

## **The aim of this study is to evaluate whether a virtual reality (VR)-based assessment of fine motor skills can be used as a valid and objective assessment of central line skills” Mohamadipannah et al (2016).**

### Abstract:

**BACKGROUND:** Due to the increased use of peripherally inserted central catheter lines, central lines are not performed as frequently. The aim of this study is to evaluate whether a virtual reality (VR)-based assessment of fine motor skills can be used as a valid and objective assessment of central line skills.

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**METHODS:** Surgical residents (N = 43) from 7 general surgery programs performed a subclavian central line in a simulated setting. Then, they participated in a force discrimination task in a VR environment. Hand movements from the subclavian central line simulation were tracked by electromagnetic sensors. Gross movements as monitored by the electromagnetic sensors were compared with the fine motor metrics calculated from the force discrimination tasks in the VR environment.

**RESULTS:** Long periods of inactivity (idle time) during needle insertion and lack of smooth movements, as detected by the electromagnetic sensors, showed a significant correlation with poor force discrimination in the VR environment. Also, long periods of needle insertion time correlated to the poor performance in force discrimination in the VR environment.

**CONCLUSIONS:** This study shows that force discrimination in a defined VR environment correlates to needle insertion time, idle time, and hand smoothness when performing subclavian central line placement. Fine motor force discrimination may serve as a valid and objective assessment of the skills required for successful needle insertion when placing central lines.

### Reference:



Mohamadipanah, H., Parthiban, C., Nathwani, J., Rutherford, D., DiMarco, S. and Pugh, C. (2016) Can a virtual reality assessment of fine motor skill predict successful central line insertion? American Journal of Surgery. August 1st. .

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