

Bond University
Research Repository



Should assessments match modern teaching methods within physiology?

Moro, Christian; Phelps, Charlotte

Licence:
CC BY-NC-ND

[Link to output in Bond University research repository.](#)

Recommended citation(APA):
Moro, C., & Phelps, C. (2022). *Should assessments match modern teaching methods within physiology?*. Abstract from Australian & New Zealand Association for Health Professional Educators, ANZAHPE 2022 Festival.

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

For more information, or if you believe that this document breaches copyright, please contact the Bond University research repository coordinator.

Should assessments match modern teaching methods within physiology?

Christian Moro and Charlotte Phelps

Faculty of Health Sciences and Medicine, Bond University, Robina, QLD, 4229

Background: Traditionally, medical students were taught disciplines such as physiology and anatomy through the use of dissections or silicone models alongside two-dimensional textbook materials. As the volume of information required to learn in a modern-day medical course increase, and teaching shifts to multimodal delivery, educators are increasingly utilising technology-enhanced resources. Augmented and virtual reality have successfully been employed for learning and teaching within many medical and health sciences programs to provide engaging and interactive learning experiences. For disciplines such as physiology and anatomy, these technologies may disrupt the traditional modes of content delivery. However, the overall evidence-based benefits and effectiveness of these devices for student learning remain unclear. Determining the viability of these teaching tools is of importance as universities have been consistently increasing their use of technology to supplement learning within health sciences in recent years. We undertook a systematic review and meta-analysis to evaluate the impact of virtual reality or augmented reality on knowledge acquisition for students studying preclinical physiology and anatomy, and also investigated any impacts on assessment performance. **Methods:** The protocol was submitted to Prospero and a literature search was undertaken in PubMed, Embase, Cochrane, ERIC, and other databases from January 1990 to November 2019. Inclusion criteria included randomised controlled trials assessing knowledge acquisition and learning in preclinical physiology and anatomy using virtual or augmented reality compared to traditional teaching methods. **Results:** Of nine hundred and nineteen records, fifty-eight articles were reviewed in full text, with eight studies meeting full eligibility requirements. The studies included a total of six hundred and twenty-six participants, conducted in Australia, Germany, Canada, United States, and Turkey. Nearly all studies included followed a two-arm parallel randomised trial design, with one being a cluster randomised controlled trial and one a three-arm parallel trial. There were no significant differences in knowledge scores from combining the eight studies, with the pooled difference being a non-significant increase of 2.86% (95% CI [-2.85; 8.57]). Analysis was undertaken to compare results between the two groups, augmented and virtual reality, however the difference in knowledge scores was non-significant ($p = \text{NSD}$). **Conclusions:** This systematic review has

identified similar benefits of traditional teaching methods to virtual or augmented reality in physiology and anatomy education. However, although augmented and virtual reality can enhance the overall learning experience, methods of assessment also need to be introduced to properly ensure equity in any introduced learning tool. Overall, the evidence suggests that although test performance is not significantly enhanced with either mode, both augmented and virtual reality are viable alternatives to traditional methods of education in health sciences and medical courses.