Special brain wave boost slows motion

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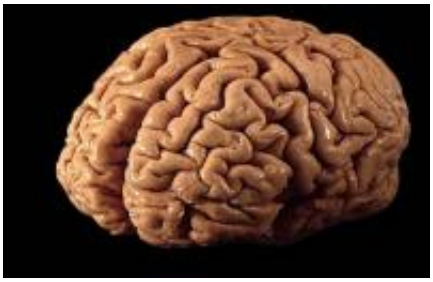

Researchers have found that they can make people move in slow motion by boosting one type of brain wave. The findings offer some of the first proof that brain waves can have a direct influence on behavior, according to the researchers, who report their findings online on October 1 in *Current Biology*.

"At last we have some direct experimental proof that brain waves influence behavior in humans, in this case how fast a movement is performed," said Peter Brown of University College London. "The implication is that it is not just how active brain cells are that is important, but also how they couple their activity into patterns like beta activity."

There are many types of brain waves, distinguished by their frequency and location, Brown explained. In the new study, the researchers injected a small electrical current into the brain through the scalps of fourteen

people while the participants manipulated the position of a spot on a computer screen as quickly as they could with a joystick.

The electrical current used increased normal beta activity, a wave that earlier studies linked to sustained muscle activities, such as holding a book. Beta activity drops before people make a move.

Unlike most previous work, which used constant brain stimulation, the new study employed an oscillating current, more like that underlying normal brain activity. As a result, people's fastest times on the computer task were 10 percent slower.

Brown said the researchers were surprised that the electrical currents used in the study—which were very small and imperceptible to the participants—could have such a measurable effect.

The current findings provide the first interventional evidence of a causal link between increased beta synchrony and the slowing of voluntary movement in otherwise healthy individuals, the researchers report, noting that earlier studies have shown altered brain waves to influence memory.

In addition to the new insight into normal brain function, the results might have implications for treating conditions characterized by either uncontrolled or slowed movements.

"If we know what patterns of brain activity slow voluntary movement, then we can try and boost these patterns in conditions like chorea and dystonia, where there is excessive and uncontrolled movement," Brown said. "Conversely, we can try and suppress beta activity in conditions like Parkinson's disease typified by slow movement."

Source: Cell Press (news : web)