INTRODUCTION

Surgical skills proficiency is a key element of resident training, yet objective tracking of progress is generally absent in most training programs. We developed a group of manipulative exercises to test surgical skills among urology residents over time using the Crowd-Sourced Assessment of Technical Skills (C-SATS®).

METHODS

- Over a three year period, all urology residents at the University of California, Irvine, completed three laboratory-based skills tasks every three months: open knot tying (OKT), laparoscopic peg transfer (LPT), and robotic suturing (RS) (Figure 1).
- All tasks were video-recorded and uploaded to C-SATS.
- Each video was de-identified and evaluated by 32 independent reviewers using the Objective Structured Assessment of Technical Skills (OSATS) for OKT, the Global Operative Assessment of Laparoscopic Skills (GOALS) for LPT, and the Global Evaluative Assessment of Robotic Skills (GEARS) for RS.
- Residents were stratified by PGY-status at the time of their initial testing session.
- We used one-way ANOVA and linear mixed model to assess for differences in task scores and improvement over time.

RESULTS

- 14 residents performed a total of 108 skills testing sessions.
- Overall mean scores for OKT were the highest of the 3 tasks, followed by RS and LPT (87, 77, and 73, respectively, p=0.001) (Figure 2). This difference between tasks scores was observed across all PGY groups.
- LPT and RS scores improved significantly over time (p<0.001), while OKT scores did not (Figure 3).
- Mean scores of each group of residents stratified by initial PGY-status were not significantly different from one another.
- Among the 6 residents who performed 11 consecutive sessions, there was a significant increase in LPT and RS scores (p<0.001).
- The total cost of evaluation of all residents was $8,100.

CONCLUSIONS

- Among residents, laparoscopic peg transfer skills and robotic suturing skills improve over time.
- Open knot tying skills are proficient upon entering residency and do not significantly improve thereafter.