



AB063. SOH22ABS031. Transcranial direct current stimulation to accelerate performance improvement in surgical training

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Background: Laparoscopic simulation is a key component of surgical training. Transcranial direct current stimulation (tDCS) is a form of brain stimulation which can be used to enhance motor function. We designed a randomised sham-controlled trial to assess if enhancement of motor function with tDCS improves performance in surgical trainees.

Methods: There were 52 laparoscopy naive medical student volunteers were recruited. Bead placement and twine passing were the laparoscopic skills examined. Demographics and baseline performance were assessed. In five consecutive study sessions, subjects were randomised to 20 minutes of tDCS or sham stimulation, followed by 20 minutes of laparoscopic skill practice. Performance improvement was assessed following the final study session. ANCOVA analysis was used to compare adjusted group means.

Results: The primary outcome was improvement in time to completion (iTTC = Retest time-Baseline time). Groups showed no significant difference in baseline parameters. When controlling for baseline error rates and percentage task completion iTTC was significantly better for bead placement in the stimulated group (adjusted mean -255 *vs.* -202 sec, $P=0.01$). No significant difference was observed in the iTTC in the twine threading group (adjusted mean

-175 *vs.* -167 sec, $P=0.76$).

Conclusions: This randomised controlled trial shows that tDCS has the potential to enhance the uptake of laparoscopic skills in surgically naive subjects. Improved time to completion in certain tasks show that this may be a promising tool to enhance surgical skills acquisition for junior trainees. In a training environment with reducing access to hands-on training enhancement of simulation may become key to maintaining training standards.

Keywords: Education; laparoscopy; performance; simulation

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Footnote

Conflicts of Interest: The authors have no conflicts of interest to declare.

Ethical Statement: The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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