

Abstract

The diploma thesis is focused on the evaluation of actual state in somatic parameters, weight proportionality and body composition of contemporary Czech preschool children. The aim of this study is to prove validity of reference standards for selected somatic parameters, body mass index and body composition which were established in 1990 (and 1991 respectively). Due to the changes in socioeconomic status, dietary habits and level of physical activity between 1990 and 2017 we assume significant changes in the physical composition of current preschool children, namely a decrease in the proportion of the muscle component and an increase in the fat component for total body weight. It is also assumed that the body mass index (BMI) and % of adiposity will give different results for assessing overweight and obesity. The study involved a total of 468 children aged 4 to 6 years, 228 girls and 240 boys. In the pilot study between 2013 and 2014, 179 children, 90 girls and 89 boys were surveyed in 4 nursery schools in Prague, 1 in Kladno and 1 in Jihlava. In a follow-up study conducted between 2016 and 2017, a total of 289 children, 138 girls and 151 boys from 6 nursery schools in Prague were examined.

Significant changes were demonstrated in almost all somatic parameters investigated, but the changes mostly concerned only selected age groups of boys or girls. The clinical relevance of the observed differences was in most cases only low or moderate. The exception was body height and skinfold on the chest 2, where no significant differences were revealed.

The body composition of children is significantly altered. There was a significant increase in the percentage of body fat in all age categories of both sexes, but only with moderate clinical relevance. % of muscle component decreased significantly, again in all groups of children. Here, clinical relevance is high for 5-year-old and 6-year-old boys and girls.

A new finding is revealing significant differences in the presence of bone mass with high clinical relevance for 6-year-old boys and 6-year-old girls. In addition, it has been shown that BMI and % body fat does not give same results in assessing overweight and obesity and that BMI underestimate occurrence of high adiposity in children.

Therefore, reference standards for somatic parameters remain valid, and the observed differences will need to be verified by more extensive and representative studies where

it is likely to be clinically relevant. There is a need for new reference standards in components of body composition.

Key words: secular trend, body composition, BMI, pre-school age