Medical Xpress

Real-time feedback tames Parkinson's brainwaves

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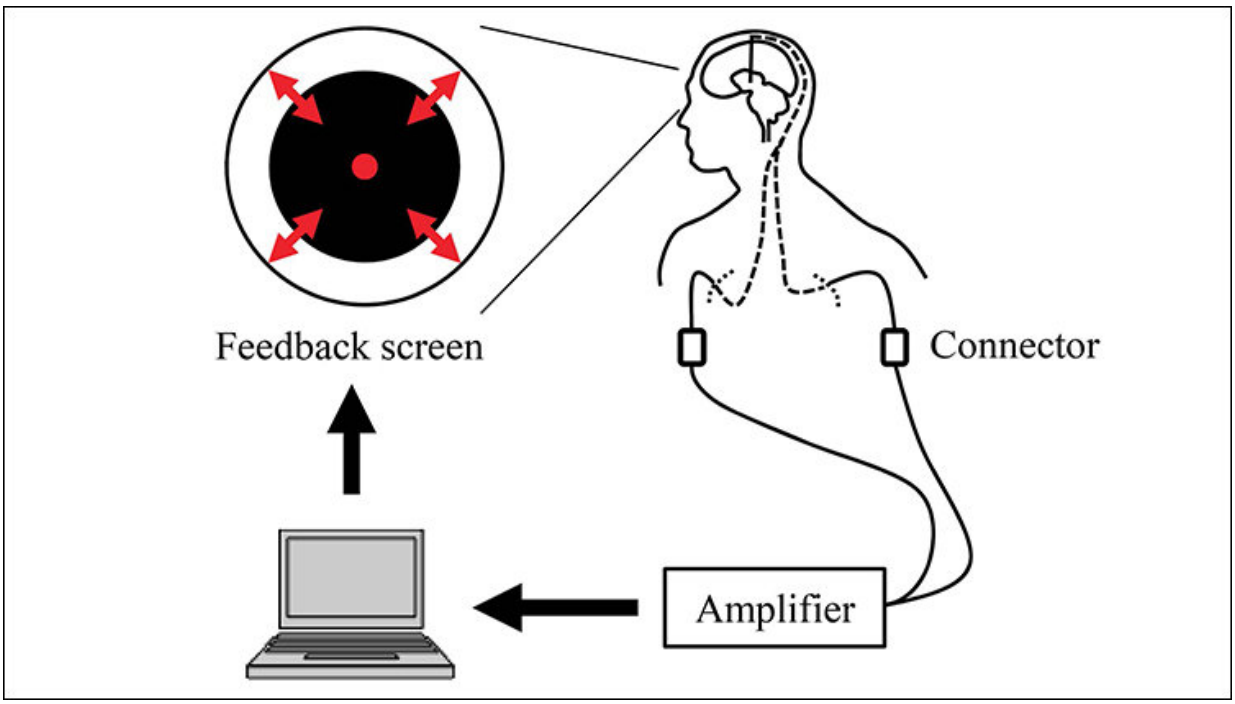

Feedback system overview. Signals from the DBS electrodes were acquired in real time. The radius of the black circle on the computer screen was controlled based on the β-band power of the acquired bipolar signals from adjacent contacts that were selected in the pre-feedback session. Credit: Fukuma et al., *eNeuro* (2018)

A neurofeedback system enables Parkinson's disease patients to voluntarily control brainwaves associated with symptoms of the disorder,

according to new research published in *eNeuro*. It remains to be determined whether such a system can provide symptom relief.

Parkinson's disease is associated with abnormal beta wave activity in the subthalamic nucleus (STN), but a direct connection between this activity and movement difficulties has not been established. In their study of eight patients undergoing a routine replacement of a pulse generator used for deep brain stimulation, Takufumi Yanagisawa and colleagues developed a method that could help scientists better understand the relationship between brain activity and disease symptoms.

By translating participants' real-time brain activity into a visual representation during a 10-minute training session, the researchers demonstrate the patients' ability to increase or decrease the size of a black circle with their thoughts alone.

This manipulation had a corresponding effect on STN beta waves measured after the training session.

Although the researchers did not observe an improvement in patients' symptoms, their study represents a new approach toward managing disease-related brain activity that could inform the development of new treatments.

More information: Real-time neurofeedback to modulate β-band power in the subthalamic nucleus in Parkinson's disease patients, DOI: www.eneuro.org/lookup/doi/10.1 … /ENEURO.0246-18.2018

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