

04. ENHANCING MEDICAL EDUCATION: THE IMPACT OF DELIBERATE PRACTICE ON LEARNING HUMAN PHYSIOLOGY

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 <https://www.youtube.com/live/fSpXH-3Xy5w?t=4617s>

BACKGROUND: Simulation-Based Learning (SBL) is a teaching method that remains underutilized at the undergraduate level of health education, despite several studies highlighting its potential. Active teaching methodologies, such as deliberate practice, are known to enhance skills like leadership, self-confidence, and teamwork, producing better results than traditional teaching strategies. The goal of this study was to determine the effectiveness of implementing deliberate practice in the teaching of Human Physiology in a medical course at a private school in Brazil.

METHODS: This is an observational qualitative and quantitative study, carried out in 2022 and 2023. An online questionnaire was developed for medical students in Belo Horizonte, Brazil, to assess their perception of deliberate practice in the aforementioned discipline. The calculated sample size was 196, and the study had 198 participants. The questionnaire was divided into five blocks: General Questions, Emotions, Skills, Debriefing and Personal Opinion. The fifth block consisted open-ended questions for students to identify aspects to be improved. The Likert scale was chosen as the evaluation method for the questions in the first four sections, with responses ranging from 1 to 5. An inferential statistical analysis was conducted, using Fisher's exact test at a 0.05 level of significance, to assess the association between categorical variables. To categorize these variables, responses from each section were summed according to their corresponding values on the Likert scale. For example, in the first section, titled General Questions, which included five statements about the students' learning experience, the scores were divided into three categories: 5-15, 16-20, and 21-25. **RESULTS:** Overall, students had a positive perception of deliberate practice. A significant proportion (66.8%) strongly agreed that they developed skills such as teamwork through the scenarios. Moreover, 83.7% completely agreed that access to realistic simulation environments enhanced their education and contributed to their learning of human physiology. 83.7% of participants completely agreed that the mistakes made during scenarios also contributed to their learning. Regarding emotions, 67.9% completely agreed that they felt motivated, while

37.8% experienced anxiety during the scenarios. The statistical analysis revealed a significant association between the sum scores of each section and the binary response ("yes" or "no") to the question "Do you like the practical classes of Human Physiology?" ($p < 0.05$), with the exception of the Negative Emotions sum. This indicates that higher section scores are associated with a greater likelihood of students liking the practical classes. **CONCLUSION:** The implementation of deliberate practice into the Human Physiology curriculum demonstrated positive outcomes in terms of student perception and had a beneficial impact on students' learning and skill development. However, further improvements are needed to refine the scenarios and foster a safer emotional environment for undergraduate students.

Table: Association Between Students' Perception of Human Physiology Practical Classes and the Sum Score of the Questionnaire's Sections.

Characteristic	Overall N = 198 ¹	Do you like the practical classes of Human Physiology?		p-value ²
		No N = 9 ²	Yes N = 189 ²	
General Questions Sum				0.022
5 - 15	5 (2.5%)	2 (22%)	3 (1.6%)	
16 - 20	27 (14%)	1 (11%)	26 (14%)	
21 - 25	166 (84%)	6 (67%)	160 (85%)	
Skills Sum				<0.001
6 - 15	7 (3.5%)	3 (33%)	4 (2.1%)	
16 - 20	16 (8.1%)	3 (33%)	13 (6.9%)	
21 - 25	61 (31%)	2 (22%)	59 (31%)	
26 - 30	114 (58%)	1 (11%)	113 (60%)	
Debriefing Sum				<0.001
5 - 15	4 (2.0%)	2 (22%)	2 (1.1%)	
16 - 20	23 (12%)	3 (33%)	20 (11%)	
21 - 25	171 (86%)	4 (44%)	167 (88%)	
Positive Emotions Sum				<0.001
3 - 7	10 (5.1%)	3 (33%)	7 (3.7%)	
8 - 11	38 (19%)	5 (56%)	33 (17%)	
12 - 15	150 (76%)	1 (11%)	149 (79%)	
Negative Emotions Sum				0.4
3 - 7	40 (20%)	1 (11%)	39 (21%)	
8 - 11	73 (37%)	2 (22%)	71 (38%)	
12 - 15	85 (43%)	6 (67%)	79 (42%)	

¹n (%)
²Fisher's exact test

Key Words: Simulation; Medical Education; Physiology.