EVALUATION OF A NEW COMPUTER-BASED CASE OF A PATIENT WITH AN ACL INJURY

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Introduction
A 2009 meta-analysis and review of more than one thousand empirical studies of online learning by the U.S. Department of Education concluded that students using online learning conditions demonstrated improved learning outcomes.

PURPOSE
The purpose of this project was to create and pilot-test a computer-based patient case of a patient with a suspected anterior cruciate ligament (ACL) injury.

RELEVANCE
As more clinical education programs enlist the assistance of technology to improve learning outcomes, it becomes essential to establish the efficacy and best practice use of these adjuncts to traditional instructional methods.

SUBJECTS
Six entry-level physical therapy (PT) students from a west coast university served as subjects for this study.

• 3 first-year students: human anatomy, patient management, and introductory orthopedics courses – no clinical rotations
• 3 second-year students: human anatomy, patient management, and introductory orthopedics courses plus one 6-week clinical rotation

METHODS AND MATERIALS
An evidence-based patient case was created with study and testing modes to allow users to augment and evaluate their knowledge of clinical examination. Both the study and test modes consisted of the same multiple choice questions. The study mode allowed learning responses (feedback) to be seen for correct and incorrect answers without scoring the performance. The test mode provided users with a score at the completion of the test. Students took the test after completing the introductory segment of the orthopedics component of the curriculum delivered via traditional instruction. Opinions about the usefulness of the information and usability of the program were also collected via survey.

EXPERIMENTAL DESIGN
After reviewing the case, at a self-selected pace, students completed a 33-question multiple choice test of anatomy, physiology, pathophysiology, and rehabilitation following surgical repair of a torn ACL.

ANALYSES
Independent T-tests were used to compare test scores of three first-year and three second-year students. Responses to survey questions were theme coded and frequencies and percentages were calculated for each.

RESULTS
Analysis revealed no significant difference between the scores of first- and second-year students (p>.05).
• Students averaged 30 minutes to complete the 33 multiple choice questions in the test.
• Users reported that the patient case contained useful information.
• Users reported the case was easy to use.
• Given a choice, students elected to use the patient case in both study and testing modes.
• Users felt that the patient case should be used as adjunct to traditional instruction.
• Users still prefer instruction via traditional face-to-face lecture

CONCLUSION
Entry-level physical therapy students found this patient case to contain useful information and be easy to use. When used after traditional instruction in introductory orthopedics, test results showed no difference between first- and second-year students. Students felt that the case was most valuable as an adjunct to traditional instruction.

FUTURE RESEARCH
Next the case will be examined for teaching effectiveness
• Pre-test post-test design
• Knowledge of knee anatomy, physiology, pathophysiology, surgical procedures regarding total knee arthroplasty (TKA)
• Post-operative rehabilitation following TKA

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