SUMMARY

Subject

The current lifestyle of most children and adults is characterized by sedentary lifestyle. Research shows that physical activity among children is decreasing while aging, (Bunc, 2004) which causes gaining the body fat, loosing physical fitness and overall resulting in overweight and obesity (eg Brettschneider, Naul, 2007; Malina, Bouchard, 1991; Roche et al., 1996). This lack of physical activity leads to a decrease in physical fitness as global phenomena (Malina 2004; Reed et al., 2006; Tomkinson, 2007), urges the increase in overweight and obesity, or causes certain health problems. One way to examine the level of lifestyle and the quality of life of children and adults is the body composition. This knowledge can contribute to determine the health of the individual and its physical ability.

Objective

To describe changes in somatic indicators and selected body composition parameters that are related to age and gender among younger school age children. To find out the correlation among somatic indicators, age and parameters of the body composition of children of both genders and to discover dominant factors affecting the body composition in both genders.

Methods

A cross-sectional statistical survey was carried out at three primary schools in Prague, where during the first testing, 220 children (116 boys and 104 girls) were tested at the age of 8-11 and at the second measurement 80 children (40 boys and 40 girls) participated at the age of 8-9 years. The founded parameters were somatic indicators and selected parameters of body composition measured by whole-body bioimpedance analysis (BIA). For the calculation of the body composition parameters were used the equations for the Czech child population (Bunc et al., 2000b). The statistical survey compared the measured variables in the age groups of boys and girls and the relationships between those variables.

Results and conclusions

All measured parameters of somatic indicators among boys and girls show a tendency to increase with the age of children. In comparison with the national anthropological research of the CAV of 2001 (Bláha et al., 2005), the total body height of boys is at zero secular trends and girls in negative secular trends. Similarly, BMI and body mass indexes point to a negative secular trend among boys and girls. Boys and girls experienced an increase in body fat in relation to their age. The ECM/BCM coefficient indicated a zero trend among boys and a negative trend for girls in terms of age. In the FFM, in both genders fatty matters increase with higher age and on the other side, total body water (TBW) decreases in both genders in

the context of the aging of the children. Repeated measurements showed that in both genders aged 8-9 years, all somatic parameters have increased and also body fat and fatty matter (FFM) values increased. The strongest influence on body composition parameters was seen among eleven-year-old girls where age and height affected FFM up to 86,9%. We did not find the dominant factor among boys that would influence their body composition. The results showed that among boys with body composition parameters exists a stronger influence of height and weight (weight among boys aged 8-9 affected ECM/BCM coefficients from 10% and total body water - TBW from 31,3%) and girls the strongest influence of age (eleven years of age among girls affected the total body water values from 64,7% and the fat-free mass parameter from 86.9%). Based on the results of measurements of somatic indicators and selected parameters of body composition (average weight for boys 32 ± 7,5 kg for girls 30,5 ± 7,3 kg, average boys height 139,9 ± 8,6 cm for girls 137,3 ± 8.8 cm, BMI body weight among boys 16,3 ± 2,4 $kg.m^{-2}$ among girls 15.9 ± 2.4 $kg.m^{-2}$), body fat values for boys 16,1 ± 2,4%, girls 16,5 ± 2,9%, FFM values for boys 26,8 ± 8,1 kg, girls 25,0 ± 7,6%), and according to WHO recommendations (2016) fat for children of younger school age, it is possible to mark the measured set of younger school age children, as children with very good physical fitness. This statement can be supported by other results showing that boys between 8-11 years of age had the increase in FFM by 11,4 kg and girls by 7,8 kg. Meanwhile, we recorded the increase in body fat between 8-11 years only by 2,8 kg for boys and 2,2 kg for girls.

Key words

younger school age, body composition, somatic indicators, physical fitness