Objectives: Traditional resident assessment of orthopaedic surgical technical proficiency relies exclusively on subjective parameters. More standardized objective measures are needed to ensure training consistency and surgical competency. The purpose of this study was to determine if orthopaedic surgery residents who train with a virtual reality simulator can lead to improved arthroscopy performance and to determine if a standardized arthroscopic shoulder and knee test were appropriate means for evaluating a resident's arthroscopic skill after completing a training course. Methods: Study participants were first and second year orthopaedic surgery residents at a single institution who were randomized to either train on the virtual reality surgical simulator (Insight Arthro VR) for a total of 2.5 hours (n=8) or receive 2 hours of didactic lectures with models (non-simulator) (n=6). Both groups were then evaluated in both knee and shoulder arthroscopy using a cadaver. Performance was measured by time to completion of a standardized protocol checklist and cartilage grading index (CGI) (scale 0-10). Results: All subjects had no previous arthroscopy experience prior to the study. The simulator group had a shorter time to completion in both knee (simulator: 5.1 ± 1.8 min, non-simulator: 8.0 ± 4.4 min; p=0.09) and shoulder (simulator: 6.1 ± 1.5 min, non-simulator: 9.9 ± 3.2 min; p=0.02) arthroscopy. Similarly, the simulator group had improved CGI scores in both the knee (simulator: 4.0 ± 1.1, non-simulator: 5.3 ± 1.5; p=0.07) and shoulder (simulator: 3.4 ± 0.8, non-simulator: 5.5 ± 1.6; p=0.008) arthroscopy. Conclusion: This study suggests that surgical simulators are beneficial in arthroscopy skills development for orthopaedic surgery residents. An arthroscopic testing model was able to measure a statistical improvement for a resident's arthroscopic skill. Instituting standardized cadaveric testing based on common orthopaedic surgical procedures such as knee and shoulder arthroscopy will not only ensure graduating residents possess the necessary skills to be technically proficient surgeons but it will also allow objective identification of residents in need of remediation.