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Teaching Neuroscience from Neuroscience: an Approach Based on the Allosteric Learning Model, Pathfinder Associative Networks and Teacher Professional Knowledge

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Abstract : Currently, the important role of neurosciences in the professional training of the physical educator is known, highlighting in the teaching-learning process aspects such as the nervous structures involved in the adjustment of posture and movement, the neurophysiology of locomotion, the process of nerve impulse transmission, and the relationship between physical activity, learning, and cognition. The teaching-learning process of neurosciences is complex, due to the breadth of the contents, the diversity of teaching contexts required, and the demanding ability to relate concepts from different disciplines, necessary for the correct understanding of the function of the nervous system. This text presents the results of the application of a didactic environment based on the Allosteric Learning Model in morphophysiology students of the Faculty of Military Physical Education, Military School of Cadets of the Colombian Army (Bogotá, Colombia). The research focused then, on analyzing the change in the cognitive structure of the students on neurosciences. Methodology. [1] The predominant learning styles were identified. [2] Students' cognitive structure, core concepts, and threshold concepts were analyzed through the construction of Pathfinder Associative Networks. [3] Didactic Units in Neuroscience were designed to favor metacognition, the development of Executive Functions (working memory, cognitive flexibility, and inhibitory control) that led students to recognize their errors and conceptual distortions and to overcome them. [4] The Teacher's Professional Knowledge and the role of the assessment strategies applied were taken into account, taking into account the perspective of the Dynamizer, Obstacle, and Questioning axes. In conclusion, the study found that physical education students achieved significant learning in neuroscience, favored by the development of executive functions and by didactic environments oriented with the predominant learning styles and focused on increasing cognitive networks and overcoming difficulties, neuromyths and neurophobia.

Keywords : allosteric learning model, military physical education, neurosciences, pathfinder associative networks, teacher professional knowledge
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