

IMPACT OF A VIRTUAL REALITY INTERVENTION ON ERGONOMICS IN COLONOSCOPY

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Background: Endoscopists are at risk of work-related repetitive stress injuries.

Endoscopic training often neglects ergonomic teaching, despite the resultant performance benefits from practicing ergonomic techniques in other procedural disciplines. There is a dearth of literature on ergonomic education in endoscopy.

Aims: To determine the effectiveness of an educational intervention for novice endoscopists designed to teach appropriate ergonomic techniques in colonoscopy.

Methods: Thirty novice endoscopists (completed <50 colonoscopies) were recruited from a colonoscopy simulation course and randomized to intervention (n=15) and control (n=15) groups. The intervention consisted of teaching and a detailed checklist on whole-body ergonomics reviewed after each of six hours of virtual reality intervention; a one hour didactic lecture; and an instructional video demonstrating ideal ergonomics during colonoscopy that could be accessed at any time. Participants were assessed using the Rapid Entire Body Assessment (REBA), a postural analysis tool, at multiple time points, including at baseline (pre-test), following the intervention (post-test), and at 4-6 weeks post intervention with a simulated test and two clinical colonoscopies. Higher REBA scores correspond to unfavourable ergonomic technique. Differences between the two groups at each timepoint were assessed using the Mann-Whitney U test.

Results: Both groups had comparable median REBA scores at baseline. The intervention group outperformed the control group on ergonomic assessment in the simulated post-test ($p<0.001$) and delayed simulation test ($p<0.001$), and at first two clinical colonoscopies (both $p<0.001$). The control group demonstrated a negative effect of time with poorer ergonomics at each of the post- and delayed tests.

Conclusions: A multi-modal intervention to teach ergonomic principles in colonoscopy was associated with improved ergonomic techniques among novice endoscopists. This finding was observed across timepoints and settings, including simulated and clinical colonoscopies. Further work is necessary to develop an optimal curriculum for ergonomics and to determine if improved ergonomics corresponds to

clinical performance.

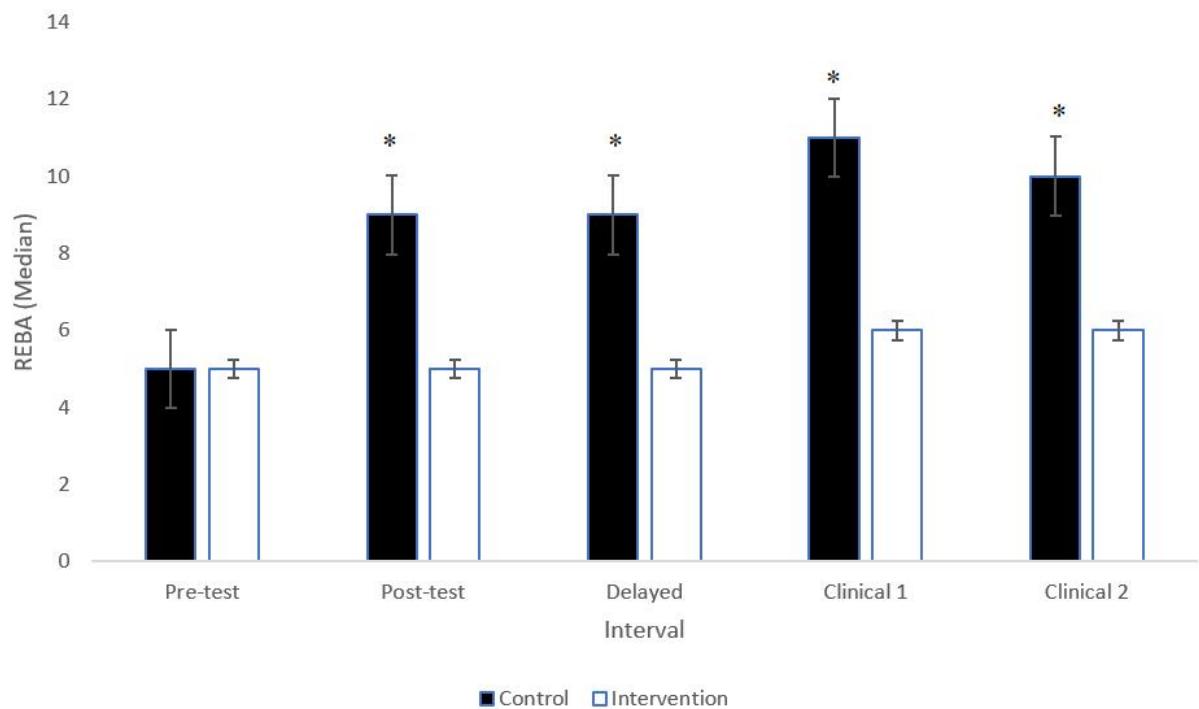


Fig. 1. Median REBA scores at different time points. (*) $P<0.05$.

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