Socio-economic factors
and body composition

This study supplies further data to the question of influence of social background in body development. There are a great number of studies concerning the influence of socio-economic factors on growth. On the other hand, there are very few investigations into the factors of body composition though these factors give more information about the developmental stage of the children's skeleton, muscle and fat mass than any absolute measurement.

The social status was established on the basis of the parents' occupation, educational level, the per capita income, per capita room-quota and sibling number. Beyond these factors the effects of maternal age at childbirth and birth order were investigated in a sample of 3553 boys and 3371 girls aged between 7-14. Body composition was studied by a two-component model.

Results of body composition have shown that children living under better social circumstances are not only heavier, because they have more developed skeleton and musculature, but have more body fat mass too. The excess of their body fat mass is caused in part by the unaltered habits of nutrition, in part by sedentary life style. These results stress the necessity for a more efficient somatic and environmental education.

Introduction

Many factors are known which have influence on development and growth [11, 6]. Hereditary factors influence the growth process of the individuals from an early age [10], environmental factors exert more dynamic effects according to the changes of the surroundings [13, 2, 8, 7, 6].

In this paper the influence of maternal age, of birth order and of some social-economic factors of child growth will be analyzed. In the following only such results will be given that were gained by comparing body mass as well as body composition of children according to a given factor for the relative most favourable, respectively most unfavourable situation. The data about the factors of body composition seem to be also significant, because these factors give more information about the developmental stage of the skeletal, muscle and fat mass of the child than any absolute measurement or index of body development.

Material and methods

The cross-sectional growth study was carried out in 23 settlements in the Bakony, one of the ethnical and geographical regions of West-Hungary [1]. The distribution of the examined children by sex and age groups is summarized in Table 1. The sample represents rural children but living in a highly industrialised environment.
Body composition was studied by a two-component model [4]. Body density was estimated by the Durnin - Rahaman regression equation [3], body fat estimates were obtained by Siri’s method [9] as recommended by the IBP [12].

The differences of body development according to age and sex as well as the influence on the social-ecological factors on growth were evaluated by one- and two-way analysis of variance. The significance test of the differences between the successive age groups, the social categories as well as peer-age gender groups were estimated by Sheffé’s pair-wise comparison method [5].

Results and Discussion

It is well known that senescence markedly influences the chromosomes. Especially the effect of the mother’s age has been thoroughly studied [1]. Data of children born in their mother’s optimal reproductive age interval (between 21 - 26 years) and children born in their mother’s endangered age interval (over 36 years) are only reported from the results on the comparative analysis of groups subdivided according to maternal age.

By studying the relationship between the mother’s age and the children’s total body mass the following can be stated. From among the children born from mothers of an older age the boys have a smaller, and the girls have a bigger total body mass (TBM) than girls born from mothers in the optimal fertility period (Figure 1). In all the age groups the divergence is significant with the exception of the boys at age 7 and 14. Examining the lean body mass (LBM) in the boys as a function of the mothers’ age the results were similar to those of total body mass. On the other hand, in the girls there were no significant differences between peers belonging to different categories. Mean total body fat (FM) seems to be higher in the children born from an older mother. In the girls this divergence is significant in every age group, but in the boys only after age 10.