestling) aged 8 to 15 years participated in the study. All athletes are divided into 2 groups: 1st group - 8-11 years old, 2nd group - 12-15 years old.

The questionnaire included the following parameters: body length; transverse dimensions of the body; circumference of the body, thickness of skin-fat layers; body

mass. "Inbodi230" (South Korea) bioimpedance analyzer was used to determine the parameters of the component composition.

The following parameters were determined: body weight, total muscle mass (TMM), body adipose tissue mass (BATM), total body fluid level (TBF), body mass index (BMI), percent body fat (PBF), waist/thigh (W/Th) and basic metabolic index. Bioimpedancemetry can be used to comprehensively evaluate the level of physical development of athletes [2].

Inbody device for bioimpedance analysis. Bioimpedance analysis mainly studies body indicators based on the principle of correlation. Indicators such as TMM, BATM, PBF, which are calculated based on this principle, show the level of physical development of the athlete.

Aternatively, excess body mass can be detected by BMI indicators in bioimpedance. According to the BMI indicator, athletes can be divided into groups such as low body mass, normal mass, and more than the norm [3].

RESEARCH RESULTS: It is of great interest to compare the data obtained by age periods, as well as to determine the effect of different types of sports on the body of children and adolescents.

Among the considered morphological indicators, body length, body weight, waist and hip circumference, body mass index and total body volume waist/thigh represent information about total body volume [4]. It can be seen that the highest indicators were found in children of elementary school age who play football: they have an average body length of 150 cm, body weight - 45.6 kg, waist circumference of 58 cm, hip circumference of 78 cm,

Relatively low indicators of physical development were found in children engaged in wrestling: body length - 128.0-145.0 cm, body weight - 32-45 kg, waist circumference 58.5-63.3 cm, hip circumference -68.3 It was equal to -75.6 cm.

These indicators are presented in the table.

Table 1.

Analysis of anthropometric indicators of athletes of primary school age

Indicators	Athletes - football players of primary school age	Athletes - wrestlers of primary school age
Body length	150 kg	128,0 – 145,0 kg
Body mass	45,6 cm	32 -45 kg
Waist circumference	58 cm	58,5 – 63,3 cm
Hip circumference	78 cm	68,3 – 75,6 cm

Table 2.

Analysis of anthropometric indicators of teenage athletes

Indicators	Athletes are junior football players	Athletes are teenage wrestlers
Body length	160, 2 cm	155,4 cm
Body mass	54,1 kg	47,3 kg
Waist circumference	65, 2 cm	60,4 cm
Hip circumference	82, 5 cm	76,7 cm

The indicators of physical development of football players who play sports in adolescence are high, their average body length is 160.2 cm, body weight is 54.1 kg, waist circumference is 65.2 cm, hip circumference is 82.5 cm, body length of wrestlers is 155.4 cm, body weight is 47.3 kg, waist circumference is 60.4 cm, hip circumference is equal to 76.7 cm.

It is known that, on the one hand, the size and growth rate are regulated by genetic factors, and on the other hand, they develop under the influence of the environment.

Boys and youths who play football are characterized by a tall and leptomorphic body structure. Young wrestlers are characterized by shorter height, larger chest, and brachymorphic body structure than football players [6].

Body length is the main indicator of a person's physical development; it does not immediately change under the influence of various environmental conditions, but changes in this indicators indicate a longer well-being or trouble in the state of the child's body. Growth shifts are important in their own right meaning. As body consumption increases, weight increases and chest circumference.

Body weight, in contrast to length, is a very labile indicator that easily changes depending on the regimen, quality of life conditions, and general condition. Therefore the mass is indicator of the current state and depends on the length of the body. Body composition in sports is considered as one of the factors that determine the effectiveness of sports activities. Of paramount importance is the calculation of fat mass, which performs the functions of a metabolically active organ, its sufficient level plays a significant role in maintaining overall health. Knowledge of the composition of the body is used in determining sports performance.

CONCLUSION: Thus, knowing the age characteristics of children's physical development allows a holistic approach to the issue of children's harmonious physical development, excluding forced or one-sided development of one or another indicator.

A statistically significant relationship between body length, muscle-skeletal mass, cell mass and fat mass and body mass index was found;

Examination of athletes through bioimpedance is carried out in a short period of time, qualitatively. The athlete himself can analyze the obtained results in 81.4% of cases. Based on the results, the coach can make a conclusion about which body indicator the athlete can work with. Examination does not cause any discomfort for the athlete [7].

It should be noted that sports have a positive effect on the formation of body structure and health indicators of children and young people. Studying the components of the body in young athletes in the monitoring mode is important for

assessing their functional status, physical development, as well as the adequacy of physical activity used during training [10].

The analyzed characteristics of the components of the athletes' body should be used for the prediction of sports results and also for the selection of different sports.

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