SIMULATION AS A RESOURCE

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SKILLS ARE SO OFTEN UNDER ASSESSED IN PROFESSIONAL PROCEDURAL PROGRAMS

- Content transfer is easier to assess, give a test, a survey, and oral exam.
- Historically technical skills were “assessed in the moment.”
- Skills training in surgery and procedures lagged behind content assessments throughout most developed countries but why?
  - Skills are hard to replicate outside of the procedure.
  - Review of skills can be subjective based on rater training
  - Definitive cutoffs are hard to establish.
  - A mixture of norm and criterion-based assessment without clarity and focus.

TRADITIONAL ASSESSMENTS

- A recent study suggests that the disparity in surgical skill among practicing surgeons accounts for more than 25% of the variation in patient outcomes.

Stulberg, J. J. *et al.* Association between surgeon technical skills and patient outcomes. *JAMA Surg.*

HISTORIC NORMS AND THE PROBLEMS

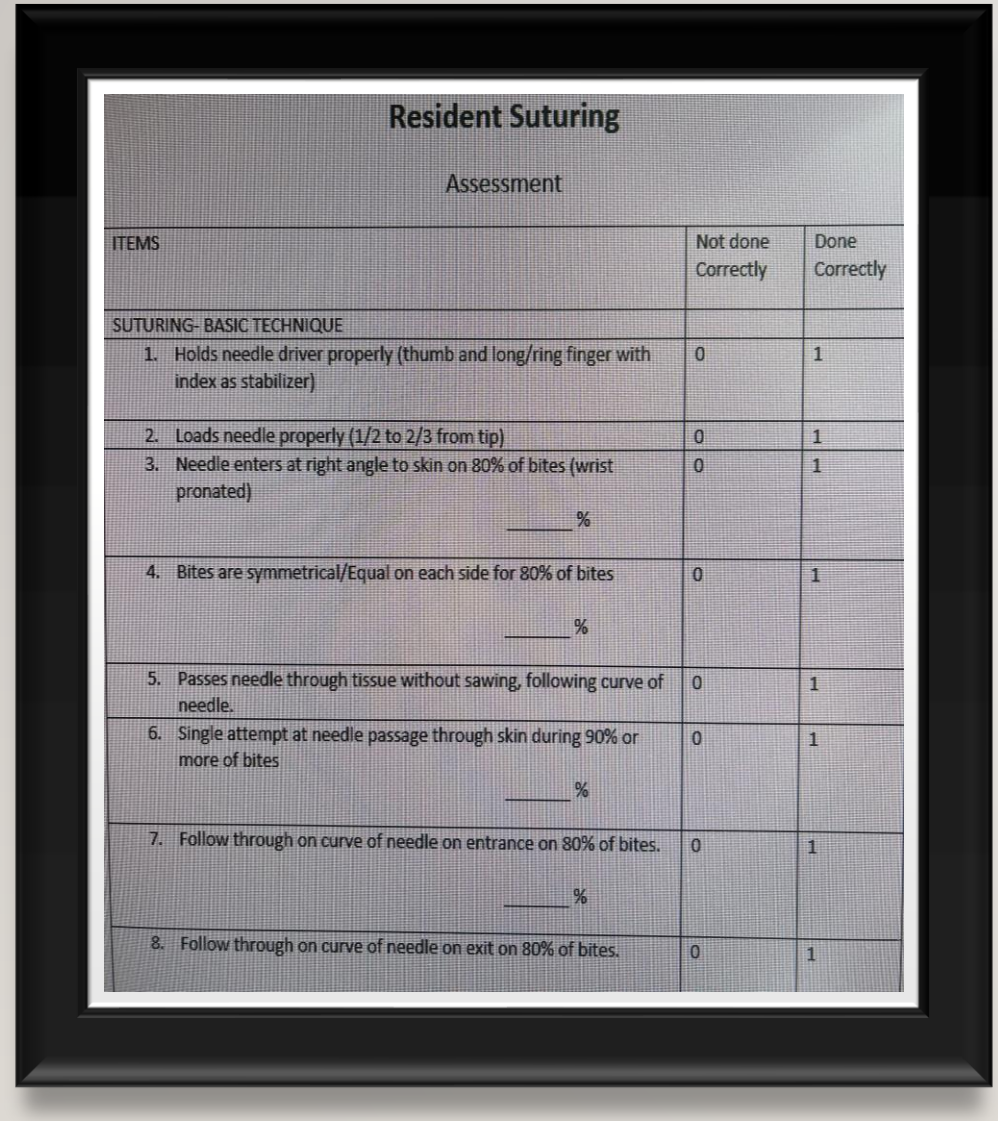
- Problems are everywhere in mentor-mentee rating

IN PERSON TEACHING IS THE ANSWER FOR TRAINING…. *BUT PROBABLY NOT BEST AT ASSESSMENT*

- Hands on training is a great way to mirror technique, learn nuances to hand eye tasks, review procedural steps, evaluate final skills results.
- Task trainers are great for assessing this purpose
- Simulation also has a large role here
    - However, the current SCOPE OF ASSESSMENT IS TOO NARROW to define complex surgery and procedures!!!!

SIMULATION

New options for skills testing environments include in-person, VR, Simulation, OR based review, etc. but with appropriate assessment tools applied



Resident Suturing

Assessment

ITEMS	Not done Correctly	Done Correctly
SUTURING- BASIC TECHNIQUE		
1. Holds needle driver properly (thumb and long/ring finger with index as stabilizer)	0	1
2. Loads needle properly (1/2 to 2/3 from tip)	0	1
3. Needle enters at right angle to skin on 80% of bites (wrist pronated) _____ %	0	1
4. Bites are symmetrical/Equal on each side for 80% of bites _____ %	0	1
5. Passes needle through tissue without sawing, following curve of needle.	0	1
6. Single attempt at needle passage through skin during 90% or more of bites _____ %	0	1
7. Follow through on curve of needle on entrance on 80% of bites. _____ %	0	1
8. Follow through on curve of needle on exit on 80% of bites.	0	1

KEEP IT SIMPLE!!!!!

FOR RATING

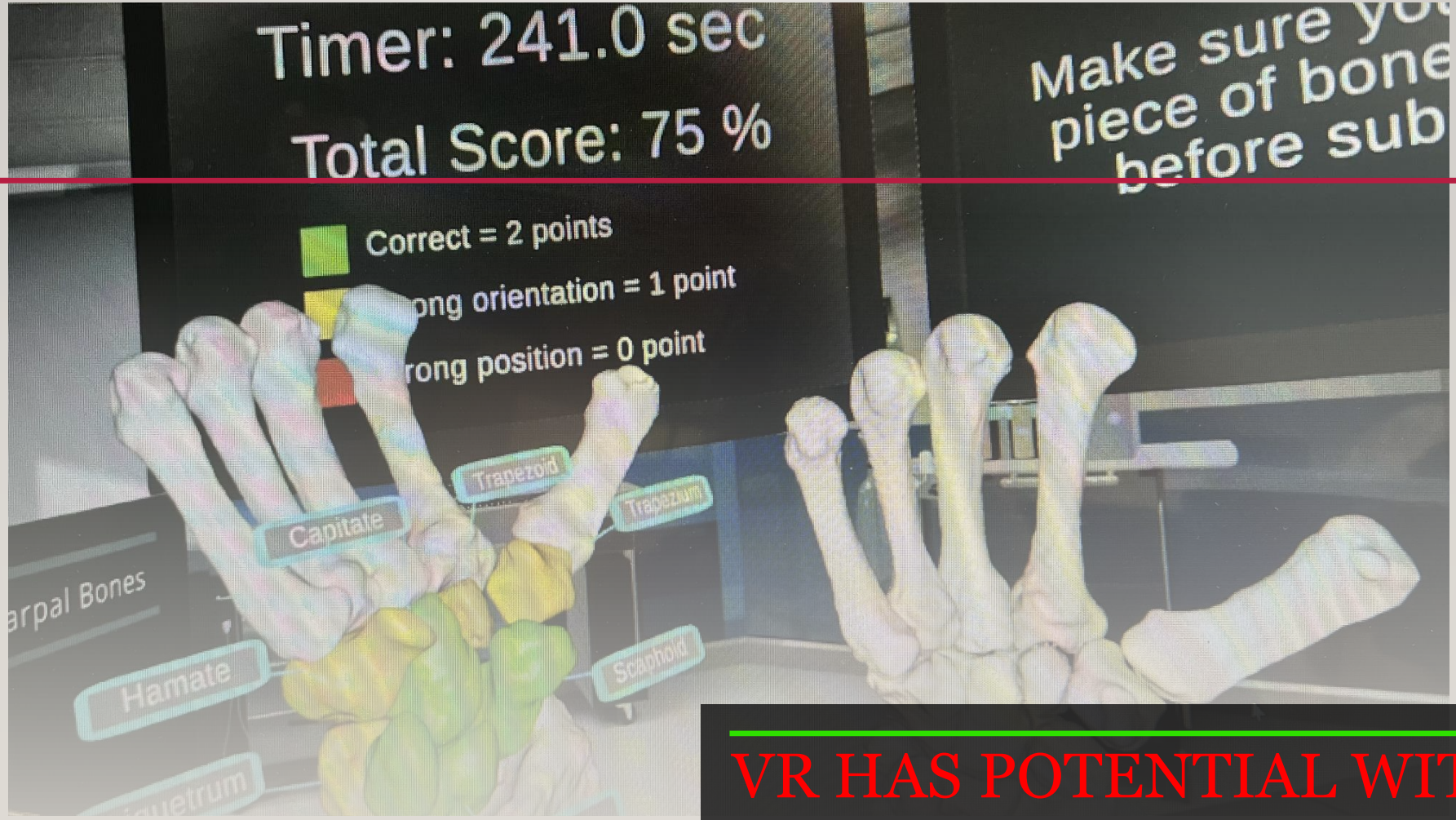
BUT YOU CAN GET CREATIVE IN SIMULATION…

IT DOES NOT NEED TO BANKRUPT THE INSTITUTION

Sheep Aorta with a Dacron graft inside for arterial access (Syringe used to create arterial pulsation with colored water)

SIMPLE MODEL, SIMPLE RATING TOOLS… FOLLOWED BY COMPLEX EVALUATION

Grease in a plastic tube to simulate arterial thrombus

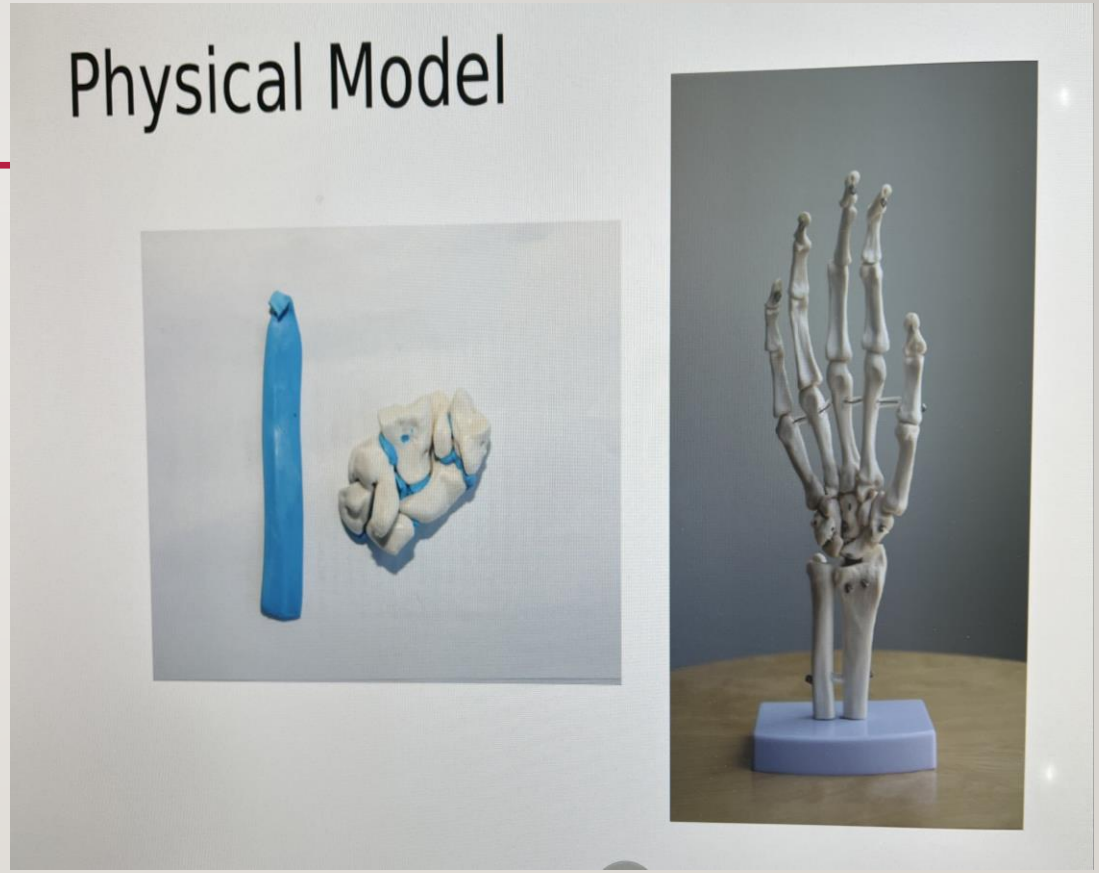


VR HAS POTENTIAL WITH LIMITED SPACE AND EQUIPMENT REQUIREMENTS

VR CONVERTED TO THE PHYSICAL TASK

- There **has to** be transferable skills to the physical realm, no one wants a surgeon that only has good outcomes in Virtual Reality or simulated endoscopy.
- There **has to** be EXCELLENT Fidelity and Authenticity of the platform to offer both learner and faculty confidence in the exercise.

Huesos de la muñeca



Oday Obaid, University of Illinois, Plastic Surgery

PRIOR SIMULATION HAD MASSIVE HARDWARE AND SOFTWARE REQUIREMENTS…

ONGOING INSTITUTIONAL COSTS

- Software updates and hardware maintenance were a significant budget of medical education and clinical departments?

NOW THE POSSIBILITIES!!!!!

Simulador endovascular con nuestro becario de cirugía vascular

WHAT IS COMPETENCY IN A SKILLS ENVIRONMENT?

- This is the hard question
- Are there key components that must be completed exactly otherwise a "Critical Fail" is achieved?
- What about the learner that is technically superior but is unable to master the steps and sequence necessary to complete the case?
- The assumption must be present that a competent surgeon/proceduralist could perform the case *the majority of the time* in *routine pathology* without major errors or omissions that risk a successful outcome?

WHAT'S THE MARKER OF SUCCESS

REQUIRES SIGNIFICANT FACULTY TIME AND COMMITMENT…

TO ESTABLISH STANDARDS THAT MUST BE MET DURING THE ASSESSMENT AND EVALUATION CYCLES

THE CURRENT LIMITATIONS OF SIMULATION

- When we look at Kirkpatrick Levels of Evaluation, most simulation is based on pre- and post-testing, so we are self limited to Level 2 of Evaluation (LEARNING).
- However, looking at changes in Behavior (level 3) and Outcomes/Performance (level 4) most simulation studies and methods are not appropriate to evaluate these higher-level expectations of learners.
- **Data and tools to assess these changes do not currently exist in most simulation programs due to program resource/education program limitations.**

THANK YOU

Medical College of Wisconsin and Johns Hopkins University SOE