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mindBEAGLE: The first EEG-based BCI System Ever for Communication with Complete Locked-in Patients

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Singapore - Frontiers in Neuroscience published an article presenting mindBEAGLE as the very first and only EEG-based Brain-Computer Interface (BCI) that enables communication with patients who suffer from locked-in syndrome (LIS), complete locked-in syndrome (CLIS) or disorders of consciousness (DOC). It is widely known that these patients need BCIs that do not rely on visual stimuli and are easy to use.

Paradigms based on non-visual evoked potentials and motor imagery can be effective for these patients. Therefore, mindBEAGLE has been developed and works with auditory, vibro-tactile (both based on P300) and motor-imagery paradigms in less than 20 minutes. In the study, 9 out of 12 LIS patients could communicate by using the vibro-tactile or motor-imagery paradigms. There were even 2 CLIS patients that could use the mindBEAGLE system to communicate. The results show that the system can restore communication to different patients.

"The data reported in this paper were collected in a real world setting and demonstrate that the BCIs can revolutionize the management of several neurological disorders. Despite the substantial or complete loss of voluntary movements and speech, LIS and CLIS patients using this technology may continue to interact with the environment and participate in decisions. This achievement would represent a dramatic improvement of their quality of life", said Rossella Spataro, MD, Neurologist at the ALS Clinical Research Center, University of Palermo, Italy and co-author of this publication in the Journal of Neuroscience.