

A Comparative Human-centric Analysis of Virtual Reality Simulation and Physical Dry lab Exercises

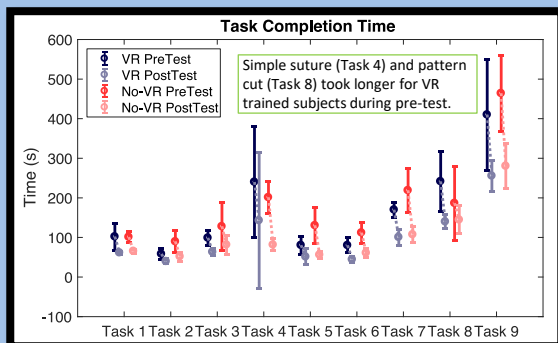


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Motivation

Are virtual reality and dry lab training skills learned interchangeable?



1. Peg Transfer



2. Clutch & Camera Movement



3. Rubber Band Transfer



4. Simple Suture



5. Clutch Camera Peg



6. Stair Rubber Band Transfer



7. Running & Cut Rubber Band

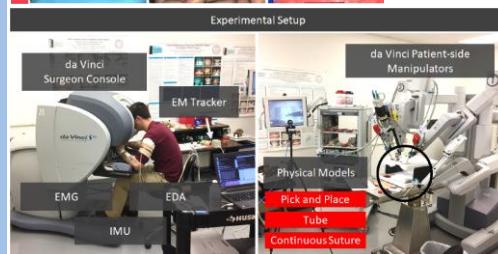


8. Pattern Cut



9. Running Suture

Data Collection



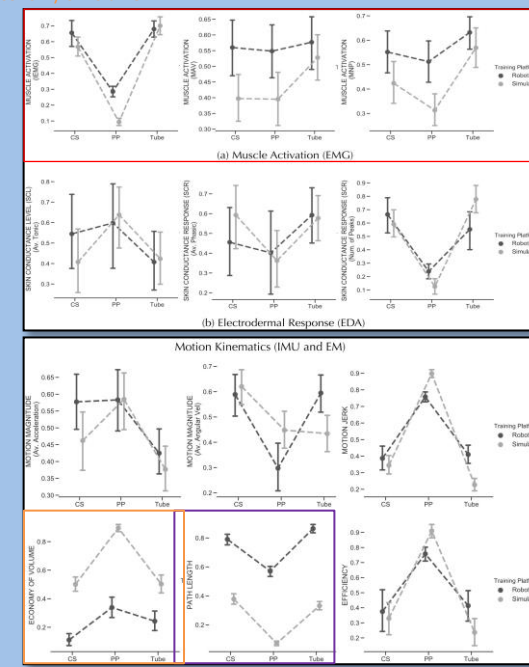
Data Collection:

Total of 72 individual experiment trials containing human physiological response signals

- Surface muscle electromyography (EMG) sensors
- Electrodermal response (EDA) sensor
- Electromagnetic (EM) trackers: position
- Inertial measurement unit (IMU) sensors: angular velocity, linear acceleration

Analysis & Results

Significant differences (p-value < 0.05): **muscle activation**, **path length**, and **economy of volume**



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