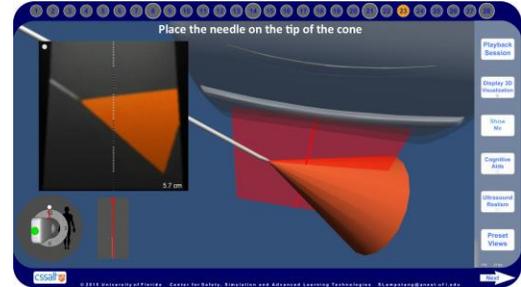
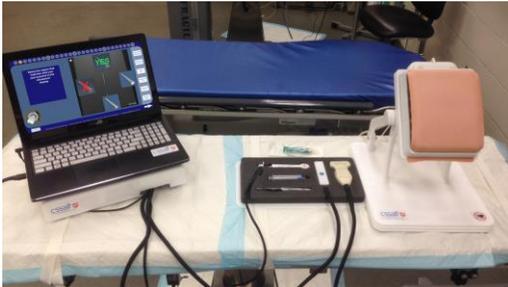


Cross-Sectional Literacy and Ultrasonography Trainer Fact Sheet

University of Florida Center for Safety, Simulation & Advanced Learning Technologies



This robust, turnkey mixed reality simulator is designed to help novices understand and acquire fundamental cross-sectional literacy and ultrasonography (US) skills. Based on the premise that it is a cognitive overload for novices to learn both US skills and unfamiliar anatomy, the trainer gets rid of anatomy as a “distraction” so that learners can focus on hands-on US skills acquisition. Anatomy is instead replaced by virtual regular and familiar 3D objects like cylinders, cubes and pyramids. Designed for austere environments, this procedure-agnostic simulator does not require wireless or internet access or wet fluids; accepts 110/220V, 50/60Hz. It can be unpacked/set up/be operational by an unfamiliar person in 5-7 minutes. The portable simulator fits inside a military-spec padded case with inbuilt wheels and telescoping pull-handle that meets airline checked luggage size limits (L+W+H=60”), weight < 70lbs. The simulator can be viewed at <http://simulation.health.ufl.edu/research/augmentmixedsim.php> and <https://www.youtube.com/watch?v=BtVzVqGcHK>

Ultrasonography Techniques:

- PART; use all DoF of US probe
- Scout scan
- Needling; tilt peek and slide
- Maintaining a short axis view while following a vessel
- Sidedness

Components:

- Virtual, regular and familiar 3D objects such as cones and cylinders encased in gel
- Virtual model of simplified targets and no go areas
- Tracked instruments: needle, ultrasound probe, virtual camera (interoperable between SMARTS-compliant simulators)
- Common SMARTS modular stand for use with other modular anatomies and procedures
- Automated scoring and replay system for after action review (AAR)
- Instructional materials teach fundamental cross-sectional literacy skills and ultrasonography techniques and procedures

Technology:

- Adheres to SMARTS (System of Modular Augmented Reality Tracking Simulators) rapid sim. development platform specs
- Quick-release placement and indexing of SMARTS-compliant anatomies to SMARTS platform
- Uses familiar, regular 3D objects like cylinders and cones that have readily recognizable reference planes or features
- Precise sub-millimeter tracking of all events
- High-durability, skin-like replaceable skin

Features:

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| <ul style="list-style-type: none"> -Integrated structured curriculum -Adjustable virtual ultrasound targets and difficulty levels -Adjustable view modes for realism and AARs -Ultrasound probe with depth markers -Debriefing with replay of past/saved procedure | <ul style="list-style-type: none"> -Hybrid cross-sectional view (3D viz in back half) -Anisotropy simulation for needles and other objects -Cognitive aids for US probe and needle orientation -Tactile feedback of bone and ligament puncture |
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