

THE IMPORTANCE OF ANTHROPOMETRIC INDICATORS IN THE PHYSICAL DEVELOPMENT OF STUDENTS TRAINING IN SCHOOL ATHLETICS SECTIONS

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Abstract

This article scientifically analyzes the importance of anthropometric indicators in the physical development of students participating in school athletics sections. The diversity of athletics events and their classification based on dominant physical qualities are described, and the morphological characteristics required for each event are substantiated. The role of anthropometric factors influencing sports performance in sprinting, speed-strength, endurance, and combined events-such as body height, body weight, muscle mass, limb segment proportions, and body mass index-is highlighted. In addition, the two-cycle structure of the training process, the regulation of training loads, and the application of near-maximal loads in young athletes are examined. The research findings justify the importance of anthropometric monitoring in the processes of talent identification, individualization of training loads, and sports specialization among school-aged athletes.

Keywords: Athletics, school section, anthropometric indicators, physical development, morphological characteristics, sports selection, training process, speed, speed-strength, endurance, combined events.

According to leading scholar K.T. Shakirjanova, a distinctive feature of the training process of track and field athletes is the diversity of its events. Unlike other sports, athletics includes a wide range of disciplines and is based on natural human movement. These movements are grouped into walking, running, jumping, and throwing events. However, athletics events can be classified not only according to the form of movement, but also according to the dominant physical qualities that are primarily developed.

From this perspective, athletics is divided into the following groups:

1. **Speed events** – characterized by high movement speed under a certain level of muscular tension (sprinting up to 400 meters and hurdling);
2. **Speed-strength events** – characterized by short-term and intense muscular efforts during the main phase of movement (jumps and throws);
3. **Endurance-dominant events** – race walking, middle- and long-distance running;
4. **Events requiring complex development of physical qualities** – combined events (decathlon and heptathlon).

Within these groups, the training process is based on general principles of sports preparation; however, each group differs in its training objectives, stages, methods, means, and approaches. This demonstrates the complex and multifaceted nature of the athletics training process.

In school athletics sections, anthropometric indicators play an important role in scientifically assessing the physical development of students. Anthropometry enables the evaluation of morphological development by measuring body dimensions and proportions. Body height, body weight, chest circumference, shoulder width, upper and lower limb segment lengths, muscle mass, and body mass index (BMI) are among the main criteria used in talent identification, individualization of training loads, and determination of sports specialization.

The morphological requirements of athletics events differ significantly. For example, sprinters require well-developed fast-twitch muscle fibers, strong thigh and calf muscles, and optimal leg length proportions. In hurdling, leg segment length and coordination are particularly important. In jumping events, body height and the ratio of leg segments determine the effectiveness of the flight phase. In throwing events, shoulder girdle width, arm length, and body mass play a decisive role in increasing force production. In middle- and long-distance running, a lean body structure, optimal body weight, and high functional endurance are essential factors.

The table above presents athletics events and their key anthropometric indicators.

Athletics belongs to a group of sports in which performance outcomes are determined through a technical form characterized by a stable movement structure and composition. The stability of technique depends on the relative constancy of external conditions defined by competition rules. External conditions may change primarily due to meteorological factors such as wind, rain, temperature, as well as the characteristics of the surface.

Athletics Event	Dominant Physical Quality	Key Anthropometric Indicators
Sprinting (100–400 m)	Speed	Muscle mass, leg length
Hurdling	Speed + coordination	Leg segment proportions
Jumping events	Speed-strength	Body height, leg length
Throwing events	Strength	Shoulder width, arm length, body mass
Middle- and long-distance running	Endurance	Optimal weight, BMI
Combined events	Combined qualities	Proportional body structure

According to the characteristics of motor activity, athletics events are divided into two main groups. The first group includes events aimed at developing maximal muscular tension at high intensity (sprinting, hurdling, jumping, and throwing). In these events, the rational use of internal and external forces ensures technical excellence. The second group includes events characterized by the manifestation of endurance under optimal intensity conditions (race walking, middle- and long-distance running), where energy conservation and movement economy are of primary importance.

The training process in athletics generally has a two-cycle structure: the autumn-winter cycle and the spring-summer cycle. The autumn-winter cycle is characterized by a long preparatory phase and a short competition period. In contrast, the spring-summer cycle involves more frequent competitions and increased training intensity. Highly qualified athletes also participate in winter competitions held in indoor facilities.

Near-maximal loads make it difficult to control movement technique and increase the risk of injury. This is especially important for school-aged children and beginners, where caution is required when working with maximal loads. In training practice, the number of sets is usually 2–3, with rest intervals of 3–4 minutes between repetitions and 2–5 minutes between sets. When exercises are performed with 90–95% of the maximal load, the number of repetitions per set should not exceed 5–6, and the total number of sets should range from 2 to 5. Loads exceeding

100% are performed with the assistance of partners or special equipment and are not recommended for children under 16 years of age.

Systematic anthropometric monitoring in school athletics sections makes it possible to track students' growth dynamics, assess individual development rates, and properly direct sports specialization. This process ensures healthy, gradual, and scientifically grounded development of young athletes and serves as an important factor in achieving high sports performance.

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