The Outlook for Non-invasive Electrical Brain Stimulation

Over a decade since the establishment of modern transcranial direct current stimulation (tDCS), the field of transcranial electrical stimulation (tES) has blossomed to include a range of techniques (e.g., alternating current (tACS), random noise (tRNS), and pulsed current stimulation), and a diverse array of applications (e.g., depression, pain, tinnitus, stroke, and schizophrenia). At the cusp of even broader dissemination of tES as a tool for the treatment and rehabilitation of brain disorders, the study of brain function, and brain enhancement, it is incumbent to consolidate what we have learned and what remains to be addressed. To this end and coinciding with this special issue of 

The NYC neuromodulation 2015 conference provides a forum for contemporary approaches in tES, identify existing barriers, and collectively address challenges by encouraging diversity and breadth in solutions. The large number of published manuscripts and registered clinical trials in the field attest to the substantial interest in tES in the scientific and clinical communities, but a cohesive effort by the field is lacking. The increased media, public, and commercial interest in tES has increased the stakes, shining a spotlight on even the choice of language used by researchers. In the face of popular interest, the scientific community can no longer be passive with respect to examining contemporary approaches in tES, identify existing barriers, and collectively address challenges by encouraging diversity and breadth in solutions. 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to issues such as regulation, off-label treatment, and neuro-enhancement. Finally, with tES research being conducted at the forefront of cognitive neuroscience and brain therapy, rational design of protocols requires addressing open questions in brain function, disease, and rehabilitation. Rigorous scientific studies and multidisciplinary discussion at meetings like this one will allow scientists and clinicians to use tES to advance our understanding of the human mind and enhance human potential that will galvanize the field.

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