

AAOS and Touch of Life Technologies Partner on New Shoulder Simulator to Train Orthopaedic Residents in Surgical Skills for Diagnostic Procedures

The Associated Press

The American Academy of Orthopaedic Surgeons (AAOS) has partnered with Touch of Life Technologies (ToLTech) to develop a virtual reality-based shoulder simulator to train and evaluate orthopaedic residents in surgical proficiency in shoulder arthroscopy.

This is the second arthroscopic surgical simulator developed by AAOS and ToLTech. The first, introduced in 2008, was a knee arthroscopy surgery simulator. Expanding this platform provides a total learning environment for orthopaedics that makes surgical training more accessible, less costly and safer than many traditional training approaches. The AAOS is committed to expanding its educational initiatives to include training enhancements offered by innovative technology.

The shoulder simulator is ToLTech's newest product release from the company's expanding ArthroSim[®] platform. It provides a precise and accurate hands-on experience using models from an actual human body. The device combines 3D graphics with robotic capabilities that simulate the "touch and feel" of a surgical procedure and human tissue without the risk of operating on a real patient or the limits of practicing on a cadaver, which only can be used once for surgical education.

The popularity of ToLTech's knee arthroscopy simulator fueled a demand from orthopaedic educators to develop a similar device for procedures related to the shoulder. Following the same path the AAOS used to develop the knee arthroscopy curriculum with ToLTech, the AAOS appointed a project team to develop a curriculum for shoulder surgery skill development that could be installed as an extension of ToLTech's proven arthroscopy platform.

"We have developed a training sequence that includes 36 different objectively measured tasks for diagnostic arthroscopy of the shoulder for our initial curriculum," says Andrew Green, M.D., who leads the AAOS Project Team that includes Michael Pearl, M.D., Matthew Saltzman, M.D. and Scott Trenhaile, M.D.

"We created a program that enables orthopedic surgeons to train on virtual patients in both the beach chair and lateral decubitus positions*," Green added. "In the future, we expect to create training programs in specific shoulder procedures, similar to the extension work underway for the knee."

Arthroscopic shoulder procedures are among the most common surgeries

performed today in the US. In fact, up to 500,000 rotator cuff repairs are performed annually in the nation.

*The patient reclines in beach chair; is on one side with lateral decubitus.

The benefits of the collaboration between the AAOS, the premier orthopaedic education provider in the U.S., and ToLTech's technology know-how, include:

The highly sophisticated simulator training program offers curriculum and assessment where proficiency can be tested for each procedural task; The curriculum includes video from actual arthroscopic surgery provided by AAOS; Orthopaedic residents can practice procedures safely and independently; and The residents become proficient in surgical skills faster using robotic devices that make the training experience more realistic.

"We see this simulator technology setting a new standard in medical education and training," says Karl Reinig, Ph.D., director of simulation for Touch of Life Technologies (ToLTech). "Over time, working with cadavers can be more costly and the simulator's advanced computer technology enables assessment that is not easy to carry out on cadavers."

ToLTech's interactive products are based on photographic images from the Library of Medicine's Visible Human Project® and other higher resolution models. The sensation of feeling is provided by the Geomagic** Phantom®, a sophisticated force-feedback device interacting with virtual patients using custom-developed ToLTech algorithms.

Other organizations that collaborated with ToLTech and the Academy in developing the shoulder simulator are the Center for Human Simulation at University of Colorado and the Arthroscopy Association of North America.

Forward-thinking medical institutions, such as Henry Ford Hospital in Detroit, are seeing the advantage of using simulators for knee and shoulder procedures before surgical rotations. Henry Ford's Department of Orthopaedic Surgery uses ToLTech's Knee Arthroscopy Simulator, the ArthroSim□, to train orthopaedic residents before they begin their surgical rotation. Patricia Kolowich, M.D., an orthopaedic surgeon and director of the Orthopaedic Sports Medicine Fellowship Program at Henry Ford, described one resident who trained on the ArthroSim prior to surgical experience: "He was handed the scope and inserted it in a patient's knee, performing a complete diagnostic arthroscopy very thoroughly and in an appropriate time frame."

About ToLTech

Touch of Life Technologies is a medical education company that develops and sells interactive software and medical procedure simulators. ToLTech products provide a virtual learning environment combining state-of-the-art interactive technology with real anatomy from the National Library of Medicine's Visible Human Project® as well as higher resolution images. In business more than a decade, Touch of Life Technologies collaborates with professional medical societies, educators and

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About AAOS For more information on bone and joint health, visit Orthoinfo.org

**Geomagic was formerly Sensable Technologies

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