

Anthropometric characteristics of adolescent athletes depending on the type of sports specialization.

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ANNOTATION.

Adolescence represents a pivotal phase of ontogenetic development marked by rapid growth, pronounced hormonal shifts, and the active maturation of the body's morph functional systems. For individuals who engage in regular sports activities, these developmental processes take place alongside consistent and frequently high-intensity training loads, which may foster balanced physical development but can also contribute to the emergence of functional imbalances and excessive physiological strain.

Keywords: *high-intensity training loads, systematically involved in sports, critical stages of ontogenesis.*

INTRODUCTION

Adolescence is one of the most critical stages of ontogenesis, characterized by accelerated growth rates, active hormonal changes, and the intensive development of the body's morph functional systems. In individuals systematically involved in sports, these processes occur under conditions of regular and often high-intensity training loads, which can both promote harmonious physical development and lead to the formation of imbalances and functional overstrain. In this regard, in-depth and systematic monitoring of anthropometric indicators in young athletes is particularly important, taking into account the specifics of the type of sporting activity, the stage of athletic training, and the individual characteristics of growth and development. This is considering an important condition for preventing overloads and optimizing the training process [1-4].

The aim of the study was: to examine and compare the anthropometric parameters of adolescent athletes specializing in football and martial arts.

Materials and methods.

A total of 115 athletes aged 12–14 years were examined: football players (n=52) and martial artists (n=63). Height, body weight, chest circumference (at rest, during inhalation, and exhalation), hand and back muscle strength were assessed. Body mass index, the Erisman index, and the Pigneur index were calculated. Statistical analysis was performed using Student's t-test ($p < 0.05$).

RESULTS.

Adolescent football players significantly outperformed martial artists in key anthropometric and strength parameters. The average height of the football players was 3.9% higher, and their body weight was 12.7% higher than that of the martial artists ($p < 0.05$). The chest circumference of the football players exceeded that of the martial artists by 14.7% at rest, 14.4% during maximum inspiration, and 14.8% during exhalation, indicating more pronounced development of the chest and respiratory system. Strength parameters also showed significant intergroup differences: the football players had 20.5% higher right hand strength, 12.6% higher left hand strength, and 32.1% higher back muscle strength compared to the martial artists ($p < 0.05$), reflecting their adaptation to prolonged dynamic loads and the need to maintain a stable body position. The Erisman index in the football players was positive and exceeded that of the martial artists by more than 200%, indicating a well-developed chest, while the negative values for the martial artists indicated a tendency toward a relatively narrow chest. The Pignet index in the football players was 30.2% lower, indicating a stronger body type, while in the martial artists it corresponded to a weaker morphological type. Moreover, the body mass index values in both groups were within the age norm and differed only slightly (a difference of approximately 3.2%, $p > 0.05$), indicating a harmonious relationship between height and body weight regardless of athletic specialization.

Conclusion.

The anthropometric profile of young athletes depends significantly on the type of sport. A more robust and resilient body type characterizes football players, while martial artists' morphological features are suited to the demands of speed, strength, and coordination training.

Literature

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