

## Assessing Skills Decay on a Knee Arthroscopy Simulator

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### Summary:

Performance on a VR knee arthroscopy simulator deteriorates over time if the subject does not undertake regular arthroscopy and simulation may provide a safe and effective way of preventing skills decay.

### Abstract:

#### Aims:

We have demonstrated that training in Virtual Reality (VR) knee arthroscopy can significantly improve simulator performance compared to controls. The aim of this study is to assess whether skills decay occurs if subjects stop performing arthroscopy.

#### Methods:

16 subjects were recruited (8 orthopaedic surgery trainees and 8 medical students or non-clinicians). All 16 subjects had previously undergone a training programme on the ARTHROMentor™ VR arthroscopy simulator consisting of standardized exercises. They had all made significant improvements in performance based on metrics provided by the simulator (time taken, distance covered by the arthroscope and hook, and roughness). These subjects were recalled after a mean period of 17 months and repeated the initial test 3 times.

#### Results:

There was a significant deterioration in the measured parameters for all 16 subjects ( $p < 0.03$ ) and there was no difference between the two cohorts. There was however a significant improvement between their 1st and 3rd attempts ( $p < 0.05$ ) but the best score attained was still short of that achieved previously following the training programme ( $p = 0.09$ ).

#### Conclusion:

Performance on a VR knee arthroscopy simulator deteriorates over time as skills decay occurs if the subject does not undertake arthroscopy regularly. Simulation may provide a safe and effective way of preventing skills decay if trainees are unable to undertake regular arthroscopy and efforts should be made to integrate simulation into the orthopaedic curriculum.