

ANALYSIS OF PHYSICAL DEVELOPMENT OF MOSCOW SCHOOLCHILDREN AGED 8–18 YEARS (ON THE RESULTS OF LONGITUDINAL STUDIES)

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The study of physical development in longitudinal researches is carried out with the aim to determine the dynamics of changes of anthropometric indicators, the level of biological maturation and functional indicators of children and adolescents in different time intervals. The processes of physical and sexual development are interconnected and reflect the general patterns of growth and development but at the same time they significantly depend on social, economic, sanitary, hygienic and other conditions, which influence is mostly defined by human age. During three longitudinal studies of physical development of Moscow schoolchildren (1960–1969, 1982–1991 and 2003–2013) the indicators of body mass and length, chest circumference, ratios, stages of biological development and muscular strength of the right hand were evaluated. The 10-year time scale of the observations allows determining the vector of changes of somatic development, puberty and functional capacities of children from decade to decade. The third longitudinal study of physical development of Moscow children and adolescents shows that modern schoolchildren exceed their peers of the 1960's and 1980's in main anthropologic indicators (body mass and length, chest girth) and the level of biological development (menarcheal age and the degree of development of the secondary sexual characters at an earlier age). The results of the studies show a change of body proportions in modern schoolchildren: the increase of body length is combined with the increase in leg length. During longitudinal observations of 2003–2013 a significant decrease of functional indicators (of hand strength) was found in children of all age groups. The findings dictate the necessity of new modern references for the assessment of physical development, reconsidering of normatives of biological development of schoolchildren and searching for the reasons of decrease in functional indicators.

Key words: *longitudinal studies, physical development, level of biological development, dynamometry*

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DEVELOPMENT OF SUBCUTANEOUS AND VISCERAL ADIPOSE TISSUE IN BULGARIAN ADOLESCENTS

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The purpose of this study is to investigate development of subcutaneous and visceral adipose tissue in Bulgarian children and adolescents by anthropometrical methods. The data analyzed are part of the three separate cross-sectional studies of 9–16-year-old children from Sofia, Plovdiv and Smolyan cities in Bulgaria, conducted in 1999–2009. The general sample included 3095 adolescents aged 9 to 16 years (1568 boys and 1527 girls). Height (cm), weight (kg) and waist circumference (cm) were taken on each person with standard methods (Martin-Saller, 1957). Additionally, the body mass index (BMI), subcutaneous (SAT, cm²) and visceral (VAT, cm²) adipose tissue, and VAT/SAT-ratio were calculated. The quantities of subcutaneous (SAT, cm²) and visceral (VAT, cm²) adipose tissue were defined by the regression equations of Brambilla et al. (2006). Different categories of body nutritional status were defined by cut-off points of BMI for children by Cole et al. (2007; 2012). Statistical data processing was performed using the software STA-