Teaching quadrupedal body planes, positional and directional terms by building models in laboratory class

Oliveira, RR. and Pereira-Sampaio, MA.

Departamento de Morfologia, Universidade Federal Fluminense

Anatomical terminology is based primarily on anatomical positioning and body planes. Therefore, knowledge of these planes is very important to understand positional and directional terms. Students must understand positional and directional terms as soon as possible to the next anatomical topics easier, since these terms will be used in each sequence of the anatomical program. Often these terms are demonstrated in lectures and in books by using two-dimensional images. This methodology can slow understanding of these three-dimensional concepts. The aim of this work is evaluate if the building of three-dimensional models could accelerate the learning process. Forty-nine students from the veterinary anatomy class of 2008 at the Fluminense Federal University were asked to answer ten questions concerning body planes and positional and directional terms, two weeks after the lecture on this topic. After answering the questions, the students were divided into groups of three or four. Each group was to build a three-dimensional animal model illustrating body planes and positional and directional terms and have it ready for the next week. The students were free to use any kind of material since different kinds of models were made. During the work, the students used three-dimensional images of the animal associated with the body planes and labels of the positional and directional terms. After the completion of the models, the students were asked to answer the same ten questions again. The mean of correct answers before and after the work was 5.94 and 7.71, respectively. A comparison of the results of the answers, before and after the work on the models, using the Student t test, demonstrated a statistically significant improvement of correct answers ($p \leq 0.01$). Since understanding body planes and positional and directional terms is enhanced by having three-dimensional understanding, the models helped the students store this information in their memory as mental models. Knowledge of body planes and positional and directional terms is essential to understand anatomy. Therefore, it is of utmost importance that the students get this knowledge as soon as possible. Building the three-dimensional models was useful to accelerate and enhance the learning process and will be used for the next classes of veterinary anatomy at the Fluminense Federal University.