

Electrocorticographic signals may restore arm movement

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(HealthDay) -- Electrocorticography (ECoG) signals from patients with chronic motor dysfunction represent motor information that may be useful for controlling prosthetic arms, according to a study published in the March issue of the *Annals of Neurology*.

To investigate whether ECoG signals recorded from chronically paralyzed patients and whether those signals can be applied to control a prosthetic, Takufumi Yanagisawa, M.D., Ph.D., of the Osaka University Medical School in Japan, and colleagues recorded ECoG signals from sensorimotor cortices of 12 patients while they attempted to carry out three to five simple hand and elbow movements. Sensorimotor function was normal in five patients, moderately impaired due to [central nervous system](#) lesions sparing the cortex in four patients, and severely impaired

due to [peripheral nervous system](#) lesion or amputation in three patients.

The researchers found that the high gamma power (80 to 150 Hz) of the ECoG signals during movements was responsive to different types of movement and provided the best information for movement classification. In all patients, the classification performance was significantly better than chance, although for patients with severely impaired motor function the differences between ECoG power modulations during different types of movement were significantly fewer. Cortical representations tended to overlap each other in impaired patients. One moderately impaired patient and three non-paralyzed patients successfully controlled a prosthetic arm using the classification method in real time.

"ECoG signals appear useful for [prosthetic arm](#) control and may provide clinically feasible motor restoration for patients with paralysis but no injury of the [sensorimotor cortex](#)," the authors write.

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