

Tooth-size discrepancy and Bolton's ratios: the reproducibility and speed of two methods of measurement

Type: Article

Abstract:

OBJECTIVE: To determine and compare the reproducibility and speed of two methods of performing Bolton's tooth-size analysis. **DESIGN:** Analysis of randomly selected clinical sample. **SETTING:** Bristol Dental Hospital, University of Bristol, United Kingdom. **MATERIALS AND METHODS:** Pre-treatment study casts of 150 patients were selected randomly from 1100 consecutively treated Caucasian orthodontic patients. Bolton tooth-size discrepancies and ratios were measured using two methods; one method employed entirely manual measurement and the Odontorule slide rule, while the other employed digital calipers and the HATS analysis software. Twenty study casts were measured twice, a week apart with both methods. Another three investigators also measured 20 study casts twice with the HATS analysis. **RESULTS:** There were small or no systematic errors within or between these two methods. A very significant difference was evident for mean time measurements between the two methods (mean time for HATS was 3.5 minutes and for Odontorule was 8.9 minutes). There was relatively high error variance of both methods of measurement as a percentage of the total variance. **CONCLUSIONS:** On-line electronic measurement was found to be more rapid than the manual method used. Both methods demonstrate relatively high random error and this has important consequences for the clinical use of Bolton's ratios.

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