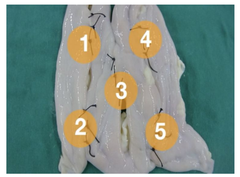
ASSESSING MENTAL WORKLOAD AND SKILL ACQUISITION IN ADVANCED LAPAROSCOPIC TRAINING: IMPLICATIONS FOR SURGICAL EDUCATION AND STRESS REDUCTION

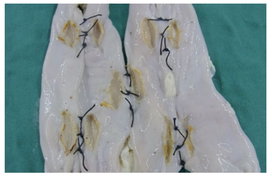
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INTRODUCTION: Acquiring proficiency in a new procedure involves cognitive and motor skills. Learning curves provide insights into skill development process, using validated scales and procedural time in clinical and simulated settings. As these metrics reflect cognitive processes, they may correlate with mental workload. We aim to measure and describe mental workload during advanced laparoscopic skill acquisition in a simulated environment.

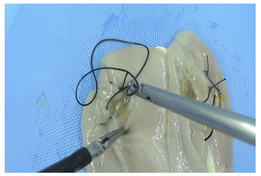
METHODS AND PROCEDURES: A quasi-experimental design was used. Trainees which underwent the "Advanced Laparoscopy Course" (ALC) from our Simulation Center during the first semester of 2023 were recruited. The ALC aims to provide proficiency in performing an intracorporeal manual jejuno-jejunostomy, using ex-vivo tissue. Pre-assessment and final assessment were evaluated using a Global Rating Scale (max. 25 points), a Specific Rating Scale (max. 20 points) and procedural time. For sessions 1 through 14, only operative time was registered. The NASA-TLX tool was applied from pre-assessment to session 14.



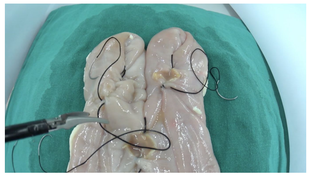
1-3 Fixation sutures



4-6 Performing enterotomies

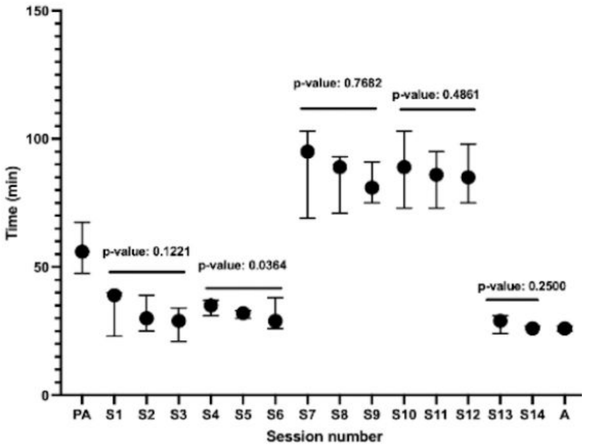


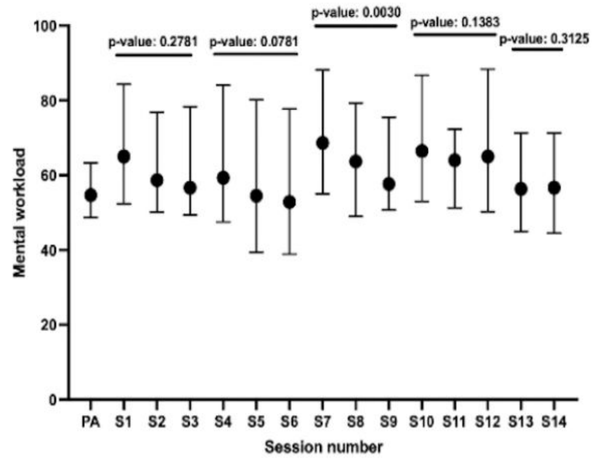
7-9 The latter including posterior wall confection



10-14 Whole anastomosis

RESULTS: Ten participants completed the course. The median mental workload (MW) for the whole course was 62 points (IQR 8.29) (out of 100) for the group. An increase in MW was identified in sessions where new skills were introduced (sessions 1-7-10). Sessions that trained the same skill, showed a trend to decrease in both operative time and workload. Session 7 in which trainees reported the highest mental workload, there was a significant decrease in this parameter **(p-value=0.003)** when comparing equivalent sessions.





CONCLUSIONS: Our study revealed that encountering new skills increased mental workload, while repetition of the same skill reduced operative time and workload, demonstrating the benefits of practice.

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