Learning Fixed Prosthesis – Classical vs. PREPassistant® Method

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Background
Pre-clinical training and theoretical knowledge is determinant in the learning process for clinical practice (Petrooulos VC et al, 2006; Harrison P, et al, 2009). This both evaluation components included in Fixed Prosthesis teaching allow the acquisition of the manual dexterity needed by the students and consequently the understanding of the essential procedures to be successful in the clinical practice (Barrero, 2015; Curtis, 2007; Hamil, 2014; Schuster, 2017; Velayo, 2014). In this context, simulation technologies have contributed to progression of clinical skills by students, aiming, above all, to identify students with difficulties (Urbankova A et al, 2011). The PREPassistant® (KaVo®, KaVo Dental Corp., Germany) is one of the examples, consisting in a CAD-assisted learning system that aid in pre-clinical learning of Fixed Prosthodontics, and that is applied in the evaluation of dental preparation at the Faculty of Dentistry of the University of Porto (FMDUP) (Rocha-Almeida P et al, 2016). This system enables both the increasing of the objectivity on pre-clinical evaluation and also the accuracy of the same (Cardoso JA et al, 2006; Almeida TC et al., 2009).

Aims & Objectives
The objective of this study was to compare the classic learning method of dental preparations with a new learning method, using models with referrals and learning guides.

Materials and Methods
In order to evaluate dental preparation techniques in teaching, thirty students that finished the 3rd year of the curricular unit of Fixed Prosthodontics I of the Integrated Master in Dental Medicine of the Dental Medicine Faculty of Porto (Portugal) were randomly selected. This sample was separated into two groups, group A and group B (control), considering two phases (diagnostic and learning). Group A executed the dental preparation in duly calibrated models that were designed with references and learning guides, while the group B performed the dental preparation according to the classical method. The results were read and compared by the PREPassistant® system, based on a pre-designed evaluation. Since the number and criteria for analysis were different on the samples of group A and group B, they were grouped for pairing analysis, in which the step 1 corresponded to the diagnostic phase, and the steps 2 and 3 to the learning phase.

The collected data were analyzed with the IBM® SPSS® Statistics 22 program (v. 19; SPSS Inc., Chicago, Illinois, EUA) and statistical evidence was considered for values of p < 0.05. Since evaluation scale range from 1 to 5 values the comparison between the two teaching methods (Group A and B), in each step, was performed by the Wilcoxon-Mann-Whitney non-parametric test.

Results
Based on statistical analysis between groups A and B, there were not statistically significant in the diagnostic phase, whereas in the learning stage they were detected statistically significant differences, presenting the group A the better performing (Table 1).

Conclusions
The models obtained in CAD and evaluated with PREPassistant® allow a significant evolution in the technique of dental preparation and the learning phase can be faster and intuitive. It was possible to create standardized models for the dental preparation technique, according to the preparation axis and the cervical finishing margin.

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References

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<thead>
<tr>
<th>Group Criteria</th>
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<th>Group B</th>
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<tr>
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<td>Phase 2 (step 2)</td>
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Table 1: Statistics of the total average classifications of parameters per steps.