

Growth in primary school children: a longitudinal study from 6 to 8 years of age

Michela C. Turci¹, Marta Viani^{1,2}, Marisa Arpesella³, Gian Piero Grassi¹

¹ Dipartimento di Morfologia Umana e Scienze Biomediche "Città Studi", Facoltà di Medicina e Chirurgia, Università degli Studi di Milano, Italy

² Centro di Ricerca Interdipartimentale delle Attività Motorie e Sportive, Università degli Studi di Pavia, Italy

³ Dipartimento di Medicina Preventiva Occupazionale e di Comunità, Sezione di Igiene, Università degli Studi di Pavia, Italy

School-based anthropometric observations represent a potential approach to address children and their families to correct life habits.

On October 2007, weights and standing heights of 261 6yr-old primary school children (116 girls; 145 boys) in Voghera (Pavia, Italy) were measured, and Body Mass Indices (BMI) calculated. Measurements were repeated 1 and 2 years later. Descriptive statistics of each parameter were computed within sex and session (**Tab. 1**). Comparisons were performed by ANOVA (F1, factor 1, sex; F2, factor 2, age; F1×F2 interaction). Statistical significance was set at 5% for all comparisons. Within age, the distributions and the percentages of boys and girls relatively under- (<3rd percentile), and overweight (>97th percentile) were computed (**Tab. 1**), while comparing BMI to reference data for Italian children (Cacciari et al., 2002).

	Girls			Boys		
	6 yr	7 yr	8 yr	6 yr	7 yr	8 yr
Weight (kg)	23.5±4.3	26.2±5.1	30.6±11.8	24.9±5.0	27.7±6.1	31.1±7.5
Height (cm)	120.2±6.1	124.6±6.2	129.8±11.8	121.1±6.0	125.7±6.1	131.8±6.2
BMI (kg/m²)	16.2±2.4	16.8±2.7	18.8±12.1	16.8±2.4	17.4±2.8	19.0±5.9
BMI <3rd	5 (4.3)	7 (6.0)	13 (11.2)	5 (3.4)	4 (2.8)	6 (4.1)
BMI >97th	2 (1.7)	3 (2.6)	7 (6.0)	10 (6.9)	10 (6.9)	8 (5.5)

Tab. 1. Descriptive statistics (mean±SD) of anthropometric variables at different ages. Distributions and (percentages) of boys and girls relatively under- and overweight.

On average, weight, height, and BMI were larger in boys than in girls, but the differences were not significant (F1, $p>0.05$). Boys and girls significantly grew with age (F2, $p<0.001$ for all comparisons). The effects of age on height increments were larger in boys than in girls (F1×F2 interaction, $p=0.017$). In boys, BMI was too high in a larger percentage than in girls. Conversely, the percentage distribution of participants whose BMI was too low was larger in girls than in boys, and increased with age.

The study allowed the monitoring of growth in school children during a 3yr life span. Further investigations on this matter should be extended to different age groups of children and adolescents, and prolonged as much as possible.

Key words

BMI, children, growth