THE UTILITY OF COMPUTER-BASED INSTRUCTION FOR TEACHING BASIC SURGICAL SKILLS TO NOVICES

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Introduction: This study assessed the effectiveness of video instruction and expert feedback on the acquisition of suturing and knot tying skills.

Method: Sixty medical students with no prior suturing experience viewed an instructional video and were then randomly assigned to one of four individualized practice conditions: no additional intervention (*control*), self study with digitized instructional video under participant control (*computer-based video instruction*), and expert feedback during (*concurrent feedback*) and after (*summary feedback)* practice trials. Each instructional session lasted approximately one hour, with 20 practice trials completed during that time. Technical performance was evaluated pre- and post-intervention using previously validated outcome measures: global ratings by two blinded experts and hand motion efficiency using the ICSAD system (number of movements and total time). Performance scores were analyzed using ANOVA with significance set at $p < .05$. The patterns of viewing the instructional video were also recorded for the video instruction group.

Results: Performance on the suturing and knot tying skill was similar for all three experimental conditions and all were significantly better than the controls on all outcome measures ($p < .05$). Trainees in the video instruction group reviewed segments of the digitized video for an average time of 4 minutes, mostly between trials 1-15.

Discussion: We found that interactive video instruction was as effective as expert feedback on a basic surgical task. Most of the utility of this type of training appears to be in the early stages of skill acquisition, suggesting that computer-based video instruction should be implemented early in the training curricula.