

LETTER TO THE EDITOR

Biometric method for the ossification evaluation of children from birth up to the ages of two and four – applied to the tarsus

Sir,

In this journal (1), a short communication was published relating to a new biometric method for evaluating bone age, as applied to the tarsus.

From personal experience of the method and from suggestions received from other colleagues, we have found that this method overestimates bone age in very young children to such an extent that retarded bone ages are considered to be normal. This fact is due to the influence which the global case study of older children exerts on these young ages. In order to correct this defect, new equations for calculation have been devised based on children of both sexes from birth up to the ages of two and four.

The total number of males up to two years is 27; the total up to four years is 71. The number of females is 36 up to two years and 77 up to four.

The correlation coefficients between the Tarsal Index and the chronological age of each of these equations are statistically significant ($p < 0.001$) and vary between 0.655 in males and 0.769 in females of up to two years and between 0.843 in males and 0.894 in females up to four years.

We offer the new bone ages' OEIT (Ossification Evaluation Index of the Tarsus) in both sexes. They are as follows:

- (1) (Males) from birth up to two years.
 (Bone age days) = $157.6 + (83.9 \times \text{Tarsus Index})$
 with (SD = 153.5)
 OEIT = $157.6 + (83.9 \times \text{Tarsus Index}) - (\text{Chronological age days}) = 0.196 \times 153.5$
 = $5.24 + (2.79 \times \text{Tarsus Index}) - (0.033 \times \text{Chronological age days})$
- (2) (Females) from birth up to two years.
 (Bone age days) = $68.9 + (90 \times \text{Tarsus Index})$ with
 (SD = 151.6)

$$\text{OEIT} = 68.9 + (90 \times \text{Tarsus Index}) - (\text{Chronological age days}) = 0.196 \times 151.6$$

$$= 2.32 + (3.03 \times \text{Tarsus Index}) - (0.034 \times \text{Chronological age days})$$

- (3) (Males) from birth up to four years.

$$(\text{Bone age days}) = 284.5 + (85.2 \times \text{Tarsus Index}) \text{ with (SD} = 218.7)$$

$$\text{OEIT} = 284.5 + (85.2 \times \text{Tarsus Index}) - (\text{Chronological age days}) = 0.196 \times 218.7$$

$$= 6.64 + (1.99 \times \text{Tarsus Index}) - (0.023 \times \text{Chronological age days})$$

- (4) (Females) from birth up to four years.

$$(\text{Bone age days}) = 124.9 + (94.6 \times \text{Tarsus Index}) \text{ with (SD} = 205.5)$$

$$\text{OEIT} = 124.9 + (94.6 \times \text{Tarsus Index}) - (\text{Chronological age days}) = 0.196 \times 205.5$$

$$= 3.1 + (2.35 \times \text{Tarsus Index}) - (0.024 \times \text{Chronological age days})$$

With these new equations, we contribute to the study which other authors (2–4) have carried out for calculating bone age in very young children using other methods.

References

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 4. Sánchez E, Hernández M, Sobradillo B, Rincón JM, Narvaiza J. Un nuevo método de valoración de la maduración ósea en los dos primeros años de vida. *Rev Esp Pediatr* 1985;41:99–110
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