Commercial non-invasive brain stimulation device impairs cognitive performance

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People show impaired memory after receiving low intensity electrical stimulation administered to the frontal part of the brain by a commercial, freely available, device. Psychologists Laura Steenbergen and Lorenza Colzato, with their colleagues at the Leiden Institute of Brain and Cognition and fellow researchers from the Max Planck Institute on Human Development, published their findings in Experimental Brain Research.

Commercial non-invasive brain stimulation device to the test

Following the prominent suggestion by several eminent research institutes and scientists, Steenbergen and colleagues were the first to investigate whether and to what degree the application of a commercial non-invasive brain stimulation device, called transcranial direct current stimulation (tDCS), improves cognitive performance, as advertised in the media. "Given the potential risks of misusing tDCS, and given that long-term effects on the brain have not been fully explored, there is a need for more research and for regulations or official guidelines for the personal use of tDCS" Steenbergen says.

The research method

24 healthy participants received a low intensity current administered by electrodes to the frontal part of the brain through the scalp by means of a commercial tDCS device (foc.us headset - v.1). People came to the lab twice and received a sham (fake stimulation) or a mild electrical current which facilitates the activation of neurons in the targeted region. During and after the stimulation, Steenbergen asked participants to perform a working memory task in which they had to update remembered information.

Working memory impaired

Compared to when the participants received the fake stimulation, the active stimulation impaired memory performance. Colzato: "Even if preliminary, these results show the fundamental critical and active role of the scientific community in evaluating the sometimes far-reaching, sweeping claims from the brain training industry with regard to the impact of their products on cognitive performance."

Source:
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