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### A COMPARISON OF THE ACCURACY OF HAND TRACING AND DOLPHIN IMAGING SOFTWARE IN LATERAL CEPHALOMETRIC ANALYSIS

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**Objective:** The purpose of this study was to compare the accuracy of hand tracing and Dolphin Imaging software in lateral cephalometric analysis.

**Materials and Methods:** Twelve lateral cephalometric radiographs, obtained from the University of Manitoba, were randomly selected, evaluated for quality, hand-traced on acetate paper by two orthodontic residents and analyzed using a modified Steiner analysis, Ricketts, Harvold and McNamara analyses. The values from these measurements were used to assess inter- and intra-evaluation correlation. Subsequently, sixty lateral cephalometric radiographs (twenty Class I, twenty Class II and twenty Class III) were randomly selected from the same database and analyzed by hand-tracing on acetate paper and by Dolphin Imaging software. Measurements obtained were analyzed using t-test statistics. All tests were set with a level of significance of  $p \leq 0.05$ .

**Results:** Inter- and intra-operator correlation was assessed and showed no significant difference ( $p < 0.05$ ). No statistical differences between most measurements obtained by hand-tracing and by Dolphin Imaging software was found. However, highly statistically significant differences ( $p < 0.001$ ) were found for UI-NA (degrees) ( $0.87 \pm 1.18$ ) (mean difference  $\pm$  SE), LI-APog (mm) ( $-21.3 \pm 0.5$ ), and LI-MP (degrees) ( $-0.87 \pm 1.18$ ).

**Conclusion:** Apart from several incisor positions and inclinations, Dolphin Imaging software appears as reliable as hand tracings. Orthodontists should be cognizant of the apparent inaccuracy of incisor positioning with automated software analyses.