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Cardiac cycle puzzle increases undergraduates' learning about cardiac physiology: Pre- and post-tests assessment

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The cardiac cycle puzzle was developed for the teaching of cardiac. This educational game involves identifying the phases of the cardiac cycle and the relationships between the morphological and functional characteristics of the heart. In a previous study, we observed this game improved the undergraduates' performance (game group), in a test on cardiac physiology, compared to the performance of students who had a lecture (control group). It has been used an experimental design, dividing the students into two groups. However, it is often not possible due to the discipline schedule. The evaluation by pre and posttest is another option to evaluate the efficiency of an educational game. Therefore, the aim of this study was to evaluate, through pre and post-test, the effect of the cardiac cycle puzzle in the students' learning about cardiac physiology. The study was approved by FOP Ethics Committee. Students of the second semester Dentistry course of Piracicaba Dental School-UNICAMP (N=77), attended a lecture on the special characteristics of cardiac cells, but without the description of the cardiac cycle. The students were instructed to study these topics and the cardiac cycle in a textbook. In the second class, the students performed the pre-test, an assessment composed of alternatives questions and written questions. After the pre-test, the students performed the activity with the cardiac cycle puzzle. In the third class, three days after the pre-test and the game, the students performed the post-test, another assessment also composed of alternatives questions and written questions, which approached the same content of the pre-test, but were not equal to the previous assessment. The grade obtained in the pre- and post-tests were compared using paired Student's t-test ($p<0.05$). The grade of students' in the post-test was higher (7.57±1.69) than in the pre-test (6.06±2.32). The results indicate that the use of the puzzle increases the students' learning about cardiac physiology.

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