

29th International Conference on

PUBLIC MENTAL HEALTH AND NEUROSCIENCE

July 16-18, 2018 Dubai, UAE

Transcranial direct current stimulation (tdcs) vs. caffeine: A comparison between their effects on cognitive functions**Abdulrahman Alammam**
Saudi Arabia

Background and Objectives: Caffeine is well known to increase arousal and alertness, and subsequently, cognitive functions would increase. Our objective of the present study was to investigate whether anodal Transcranial Direct Current stimulation (tDCS) over the prefrontal cortex could improve performance cognitive function in comparison with caffeine.

Methodology: A prospective study was conducted at the College of Medicine, King Saud University during the period between July and September 2017. A total of 32 subjects performed Cognitrone S4, Reaction Test S3, and Stroop Interference Test S8 in Vienna Test System (WTS NEURO). Tests were designed to assess concentration, attention, reaction, reading speed, and color recognition. Subjects were categorized into two groups, one group was given tDCS, and the other was given caffeine. Subjects performed the tasks once with sham tDCS and a placebo (decaf) espresso shot, and once with active tDCS and an actual espresso shot.

Results: The number of correct reactions significantly improved in the tDCS group (-4.467 ± 5.012 $p=0.004$) while in the caffeine group it did not (-2.294 ± 7.016 $p=0.196$). On the other hand, the reaction time significantly improved in the caffeine group (59.294 ± 95.603 $p=0.021$) while in the tDCS group it did not (14.667 ± 67.248 $p=0.413$). The overall result showed no significant difference between tDCS and caffeine on their general cognitive performance.

Conclusion: This result might be achieved by focally improving executive functions and/or cognitive capacity when tasks are difficult, rather than by improving levels of arousal/alertness. These results indicate that tDCS is a promising tool to improve cognitive function. The variability in response to tDCS protocols is in line with similar studies using other forms of non-invasive brain stimulation. We recommend future studies to explore the effects of tDCS on patients diagnosed with cognitive disorders.

Biography

Abdulrahman Mohammed Alammam is a medical student at King Saud University. He had completed his education in scientific field at "The Modern Institute of The Capital". He got certificates in Basic Course on ECG and Arrhythmias Management, Research Methodology Course at SANS, Radiology Interpretation Course, Antibiotic and Infection Control Course.

abdulrahman.alammar94@gmail.com

Notes: