Physical Growth and Biological Maturation of Children and Adolescents: Proposed Reference Curves

Leite Portella D.

Arruda M.

Gómez-Campos R.

Checkin Portella G.

Andruske C.L.

Cossio-Bolaños M.A.

Background/Aim: The study of physical growth variables in terms of chronological age and biological maturation may provide a common reference point to reflect on the occurrence of body dimensions in and between individuals. The objectives of this study were as follows: (a) verify if the observed gender differences in the variables of physical growth by chronological age are confounded by physical maturation, (b) compare physical growth patterns with the reference of the Centers for Disease Control and Prevention (CDC)-2012, and (c) develop regional curves to assess physical growth in terms of biological maturation. Methods: Researchers studied 3,674 children and adolescents. Weight, standing height, and sitting height were measured. Biological maturation was determined by using the age of peak velocity growth. Body mass index (BMI) was calculated. Growth variables were compared with the CDC-2012 reference. Percentiles were calculated by the LMS method. The students differed in weight and BMI when compared to the reference individuals. The differences in weight, standing height, and BMI between both genders are more pronounced when they are aligned with biological age rather than chronological age. Conclusion: Weight and BMI differ from the reference. Furthermore, the assessment of the physical growth trajectory should be analyzed in terms of biological maturation. The proposed regional curves may be used in and applied to clinical and epidemiological contexts. © 2017 S. Karger AG, Basel.

Adolescents

Biological maturation
young adult
adolescent development
Brazil
child development
reference value
sex factor
Adolescent
Adolescent Development
Body Height
Body Mass Index
Body Weight
Brazil
Child
Child Development
Cross-Sectional Studies
Female
Humans
Male
Reference Values
Sex Factors