

ANTHROPOMETRIC ASSESSMENT OF 6-14-YEAR-OLD BUDAPEST CHILDREN IN 1987

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Abstract: In 1987 height, weight and skinfold thicknesses (triceps, biceps, subscapular, abdomen, suprailiac, thigh, calf) were measured using Lange caliper in Budapest children (1562 boys, 1589 girls) 6-14 years. Percentile curves of the individual skinfolds $\Sigma 7$ and $\Sigma 4$ (subscapular, abdomen, suprailiac, thigh) skinfolds were related to height-age. Mean values of height and weight related to age were compared to Hungarian data (Eiben et al. 1968-1969, 1985) and our team's earlier study (1974). Based on the strong correlation between $\Sigma 7$ and $\Sigma 4$ skinfold thicknesses $\Sigma 4$ skinfold gives useful information about the nutritional state. A person may be considered obese if $\Sigma 4$ skinfold thicknesses related to height-age is above the 90th centile, overweight is between 75-90th centiles. The positive secular trend of Budapest children is still going on. (In 1987, boys in Budapest are 2.56 cm, girls 2.82 cm higher and boys weigh 1.92 kg, girls 1.82 kg more than in 1969.) Obesity seems to be more frequent in the capital than in the whole country (Budapest boys weigh 2.35 kg, girls 2.42 kg more than children in general).

Key words: Budapest children; Skinfolds; Secular trend; Obesity.

Introduction

In social-pediatric practice height and weight measurements are basic data. In addition skinfold thicknesses give a good information of body composition. A few data are available about distribution of skinfold thicknesses of Hungarian children (e.g. Eiben-Pantó 1987/88). Therefore it seemed to be reasonable to study distribution pattern of skinfold thicknesses in Budapest children.

Subjects and methods

Heights, weights and 7 skinfold thicknesses (triceps, biceps, subscapular, abdomen, suprailiac, thigh, calf) on the left side were measured using Lange (1961) skinfold caliper in 3151 Budapest children: boys $n = 1562$, girls $n = 1589$, aged 6-14 years. The measurements were taken in May 1987. Heights and weights were compared to Eiben's et al. (1968, 1987) and our team's earlier (1974) data. Percentile curves of the different skinfolds, $\Sigma 7$ and $\Sigma 4$ (subscapular, abdomen, suprailiac, thigh) skinfold thicknesses grouped according to sex were related to height-age. Relationships between $\Sigma 7$ and individual skinfold thicknesses as well as weight-for-height were calculated. The statistical analysis were made by SPSS (1983) computer programme.

Results

Comparing our data to those of Eiben et al. (1968-69, 1987) and our earlier study (1974) indicate a positive secular trend in height and weight (Fig. 1). In 1987, boys in Budapest are on an average 2.56 cm, girls 2.82 cm taller and boys' weight 1.92 kg, girls 1.82 more than in 1968-69. The average body height and weight of the children in Budapest of both sexes are above the average of the children of the whole country (boys 1.87 cm, girls 2.32 cm taller, boys weight 2.35 kg, girls 2.42 kg more).

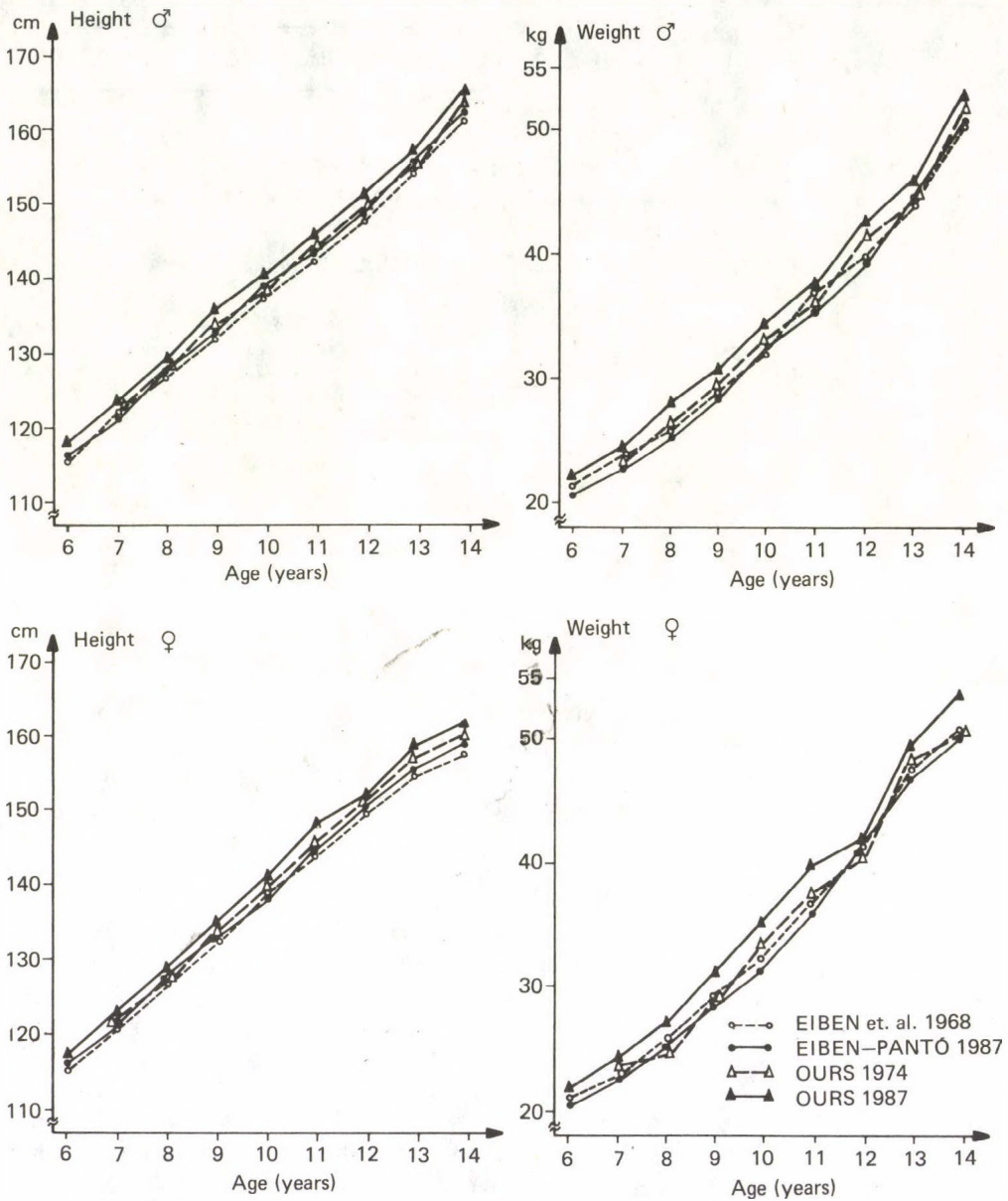


Figure 1: The mean values of body height and weight Budapest boys and girls studied by different authors in different years

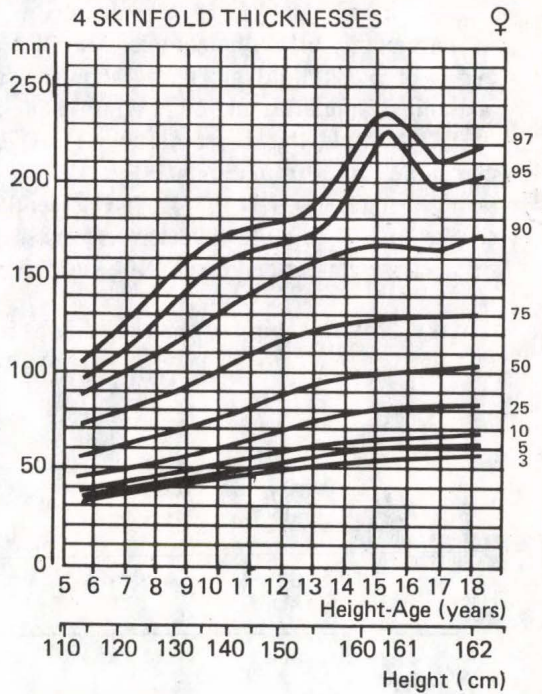
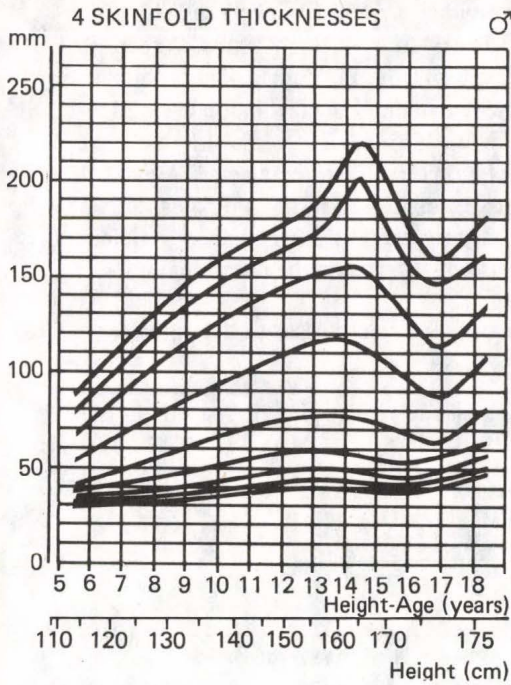


Figure 2: Percentile curves of $\Sigma 7$ skinfold thicknesses related to height-age

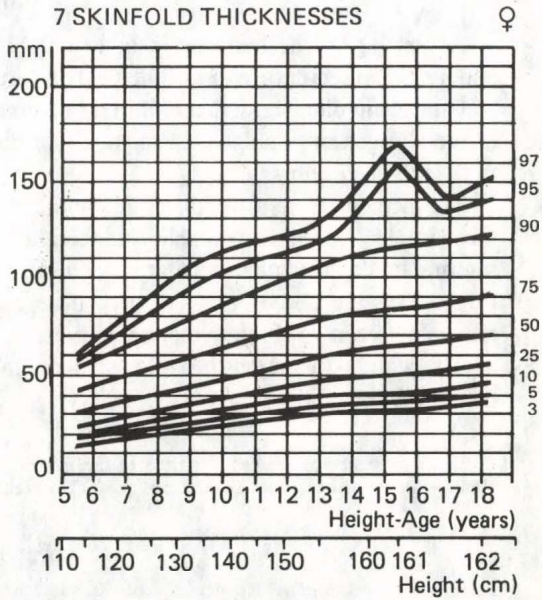
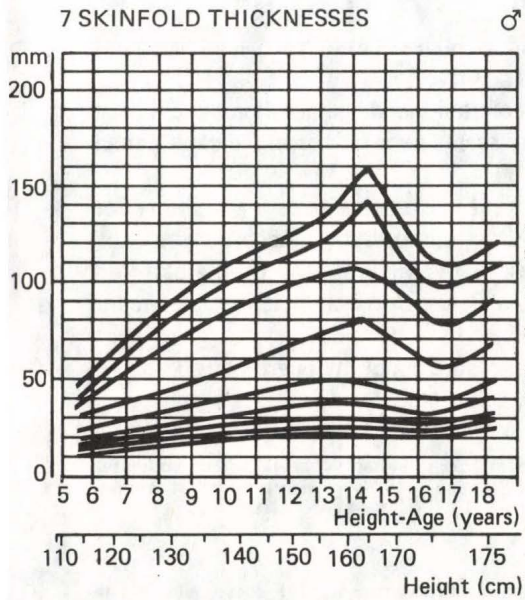


Figure 3: Percentile curves of $\Sigma 4$ skinfold thicknesses (subscapular, abdomen, suprailiac, thigh) related to height-age

Both in boys and girls percentile curves of individual skinfold thicknesses show an increase until the 13th height-age. After this age curves go in different ways. Percentile curves of $\Sigma 7$ skinfold thicknesses show the same pattern (Fig. 2). Values of subscapular, abdominal, auprailiac and thigh skinfold thicknesses gave the best correlation coefficient to $\Sigma 7$ skinfold thicknesses (Table 1). Therefore we formed $\Sigma 4$ skinfold thickness percentile curves from our data (Fig. 3). The correlation coefficient between $\Sigma 7$ and $\Sigma 4$ skinfold thicknesses is 0.974. The percentile curves of $\Sigma 4$ skinfold thicknesses run similar to $\Sigma 7$ skinfold thickness curves. There is only modest correlation coefficient between weight-for-height and $\Sigma 7$ skinfold thicknesses or between the individual ones.

Table 1. Relationship between skinfold thicknesses, $\Sigma 7$ thicknesses and weight-for-height (r)

		Triceps	Biceps	Sub- scapular	Abdomen	Supra- iliac	Thigh	Calf	Weight-for- height
$\Sigma 7$ skinfold thicknesses	Boys (n=1562)	0.875	0.874	0.877	0.932	0.915	0.882	0.693	0.724
	Girls (n=1589)	0.825	0.863	0.883	0.911	0.890	0.883	0.705	0.735
Weight-for- height	Boys	0.685	0.643	0.739	0.714	0.754	0.783	0.698	—
	Girls	0.711	0.687	0.754	0.736	0.718	0.739	0.696*	—

Conclusions

According to the increase in body heights and weights measured in years 1968–69 and 1987 the secular trend in Budapest children is positive.

Our recent data show that children in Budapest are taller and heavier than the children of the Hungarian population. Frequency of obesity seems to be higher in the capital than in the whole country.

The percentile distribution of $\Sigma 7$ and $\Sigma 4$ skinfold thicknesses gives a possibility for the simple, quick, repeatable judgement of body composition. According to the internationally accepted standards a child is obese if the value of $\Sigma 7$ or $\Sigma 4$ skinfold thicknesses are above the 90th percentile curve, and has overweight if this parameter ranges between 75–90th percentile curves.

The weight-for-height provides an acceptable measure about the degree of obesity of the whole population.

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