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*“Shoulder Arthroscopy Simulation with Eye Tracking for Accelerating Learning of Rotator Cuff Repair among Orthopedic Residents: A Controlled Laboratory Study”*

Rotator cuff tears are known to be one of the major causes of shoulder pain that affects between 6.8% and 22.4% of the population of age over 40. Rotator cuff re-tear (RCR) after repair surgery is a main postoperative drawback. The rate of rotator cuff re-tear depends on numerous patient factors after primary repair surgery including tear characteristics and variances. However, the factors from the surgeon side are not yet well studied.

Arthroscopy simulation programs have emerged as a valuable tool to bridge this gap, offering a controlled and repeatable environment for trainees to develop and refine their skills. The purpose of this study is to investigate the use of arthroscopic surgical simulator empowered with eye tracking technology for monitoring the performance of orthopaedic residents during the learning of rotator cuff tear repair. Eye-tracking and video analysis will provide sufficient data to monitor the change of dexterity (skills in hand) and cognition (decision making) over arthroscopic simulation practice. We will track the completion of surgical tasks designed based on the rotator cuff repair model and evaluate the eye-hand coordination efficiency during the learning of arthroscopic management skill sets.