

The Efficacy of Animations in Promoting Student Knowledge of Muscle/Neurophysiology

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The objective of this study was to determine the efficacy of animations in promoting student knowledge of Muscle/Neurophysiology. Students (N = 65) in three undergraduate Anatomy & Physiology courses first received instruction in muscle/Neuro physiology using static imagery embedded in PowerPoint lectures. This exercise was followed by a 20-item “pre-animation” test of structures, functions, and relationships within the Sarcomere/Neuron during the process of contraction. In the subsequent class period, all students received instruction in the same principles of muscle/Neuro physiology, only with animations illustrating the movement of ions and sliding of muscle fibers. Finally, students completed a “post-animation” test involving the same 20 questions included on the pre-test. Scores on individual test items were summed to create composite pre-animation and post-animation indexes. A t-test for dependent means revealed a significant difference between the conditions, with improved performance exhibited on post-animation scores (M = 9.05, SD = 3.51) relative to pre-animation scores (M = 7.34, SD = 2.81), $t(63) = 4.131$, $p < .001$. Relative to static imagery, the animations may provide students with a better understanding of the mechanisms associated with organ function by illustrating the sequence of procedural steps in an incisive and regulated manner.

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