Contribution ID: **233** Type: **Poster**

Darts' fast-learning reduces theta power but is not affected by Hf-tRNS: A behavioral and electrophysiological investigation

Tuesday, September 24, 2024 12:50 PM (20 minutes)

Sports trainers have recently shown increasing interest in innovative methods, including transcranial electric stimulation, to enhance motor performance and boost the acquisition of new skills during training. However, studies on the effectiveness of these tools on fast visuo-motor learning and brain activity are still limited. In this randomized single-blind, sham-controlled, between-subjects study, we investigated whether a single training session, either coupled or not with 2mA online high-frequency transcranial random noise stimulation (hf-tRNS) over the bilateral primary motor cortex (M1), would affect dart-throwing performance (i.e., radial error, arm range of motion, and movement variability) in 37 healthy volunteers. In addition, potential neurophysiological correlates have been monitored before and after the training through a portable electroencephalogram. Results revealed that a single training session reduced radial error and arm range of motion during the dart-throwing task, but not movement variability. Furthermore, after the training, resting state-EEG data showed a decrease in theta power. Radial error, arm movement, and EEG were not further modulated by hf-tRNS. This indicates that a single training session, regardless of hf-tRNS administration, improves dart-throwing precision and movement accuracy. However, it does not improve movement variability, which might require multiple training sessions. Theta power decrease could describe a more efficient use of cognitive resources due to the fast dart-throwing learning. Further research could explore different sports by applying longer stimulation protocols and evaluating other EEG variables to enhance our understanding of the lasting impacts of multi-session hf-tRNS on the sensorimotor cortex within the framework of slow learning and training assistance.

If you're submitting a poster, would you be interested in giving a blitz talk?

No

If you're submitting a symposium talk, what's the symposium title?

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?

No

Primary authors: CORNACCHIA, Ester; MANIPPA, Valerio; SCARAMUZZI, Giorgia Francesca; SPINA, Anna Concetta; AMICO, Francesca; PALMISANO, Annalisa; SCIANATICO, Gaetano; BUSCOMBE, Richard; AVERY, Richard; THOMA, Volker; RIVOLTA, Davide

Presenter: CORNACCHIA, Ester

Session Classification: Lunch & poster 2