Quality of a CAD-software based tool for objective rating of tooth preparations

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Objectives:
A continuous and objective feedback for students is an essential part of learning the skills of tooth preparations. An unfavorable instructor-student ratio and considerable inter- and intra individual differences in rating tooth preparations motivate the use of digital and objective tools. The aim of this study is to evaluate whether the CAD software "prepCheck" (Sirona AG, Bensheim) can improve the objectivity of the lecturers with the absolute measurement for each preparation criteria. Furthermore we expect less inter-individual differences in assessment between the lecturers on the basis of the absolute measurements of prepCheck.

Methods:
As part of the entrance exam for the third clinical semester 18 chamfer preparations were prepared for an all-ceramic crown on tooth 36. Four lecturers rated conventionally and independently the preparations. Subsequent the lecturer rated the 18 chamfer preparations on a computer screen with the prepCheck-software. Thereby the following parameters of a full crown preparation were compared between the conventional rating and the "prepCheck" supported rating:

- **Occlusal Reduction**
- **Taper**
- **Surface Quality**

Results:
With the help of prepCheck the rating of the OCCLUSAL REDUCTION changed dramatically. Conventionally as “good” rated preps were rated as “bad” on base of the prepCheck measured distance value and vice versa.
The evaluation of the TAPER was minimally better with the exact measured distance value and vice versa.
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Conclusion:
Based on the measured values for occlusal reduction, the lecturers decide whether an all-ceramic crown is possible with minimal material thickness in mind.

- The assessment becomes more objective and
- The criteria to be achieved are equal for all students
- At once the inter-individual assessment shows smaller differences within the faculty

For rating the taper the lecturers decide for “good” marks, although those values are out of tolerance. With his clinical experience the lecturer makes the final decision on rating.

References:

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