BODY COMPOSITION OF ELITE YOUTH PENTATHLETES AND ITS GENDER DIFFERENCES

Abstract
Analysis of body composition is currently an essential method for detection of indicators determining sporting performance. Especially in the modern pentathlon as it consists of disciplines with different types of physical load. The aim of the study was to describe the current profile of elite youth modern pentathletes' body composition and its gender differences. The research group consisted of 12 modern pentathletes (male: n = 7, age 19.6 ± 1.05 years, female: n = 5, age 17.4 ± 0.85 years), members of the Czech national team. Body composition parameters were recorded using bioimpedance method, namely BIA 2000M device, and segmental distribution of muscle mass was detected using Tanita MC-980MA device. Statistically significant gender differences and significant effect size were found in total body water (p = 0.004; d = 0.99), percentage proportion of fat mass (p = 0.001; d = 1.02) and in the value of basal metabolism (p = 0.004; d = 1.08). However, in some parameters, we found statistical significance of gender differences but without effect size. In males, we found unequal muscle mass distribution in paired limbs using segmental analysis (p = 0.008 for upper limbs, and p = 0.002 for lower limbs). In females, no statistically significant differences in muscle mass proportion were recorded (p>0.05). Individual parameters of body composition of the monitored participants predict excellent physiological predispositions for sporting performance. In the case of the male pentathlon athletes, deficit of compensation of unilateral load is apparent.

Key words: body composition, bilaterality, modern pentathlon, asymmetries, fat mass