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Interpreting Lung Collapse: A randomised controlled study into the impact of three-dimensional animation

B.M. Ward¹, D. Chanock², V. Charissis³, L. Brady³ and P. Anderson³

¹University of Edinburgh, UK

²Ayr Hospital

Department of Radiology, Ayr, UK

³University of Glasgow / Glasgow School of Art

Digital Design Studio, Glasgow, UK

(v.charissis@gsa.ac.uk, ben.ward@ed.ac.uk)

PURPOSE

The use of computer-generated anatomical models has become widespread in anatomy teaching [1]. Several randomized controlled studies have shown positive learning outcomes in basic undergraduate anatomy. Recent studies have suggested Virtual Reality has a role in shortening the learning curve in postgraduate medical training [2,3]. The correct interpretation of radiological images often relies upon a three dimensional (3D) internal understanding of anatomy, but little is known about the potential role of enhanced visualization in radiological training. To this end, we have designed a randomized controlled study exploring the trainee's radiological interpretation of lung collapse, anatomical knowledge and visual-spatial ability.

MATERIALS/ METHODS

We designed a 3D animation series demonstrating the range of lobar collapse. In addition, we developed an integrated computer-based educational package bringing together plain film, CT data and traditional schematic diagrams. 20 current radiology trainees at a deanery study day will be randomized into two equal groups, one tutorial group given additional access to the 3D animation resource. Both arms are timed, pre-assessed for knowledge, prior experience, visual-spatial skills and then debriefed by identical MCQ and qualitative survey instruments integrated with the educational package [4].

RESULTS/ DISCUSSION

The results will be collected (using Questionmark-Perception) and the mean scores compared with a 2-tailed Student's t-test (SPSS). We will use similar methods to analyse the visual-spatial data and in addition utilise chi-squared tests to ensure the groups are comparable. The qualitative analysis includes a Likert questionnaire analyzed for internal consistency (Cronbach's alpha) and a thematic analysis of several open questions. The results are explored in relation to recent publications and the scope for further investment in terms of education provision and research.

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