



Simulation training with the DHRT system and the personalized learning feedback can improve resident self-efficacy with IJ CVC procedures and provide sufficient feedback to allow residents to accurately assess their own performance” Yovanoff et al (2018).

Abstract:

OBJECTIVE: To compare the effect of simulator functional fidelity (manikin vs a Dynamic Haptic Robotic Trainer) and personalized feedback on surgical resident self-efficacy and self-ratings of performance during ultrasound-guided internal jugular central venous catheterization (IJ CVC) training. In addition, we seek to explore how self-ratings of performance compare to objective performance scores generated by the DHRT system.

DESIGN: Participants were randomly assigned to either manikin or DHRT IJ CVC training over a 6-month period. Self-efficacy surveys were distributed before and following training. Training consisted of a pretest, 22 practice IJ CVC needle insertion attempts, 2 full-line practice attempts, and a posttest. Participants provided self-ratings of performance for each needle insertion and were presented with feedback from either an upper level resident (manikin) or a personalized learning system (DHRT).

SETTING: A study was conducted from July 2016 to February 2017 through a surgical skills training program at Hershey Medical Center in Hershey, Pennsylvania.

PARTICIPANTS: Twenty-six first-year surgical residents were recruited for the study. Individuals were informed that IJ CVC training procedures would be consistent regardless of participation in the study and that participation was optional. All recruited residents opted to participate in the study.

RESULTS: Residents in both groups significantly improved their self-efficacy scores from pretest to posttest ($p < 0.01$). Residents in the manikin group consistently provided higher self-ratings of performance ($p < 0.001$). Residents in the DHRT group recorded more feedback on errors (228 instances) than the manikin group (144 instances). Self-ratings of performance on the DHRT system were able to significantly predict the objective score of the DHRT system ($R^2 = 0.223$, $p < 0.001$).

CONCLUSION: Simulation training with the DHRT system and the personalized learning feedback can improve resident self-efficacy with IJ CVC procedures and provide sufficient feedback to allow residents to accurately assess their own performance.

Reference:

Yovanoff, M.A., Chen, H.E., Pepley, D.F., Mirkin, K.A., Han, D.C., Moore, J. and Miller, S.R. (2018) Investigating the Effect of Simulator Functional Fidelity and Personalized Feedback on Central Venous Catheterization Training. *Journal of Surgical Education*. March 21st. .

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