

# A Study on the Development of a Shoulder Arthroscopic Surgery Training System using Virtual Reality Techniques

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## ABSTRACT

The shoulder arthroscopic surgery is a minimally invasive surgery. In contrast to the traditional operation, shoulder arthroscopic surgery has several advantages including small cuts, quick recovery, and short operation time. This operation procedure involves quite challenging tasks such as space perception, portal placement, and the understanding of shoulder arthroscopic anatomy. By using adequate interactive multimedia techniques in computer simulation for arthroscopy, the challenges of learning shoulder arthroscopy can be overcome. In this research, we developed a computerized simulation system for the training of shoulder arthroscopy by using virtual reality, one of the interactive multimedia techniques. The system is to help trainees in obtaining space perception and shoulder anatomy understanding before operation room learning. The VR system is embedded in a digital learning platform so that the learning can be repeated proceeded without limitations of time and place. A questionnaire was also developed to investigate user satisfaction of using the simulation system. The results showed that the system was generally accepted. The training system developed in this research can effectively help trainees obtain proper knowledge ahead of clinical observation.

Keywords : Virtual Reality ; Shoulder Arthroscopic Surgery ; Digital Learning

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