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HEIGHT-WEIGHT STANDARDS IN ITALY: A CRITICAL REPORT

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Abstract: A review of several national surveys in Italy on height and weight is given and the presuppositions of such are discussed. Using the results of a recent vast Italian survey on growth the need of appropriate growth studies is demonstrated.

Key words: Growth standards, Italian population.

Anthropometric survey in Italy dates back to 1850 when Livi undertook for the first time on a large scale body measurements on Italian conscripts. Since then the increasing interest in questions concerning height and weight in Italy is reflected by numerous studies. The main results of such consist of: (1) The observation of a North-South gradient for height in Italy, being largest in the North and smallest in the South (2) The awareness of a constant increase in weight and height with time, i.e. the phenomenon of a secular trend. From Figure 1 results an average increase in height of 0.7 cm for each decade between 1874 and 1960. A similar trend is also observed from data of various other authors (Table 1) between 1854 (Livi) and 1976 (De Stefano et al.).

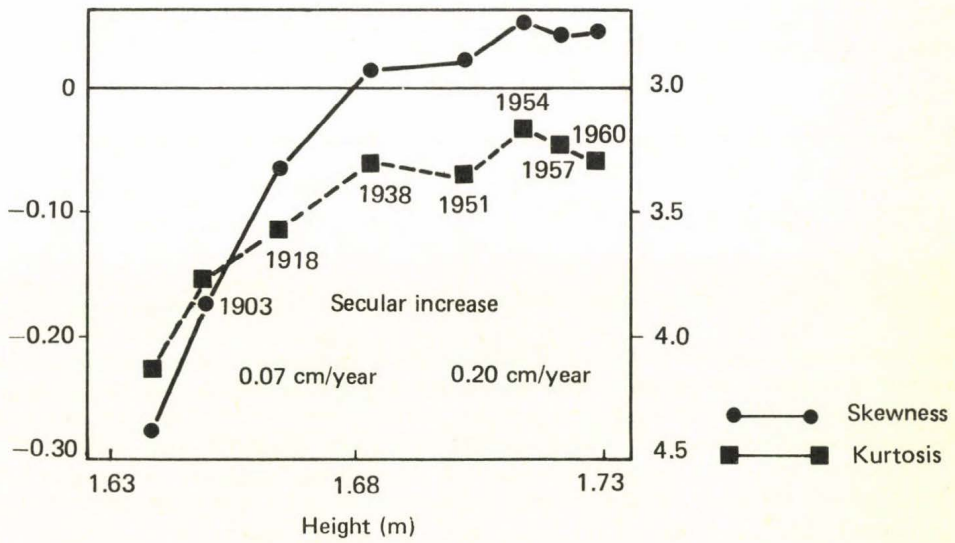


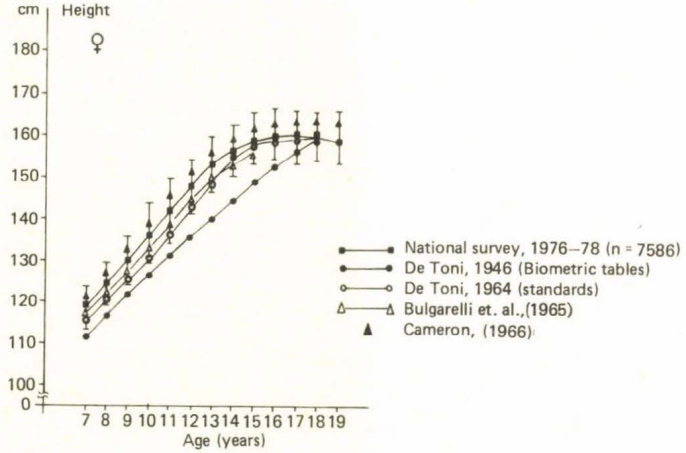
Fig. 1: Secular increase of height in Italy between 1974 and 1960

Table 1. Secular increase of height differentiating between the national average of Italy (Nat. Av.) and data from southern Italy (S. I.). The data relate to conscripts with the exception of those from 1976 which are 18 year old students

Year	National average	Southern Italy
1854	162.6	–
1904	164.2	–
1920	166.4	162.3
1938	–	164.0
1958	–	168.5
1976	173.9	169.3

In contrast to this well-documented interest in the increase of height and in anthropometric changes in general of the Italian population much less attention has been devoted to growth studies in Italy. This is surprising in view of their importance for pediatrics, social child care and epidemiology. A first national survey of data on growth dates back to 1959 when Bacchetta pooled the data from different regions of Italy which had been collected by various authors (mostly pediatricians) between 1910 and 1930. A similar study covering the time between 1940 and 1965 (Figs 2a, b, 3a, b) was done by Bulgarelli et al. (1961, 1965). However, there are strong objections against the claims of both authors that their data represent the national standards for Italy. The two main objections relate to: (1) The fact that in both cases the pooled data cover a period of 20 years and 25 years, respectively, without any differentiation between shorter time intervals; an absolute necessity especially with respect to the effects of the first and second world war. However, pooling data covering long time periods may generally mask secular trend and thus lead to bias. (2) The fact that these data were collected by different researchers with varying training and experience. Thus bias may well result from such incongruences of measuring techniques. A third approach to establishing Italian standards for height and weight was done by De Toni (1946) who introduced for the first time biometric growth tables which, however, did not take into account the different growth velocities at different stages. The results of this approach are shown in Figures 2a, b and 3a, b, and clearly differ from those of his subsequent corrected study in 1964. However, also this corrected approach for a national standard still lacks differentiation according to the period of data collection, he pooled his own data (1940 – 1946) together with those from Bulgarelli (1930 – 1945), as well as differentiation between the main districts. The importance of differentiating between the latter is clearly visible from our data (Capucci et al. 1983) presented in Fig. 4.

In view of this unsatisfactory situation a national survey including a battery of 60 measurements was initiated in 1974 and terminated in 1976. This survey takes into account all the points criticized above – time of sampling, training, control of inter- and intra-observer errors, differentiation of geographic regions, and homogeneity of sample composition. Thesre obtained growth curves for height (Fig. 5a, b) and weight (Fig. 6a, b) show clearly that the trends in Southern Italy (pooling Sicily, Calabria, Puglia, Basilicata) differ from those in Central (Campagna, Abruzzo, Lazio, Toscana) and Northern Italy (Piemonte, Lombardia, Veneto, Emilia Romagna). This is most expressed with height and especially so in females who are constantly below the values of the other two regions in the 50th centile. The Northern and Central regions show a similar pattern. This picture changes for weight. Here (Fig. 6a, b) the South of Italy again shows the greatest deviation



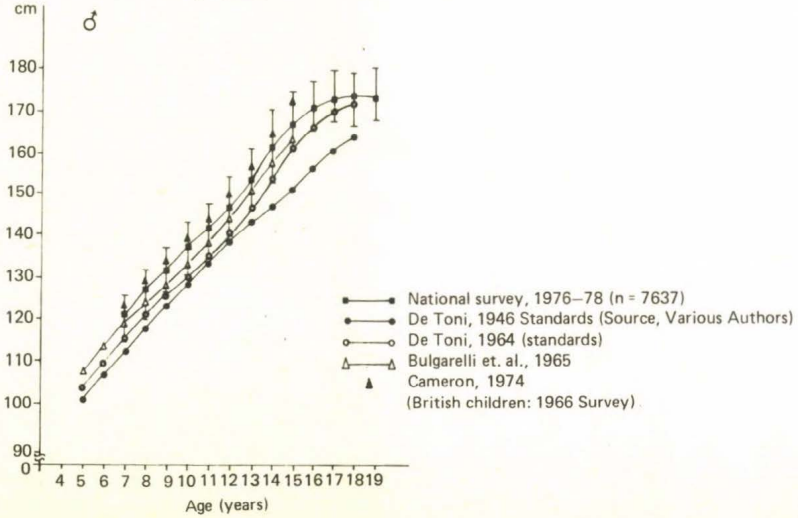
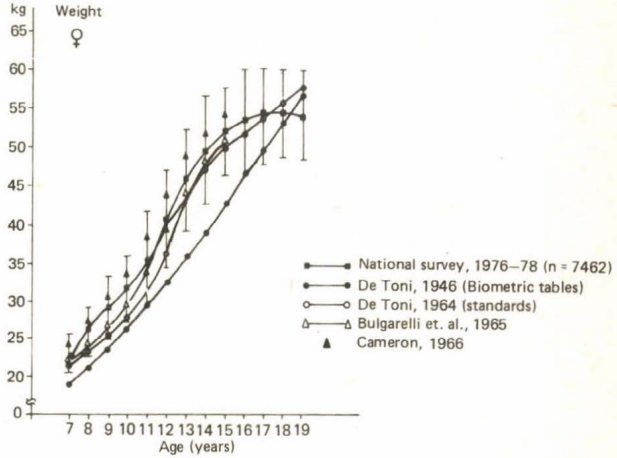


Fig. 2: Height (cm) plotted against age (years) comparing several surveys of Italian females and males



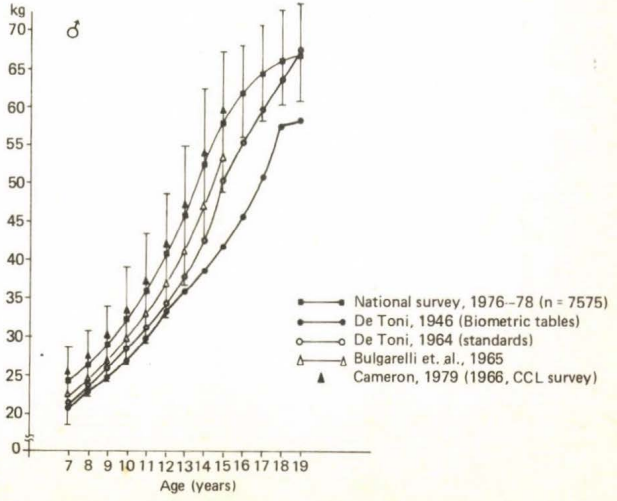


Fig. 3: Weight (kg) plotted against age (years) comparing several surveys of Italian females and males

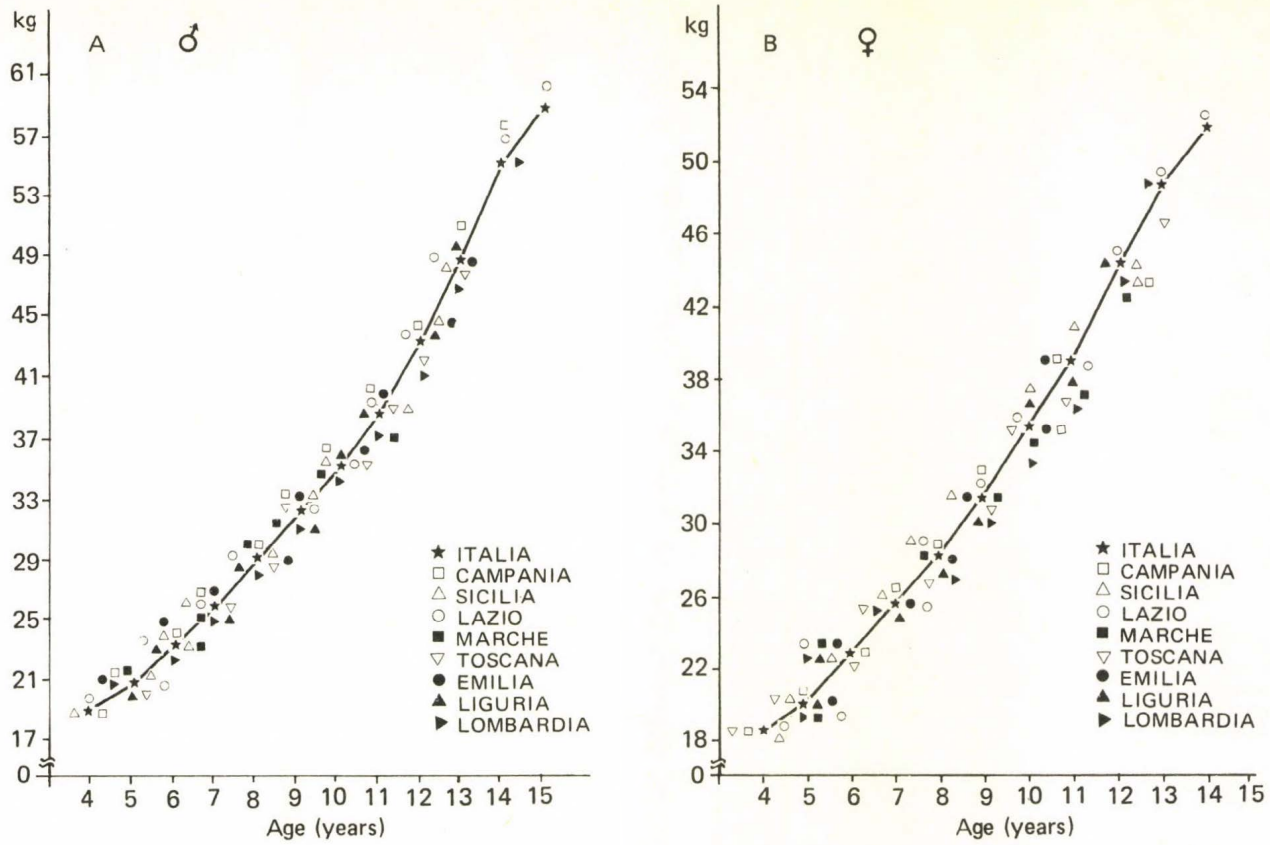
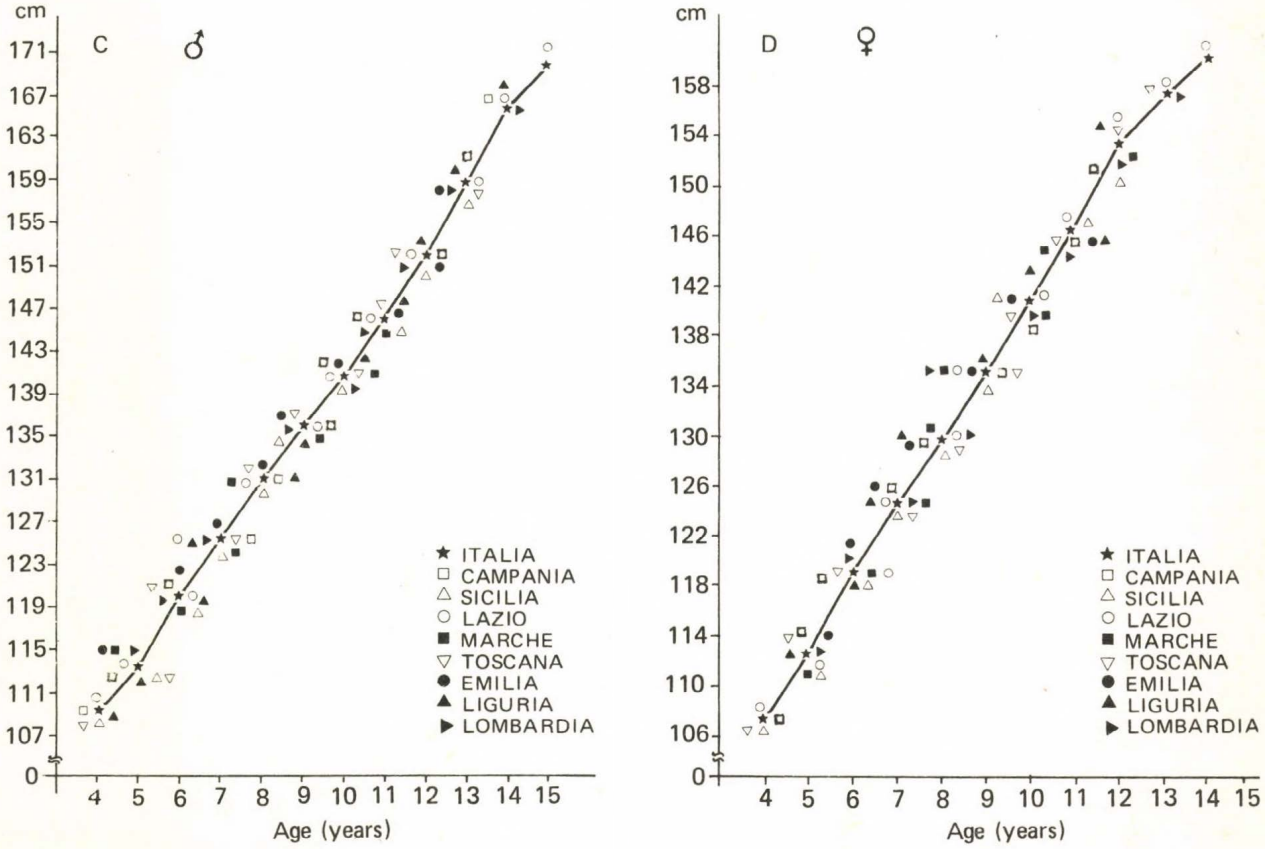


Fig. 4: Means of (a, b) weight (kg) and (c, d) height (cm) against age (years) and relative position of the regional samples for males (A, C) and females (B, D)



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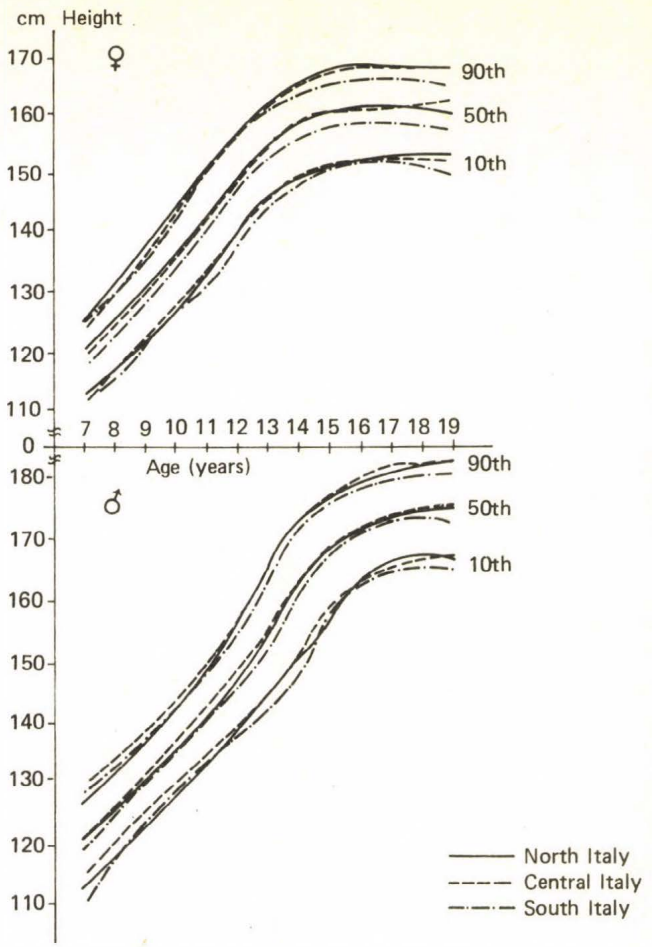

Fig. 5: Percentiles of growth curves plotting height (cm) against age (years) for Italian females and males

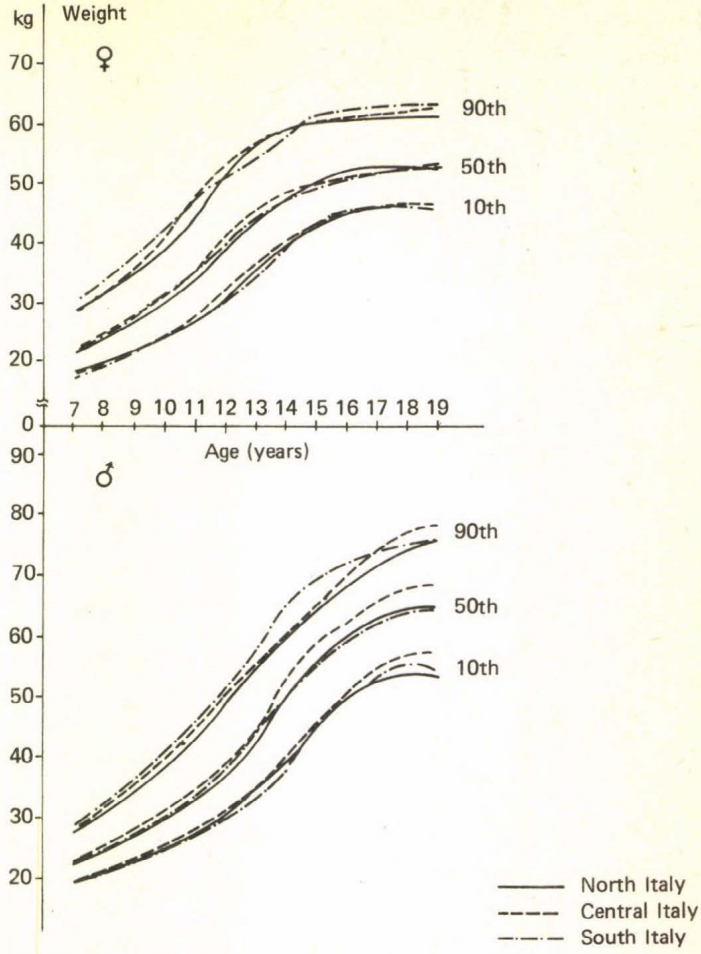

Fig. 6: Percentiles of growth curves plotting weight (kg) against age (years) for Italian females and males

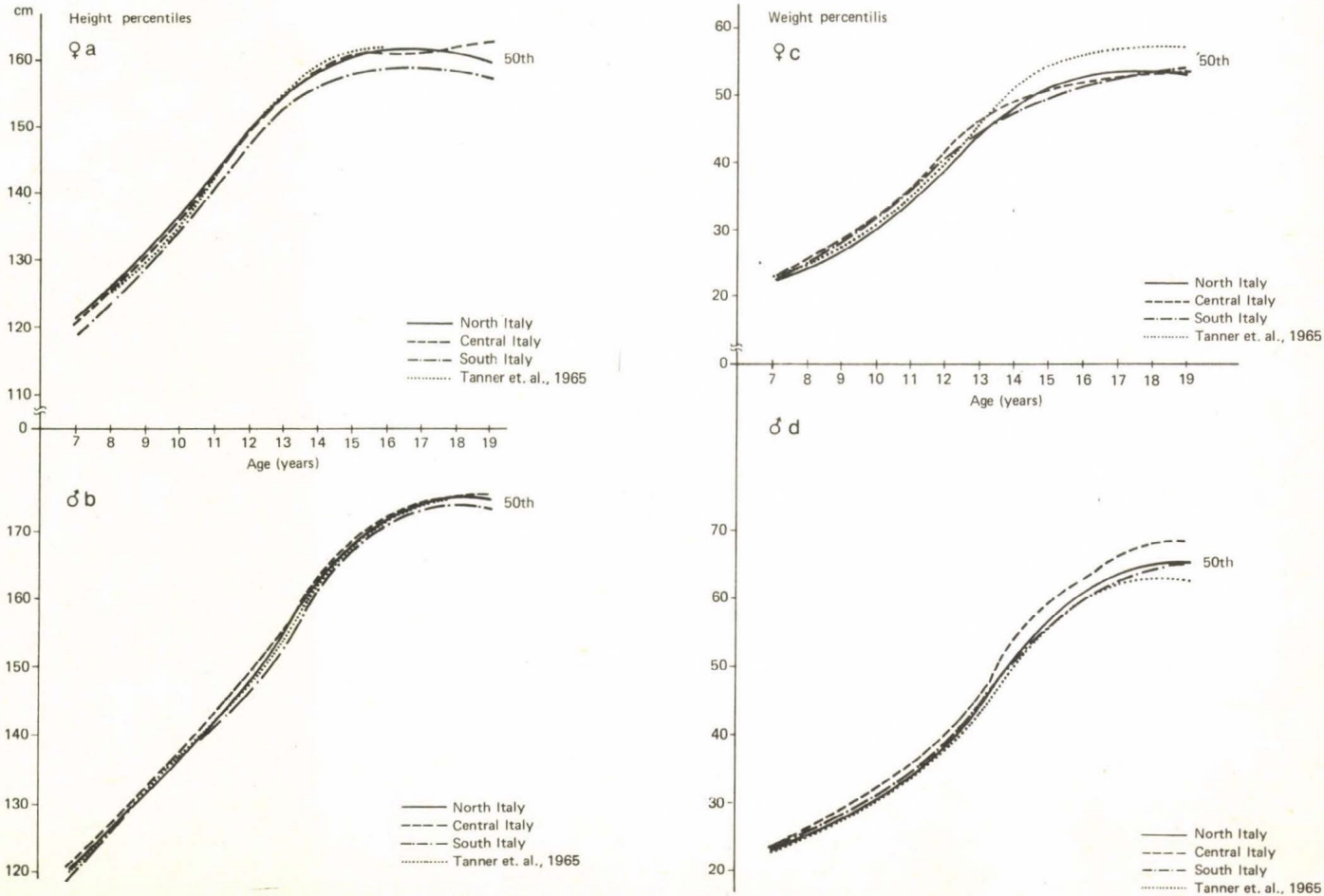

Fig. 7: Comparison of growth curves for height (a, b) and weight (c, d) in the 50th centile for females (a, c) and males (b, d)

but in the opposite direction, both males and females nearly constantly showing higher values than those in the other two regions. However, there is also a noteworthy difference between the Northern and the Central region, the latter, also tending towards higher values in weight and especially in males.

From these results the necessity of establishing different national standards, at least for the South of Italy, seems obvious. As national standard for Italy for several decades has been used mostly the English national standard (Tanner et al. 1966). A comparison of the 50th centiles of height and weight of these with our data (Fig. 7a–d) makes not only the North-Central-South gradients still more striking, but also demonstrates the need for appropriate growth surveys.

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