

Automated bone age determination from hand X-rays up to 19 years for boys and 18 years for girls – methodology and results.

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The BoneXpert method for automated determination of bone age from hand X-rays was introduced in 2009, covering the Greulich-Pyle bone age range up to 17 years for boys and 15 years for girls. This talk presents an extension of the method up to bone age 19 years for boys and 18 years for girls.

The extension was developed based on images from the First Zurich Longitudinal Study of 231 healthy children born in 1954-56 and followed with annual X-rays of both hands until the age of 20 years.

The method was validated on two cross-sectional studies of healthy children from Rotterdam and Los Angeles. We found a root mean square deviation from manual rating of 0.68 and 0.49 years in these two studies for boys in the bone age range 17-19 years. For girls, the deviations were 0.77 and 0.63 years respectively, in the bone age range 15-18 years.