

Abstract:

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Bone Age Determination by Ultrasound (BAUS): Validation in Brazilian Students

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Aiming to compare BAUS and classic Greulich-Pyle radiographic bone age (BARx) we evaluated 494 students (F:250; M:244), age range 6-17y; height and BMI between ± 2 SDS. BAUS was performed employing the SonicBone Medical device and BARx was done using a portable Rx device. BARx was established after reading of 3 experienced investigators (2 pediatric endocrinologists and 1 radiologist), and the final BA was established after review and concordance of at least two investigators. A significant correlation between BAUS and BARx was identified both in girls ($r=0.921$; $p<0.0001$) and boys ($r=0.915$; $p<0.0001$). A significant correlation was also detected between chronological age (CA) and BA methods (BAUS: $r=0.95$ and BARx: $r=0.94$, $p<0.0001$). The mean(SD) values of the difference BARx-BAUS was 0.04(1.0)years and -0.01(1.1)years for girls and boys, respectively. Differences between both methods were predominantly detected in girls $>13y$ and boys $>14y$, with $R=0.68$ and 0.71 , and BARx-BAUS were 0.1(0.9)years and -0.1(1.0)years, respectively for girls and boys. We concluded that there is a significant positive correlation between BARx and BAUS, indicating that BAUS is a safe and practical method of bone age determination, with potential clinical applicability.