

Estimation of Pubertal Growth Spurt Parameters in Children and Adolescents Living at Moderate Altitude in Colombia

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Abstract

Objective: Knowledge of the biological parameters of pubertal growth spurt allows verification of secular changes and exploration of the timing of puberty. The aim of the study was to estimate final height, age at peak height velocity (APHV), and peak height velocity PHV (cm/y) in children and adolescents living at moderate altitude in Colombia. Methods: A cross-sectional study was designed in 2,295 schoolchildren from Bogotá (Colombia) with an age range from 5.0 to 18.9 years. Height (cm) was assessed. Preece–Baines model 1 (1PB) was used to make inferences about mathematical and biological parameters. Results: The five mathematical parameters estimated in general have reflected quality in the fit to the model, reflecting a small residual error. Final height was reached in boys at 170.8 ± 0.4 cm and in girls at 157.9 ± 0.2 cm. APHV was estimated at 12.71 ± 0.1 years in boys and 10.4 ± 0.2 years in girls. Girls reached APHV 2.2 years earlier than boys. In relation to PHV (cm/y), boys reached higher growth speed in height (7.4 ± 0.4 cm/y), and in girls it was (7.0 ± 0.2 cm/y). Conclusion: It was determined that final height was reached at 170.8 ± 0.4 cm in boys and 157.9 ± 0.2 cm in girls, and APHV (years) and PHV (cm/ye) were reached relatively early and with average peak velocity similar to Asian and Western populations. A large-scale longitudinal study is needed to confirm these findings. © Copyright © 2021 Cossio-Bolaños, Vidal-Espinoza, Minango-Negrete, Olivares, Urzua-Alul, de Campos, Fuentes-López, Sanchez-Macedo, Diaz-Bonilla, Torres-Galvis and Gomez-Campos.

Author keywords

children; final height; growth velocity; Preece–Baines function; stature