

Re-training the brain

November 9 2011



(Medical Xpress) -- People experiencing the early signs of Parkinson's disease could see their symptoms improved through a process of regulating and re-training how their brains respond to certain activities and actions, new University research has uncovered.

Experts from the University's MRC Centre for Neuropsychiatric Genetics & Genomics and School of Psychology, in a paper published in *The Journal of Neuroscience*, used real-time brain imaging to identify how people with Parkinson's disease react to their own brain responses.

Using a technique known as neurofeedback – which monitors brain activity in an MRI scanner - activity levels are fed back to the patient in the form of a display on a screen.

Using this feedback patients can learn to alter activity in specific parts of their brain.

"This is the first time that the neurofeedback technique has been used with patients with Parkinson's disease," according to Professor David Linden from Cardiff University's School of Psychology, who led the study.

"Self-regulation of brain activity in humans based on real-time feedback is emerging as a powerful technique. In this study we assessed whether patients with Parkinson's disease are able to alter their brain activity to improve their motor function.

"We found that the five patients whose received neurofeedback were able to increase activity in brain networks important for movements and that this intervention resulted in an overall improvement in motor speed – in this case, finger tapping."

The study involved 10 patients, all with early stage Parkinson's. The patients were divided into two groups – half the group received [brain](#) feedback and the other did not.

Whilst self-regulation using this technique has been used to record activity in other conditions like schizophrenia and ADHD, apart from a study on chronic pain – the clinical potential of the technique for neurological disorders has not been explored.

Parkinson's disease was considered a suitable target for the technique – and an opportunity to show that its use could help patients with neurogenerative disorders.

Professor Linden added: "Whilst this was a very small study the key aim was to establish whether this technique may be feasible for sufferers.

"The training resulted in clinically relevant improvement of motor functions – so assuming patients can learn to transfer the strategies used during neurofeedback into real-life settings, it might also become possible to sustain the clinical benefits."

The scientists now hope to take this method further in formal clinical trials in order to establish whether it holds promise for patients.

Professor Linden adds: "We have to be clear: this won't stop the progression of the disease or offer sufferers false hope, but it does have the potential to alter the course of motor symptoms and possibly reduce drug requirements in early disease.

"This may have the effect of delaying more severe motor complications and improve the quality of life of patients affected by Parkinson's disease."

Provided by Cardiff University

Citation: Re-training the brain (2011, November 9) retrieved 18 April 2024 from <https://medicalxpress.com/news/2011-11-re-training-brain.html>

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