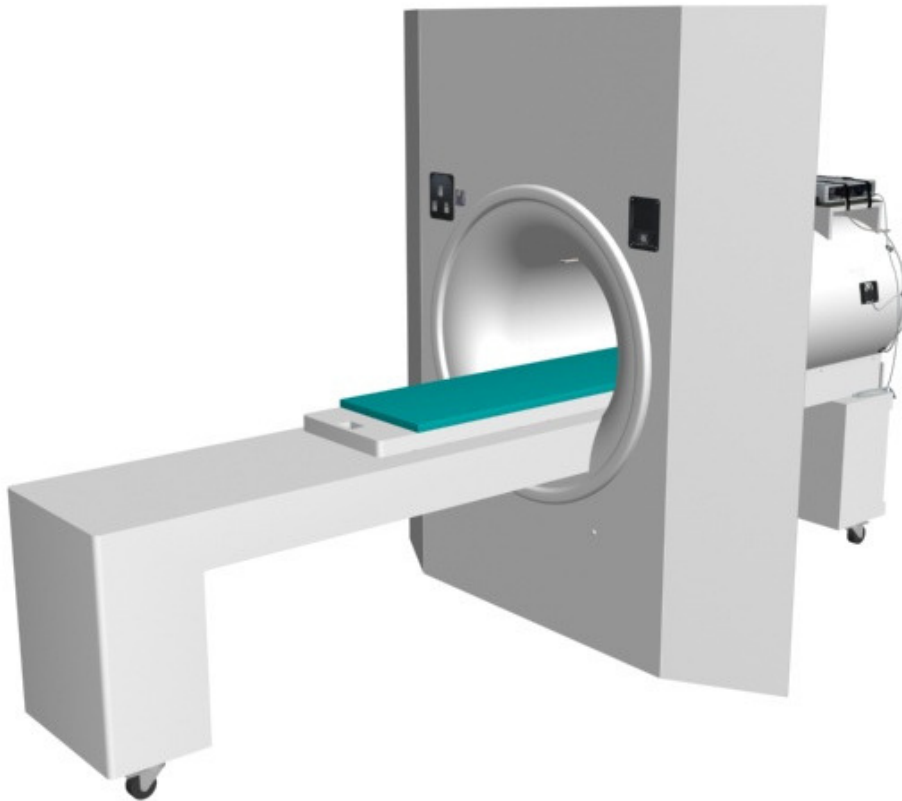


MRI SIMULATOR™

SIMULATE THE MRI ENVIRONMENT





SIMULATOR USE CASES

Acclimation

Introduces participants to an authentic scanning environment, eliminating failed scans caused by claustrophobia and anxiety. Participant can be habituated to the MRI environment reducing participant dropout to <5%.

Research

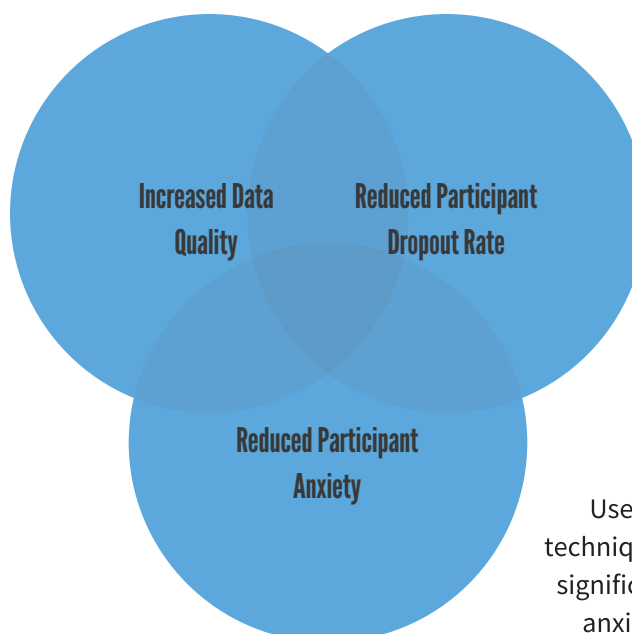
Allows researchers to conduct pilot studies and train participants outside of the magnet. Using the MoTrak system, researchers can train participants to minimize head and body motion, increasing data quality.

Staff & Student Training

Used to quickly train academic, research, or hospital personnel on best practices in the MRI environment in an inexpensive, safe, and controlled setting.

BENEFITS OF MRI SIMULATION

Simulation of the MRI environment before scanning has been shown to reduce motion in the scanner and significantly improve the quality of imaging.



Reduction in participant dropout rate with the introduction of patient comfort programs highlighted by the use of the MRI simulator is proven to be extremely effective.

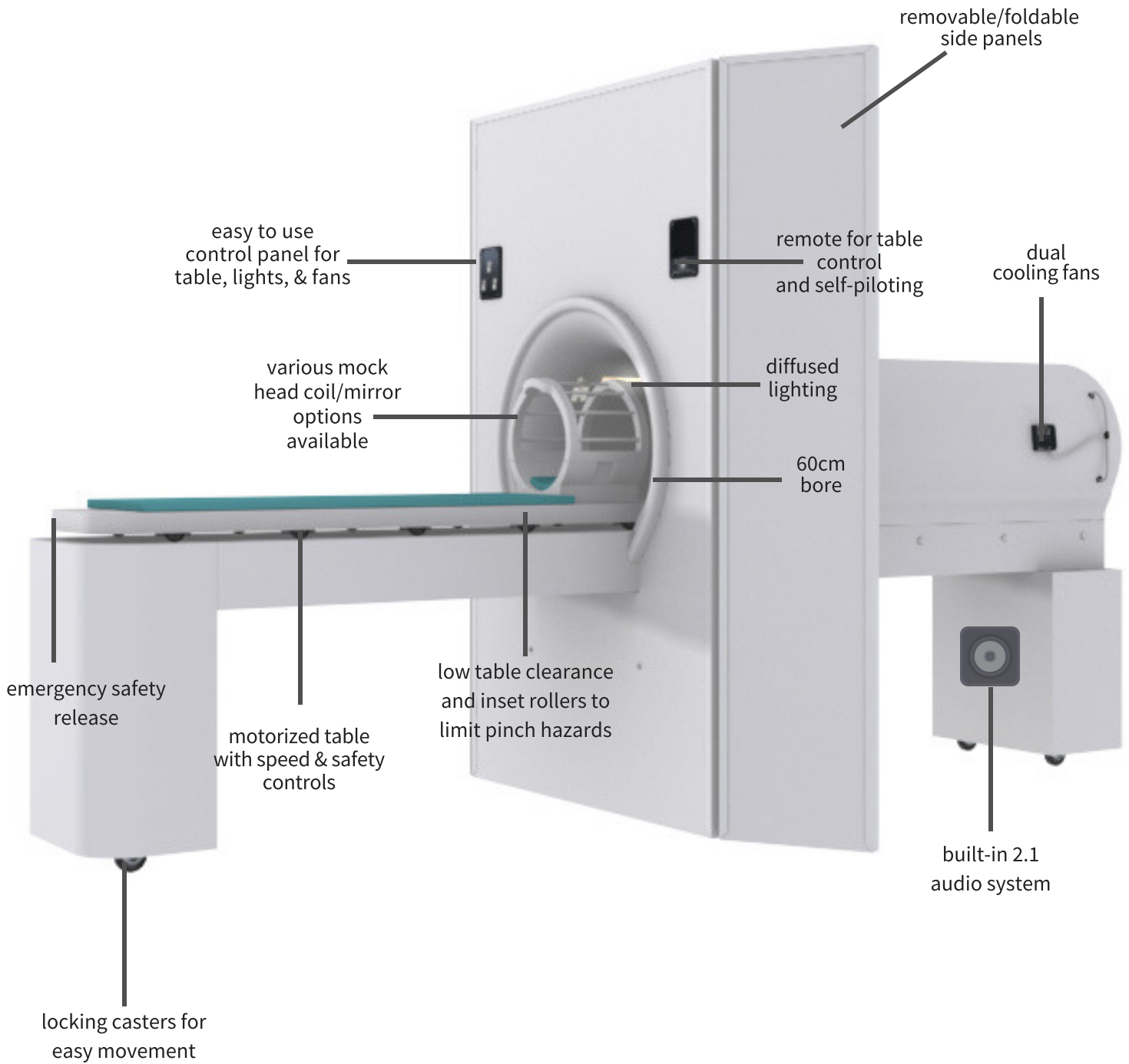
Use of the mock scanning techniques before fMRI scans can significantly reduce participant anxiety, ensuring that data quality is not affected.



MRI SIMULATOR™

OVERVIEW

SIMULATOR OVERVIEW





MRI SIMULATOR™

TECHNICAL SPECIFICATIONS



TECH SPECS

Dimensions

Max. sizing (L x W x H)	134 ¼" x 79 ½" x 81 ¾"
Min. Sizing (L x W x H)	134 ¼" x 48" x 81 ¾" – side panels removed or folded back
Simulator Weight	450 lbs.
Bore Diameter	60cm
Shipping Dimensions	88" x 48" x 55" wooden crate; 825 lbs.

Audio

Internal audio system	24W subwoofer / two 8W satellite speakers
Input connector	3.5mm Stereo Audio Jack

Power

Power Requirements	120 VAC, 60Hz, 4A 230 VAC, 50Hz, 2A, CE Compliant
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Regulatory

CE Compliant

Materials

Bore Façade, Entry, Tube, & Extension Panels	White Plastic
Participant Table, Pedestals, & Table Base	White Laminated wood

Weight Limits

Table Max. Weight	275 lbs.
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Controls

Front Control Panel	Participant table movement, Lighting (on/off), Fan (on/off)
Remote Control*	Controls Participant table movement
Side Control Panel	Side-located; switch controls power to table, lights, fans, audio system

Included Components

Large Components	Bore, Façade, Participant Table, Participant Table Base, Two (2) Extension Panels
Assembly Components	Two (2) front panel attachment bolts and wing nuts, two (2) locking table alignment knobs
Power/Audio/Control/Comfort	2.5m (+/- 0.2m) power cable, 3m (+/- 0.2m) M to M audio cable, battery-powered remote control*, pad for participant table

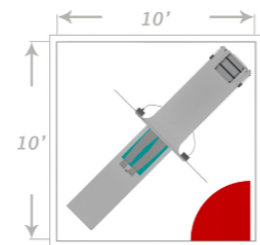
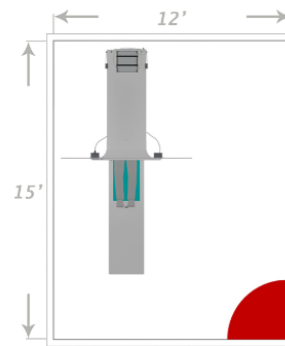
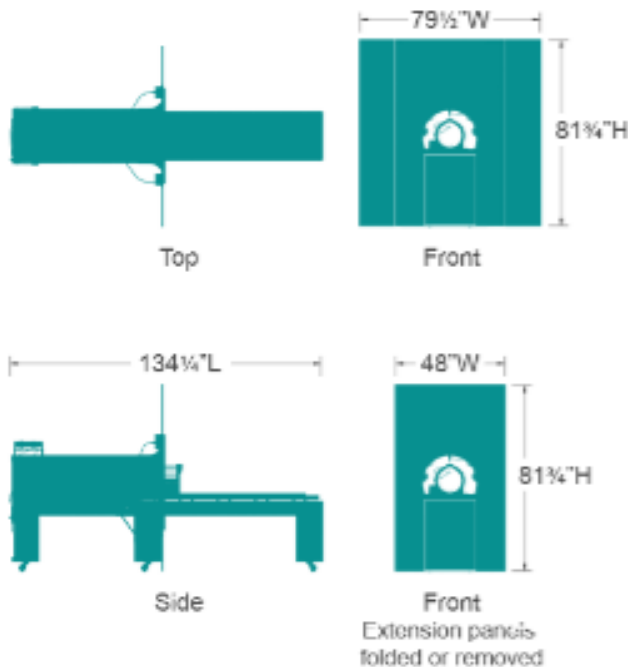
* = For Domestic U.S. Models only



MRI SIMULATOR™

DIMENSIONS & INSTALLATION

INSTALLATION



PSYCHOLOGY SOFTWARE TOOLS
Solutions for Research, Assessment, and Education

What kind of space is required?

The MRI Simulator is designed to fit in a standard office space without any structural modifications. All components included with the MRI Simulator can easily fit through a standard 3'x7' office door. Standard power input options (120V or 220V where required) mean that the system does not require special power considerations.

How is the simulator shipped and assembled?

The MRI Simulator is typically shipped in a single crate, and can be completely unpacked and assembled by a single person. The system is shipped as 6 main components, and once unpacked, can be easily moved into position and assembled without tools. In most cases, the entire simulator can be assembled and ready to use within 45 minutes. Technicians from PST are also available for on-site installation and training.

Can the simulator be moved?

Moving the MRI Simulator in the case of maintenance, storage, or relocation can easily be done as the system does not require any tools for disassembly and can fit through a regular office door. The entire system is mounted on lockable casters and can be moved around the room as necessary.



MRI SIMULATOR™

MRI/CT SIMULATION SOFTWARE

developed by



The Institute for
Advanced Clinical Imaging

SOFTWARE

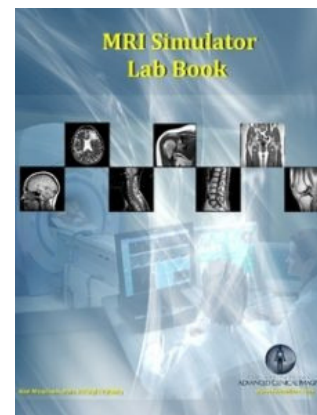
The screenshot displays the MRI Simulator software interface. It includes sections for Patient Information (Academy Number, Patient ID, Patient Name, Patient Weight), Patient Position (Supine, Head First), and a list of imaging parameters (TE, TR, TI, Flip Angle, Echo Train Length, Bandwidth). A central area shows a simulated MRI scan of a brain. The interface also includes a 'Scan Timing' section with fields for 'Start' and 'End' times, and a 'Save Series' button.

An immersive training experience.

Used in conjunction with the MRI Simulator hardware, MRI Technologist students have the opportunity to fully experience a simulated MRI environment. Students will gain knowledge of:

- coil selection
- scanning procedures
- protocol setup
- sequence selection
- anatomical coverage
- parameters and trade-offs
- image weighting and contrast

As a companion to the MRI Console Simulation Software, the MRI Simulator Lab Book will provide students with 15 simulated exams using real-life artifacts, pathology, and patient care scenarios.



“One of the most difficult challenges facing new MRI technologists is familiarity with the scanning software. The MRI Simulator allows the technologist to become familiar with this software in a non-threatening environment and at his/her own pace. It is a “must-have” for individuals wanting to enter the MRI profession.”

Cheryl O. DuBose MSRS, RT(R)(CT)(MR)(QA)
Program Director of Magnetic Resonance Imaging
Arkansas State University

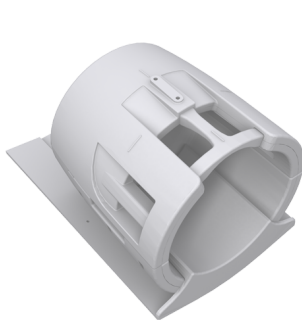


MRI SIMULATOR™

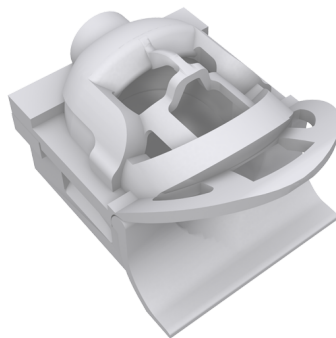
PRIMARY COMPONENTS

COMPONENTS

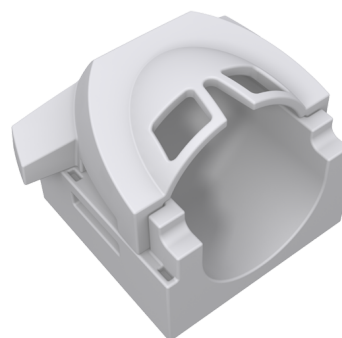
MOCK HEAD COILS



GE 32 Channel Mock Head Coil



Siemens 64 Channel Mock Head Coil



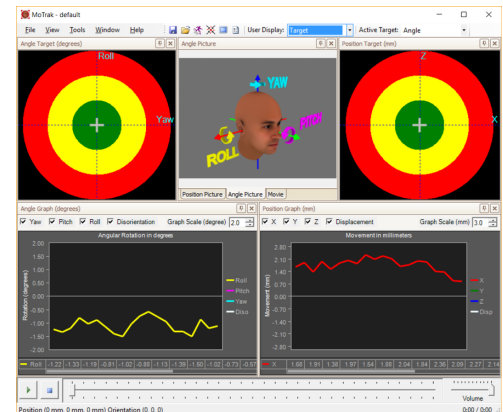
Siemens 32 Channel Mock Head Coil



Siemens Style Mock Head Coil

MOTRAK

MoTrak is a head-mounted motion tracking system capable of monitoring head motion and angular rotation along the X, Y, and Z axes. With this data, the MoTrak system can modulate audio and/or video output, allowing the researcher to provide positive and/or negative feedback to train participants to remain still - increasing MRI imaging data quality.



SIMFX

SimFx™ software simulates the ambient scanner sound and the active scanning noise of the MRI environment. Using high-quality fiber-optic microphones, a variety of ambient and active scanner sounds from both GE and Siemens scanners were recorded and are available to use with the SimFx Sound Simulation System.





MRI SIMULATOR™

ADDITIONAL ENHANCEMENTS

VISUAL PRESENTATION PACKAGE

- Colorado HD Video Scan Reverser
- Adjustable Height Stand



AUDIO PRESENTATION PRODUCTS

- Avotec Silent Scan 3300 Patient Communication System
- OptoAcoustics FOMRI-III Fiber Optic Microphone for fMRI

STIMULUS RESPONSE

- Celeritas Fiber Optic Response System



ON-SITE INSTALLATION & TRAINING

- PST Technicians will perform on-site installation and training, reducing setup time and ensuring staff are knowledgeable about the system.

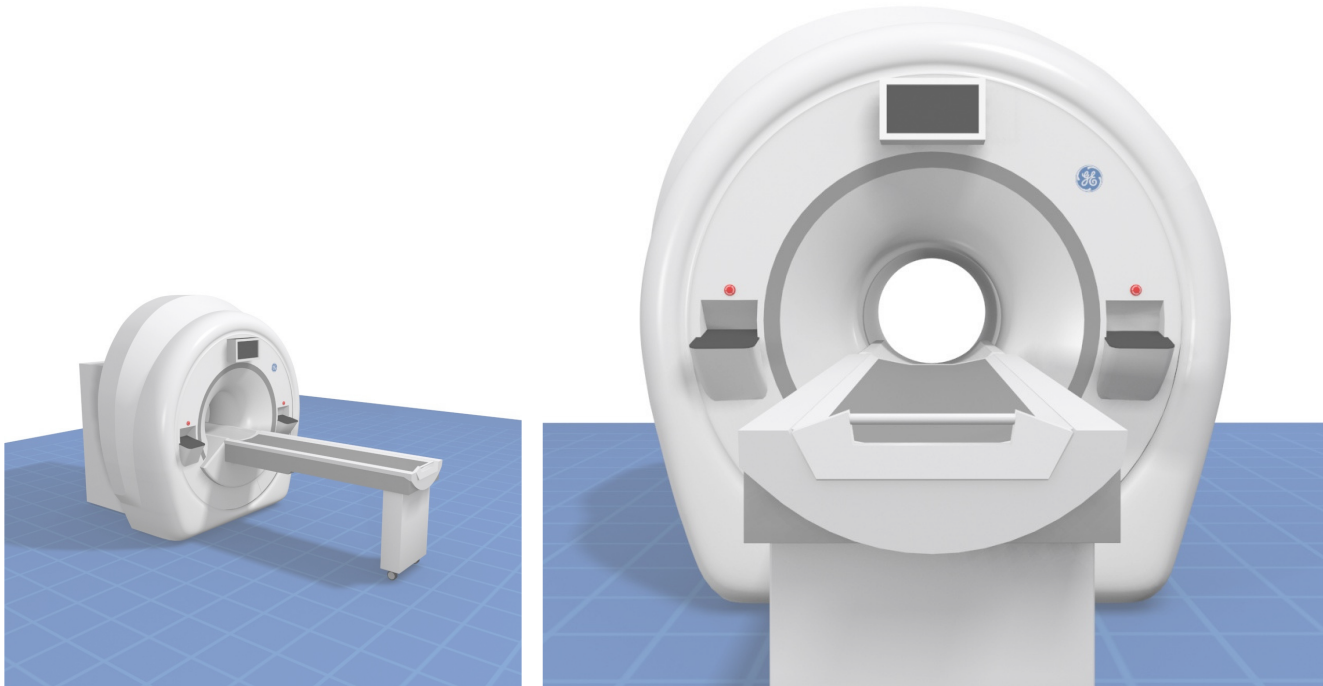
ENHANCEMENTS



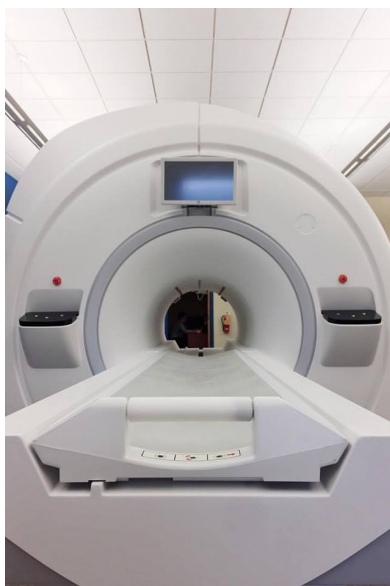
MRI SIMULATOR™

CUSTOMIZED SIMULATORS

CUSTOMIZATION



Does your desired MRI environment require a customized machine? PST is taking orders for high-end customized simulators. On this page are several examples of simulators we have made to fit specialized labs and workspaces.



Pictured left is a custom GE Discovery MR750 Simulator PST installed in a state-of-the-art international fMRI research facility.

To request a quote for a customized simulator for your workspace, please email sales@pstnet.com.



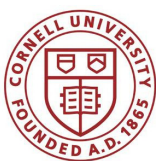
REFERENCE SITES

Below are just a few of the sites where our MRI Simulators are in current use:

- Alberta Children's Hospital
- Brown University
- Children's Hospital of Philadelphia
- Children's Hospital of Pittsburgh
- Duke University
- Durham University
- East China Normal University
- Harvard University
- Linköping University
- Monash University
- Nationwide Children's Hospital
- Shenzhen University
- New York University
- NIH/NIMH
- Ohio State University
- Pennsylvania State University
- Princeton University
- San Diego State University
- Stanford University
- University of California - Davis, Irvine
- University of Michigan - Ann Arbor
- University of Sydney
- Washington University - St. Louis
- Yale University

PUBLICATIONS

Several studies demonstrating MRI Simulator efficacy for participant acclimation:



Epstein, J. N., Casey, B. J., Tonev, S. T., Davidson, M., Reiss, A. L., Garrett, A., ... & Jarrett, M. A. (2007). Assessment and prevention of head motion during imaging of patients with attention deficit hyperactivity disorder. *Psychiatry Research: Neuroimaging*, 155(1), 75-82. (cornell University)



de Bie, H. M., Boersma, M., Wattjes, M. P., Adriaanse, S., Vermeulen, R. J., Oostrom, K. J., ... & Delemarre-Van de Waal, H. A. (2010). Preparing children with a mock scanner training protocol results in high quality structural and functional MRI scans. *European journal of pediatrics*, 169(9), 1079-1085.



6632.2012.06457.x.Grey SP, Price G, Mathews A (2000). Reduction of anxiety during MR imaging: a controlled trial. *Magn Reson Imaging* 18:351-355.



Greene, D. J., Black, K. J., & Schlaggar, B. L. (2016). Considerations for MRI study design and implementation in pediatric and clinical populations. *Developmental cognitive neuroscience*, 18, 101-112.



MRI SIMULATOR™

RESOURCES

To request a quotation for the MRI Simulator or any other PST products, please visit our website (www.pstnet.com) and submit a quote request. A member of our solutions team will be in touch within 24 hours with pricing information and to answer any additional questions you might have.

Alternatively, our Solutions team can be reached by contacting PST via phone (412.449.0078), fax (412.449.0079), or email (sales@pstnet.com). To provide a quotation, our team will need the following information:

- Name
- Institution
- E-mail Address
- Shipping Address
- Phone Number
- Product(s) of Interest



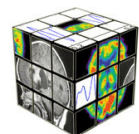
For international customers, purchases may also be made through the PST Global Re-seller Network.

Please visit our website to find a re-seller near you.



Or stop by our booth at one of the following conferences!

- SfN
- ISMRM
- OHBM
- CNS
- Psychonomics
- MPA





MRI SIMULATOR™

MORE ABOUT US

Psychology Software Tools, Inc. was founded with the vision of creating innovative and affordable technologies and solutions which improve the efficacy of human behavioral research, assessment, and education. Our goal is to consistently provide products and services to our customers which increase their productivity, effectiveness, and confidence in addressing the challenges they face in these diverse disciplines.

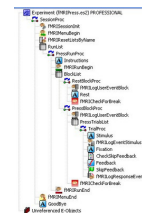


MORE INFO

OTHER PST PRODUCTS



Stimulus Presentation Software



E-Prime Extensions for fMRI



Response and Stimulus Device



MRI Digital Projection System