

Stroke Recovery Speed Linked To Brain Stimulation, Study

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AsianScientist (May 31, 2012) - People with a curious condition that causes them to apply make-up on only one side of their face, or ignore food on half of their plate, are playing a new role in understanding stroke recovery.

In a new publication in *The Journal of Neuroscience*, researchers from the Queensland Brain Institute (QBI) have found that people with the condition, a subset of the stroke called 'unilateral spatial neglect,' tend to have the worst recovery outcomes in regaining lost functioning in their bodies.

This finding has led the team to believe that attention may have an important impact on recovering successfully.

Unilateral spatial neglect is typically caused by strokes on the right hand side of the brain and manifests in patients ignoring the left side of their body.

People with the condition may ignore food on the left hand side of their plate or, if asked to draw a clock, squash all 12 numbers into the right side of the clock face, leaving the other side blank.

They may also fail to shave, or to put make-up on the left side of their faces and. In severe cases, they behave as though the left side of their world does not exist.

"We know that brain plasticity plays a critical role in recovering from stroke," said Professor Jason Mattingley of The University of Queensland, a senior author on the paper.

"The fact that people with spatial neglect tend to have poorer recovery of motor function suggested to us that attention may be important for guiding plasticity following stroke."

Current research being undertaken by the Mattingley laboratory is exploring this link. Volunteers first undergo a magnetic resonance imaging (MRI) scan, which provides researchers with a three-dimensional picture of the brain.

The MRI scan allows researchers to guide a transcranial magnetic stimulation (TMS) coil into position upon a volunteer's scalp, which induces a small electrical current in the underlying brain tissue, causing it to become more active.

In this study, the researchers specifically target a part of the motor cortex that controls the thumb muscle in the left hand.

"By adjusting the type of brain stimulation delivered we can artificially induce short-term changes that resemble naturally-occurring plasticity," explained Dr. Marc Kamke, Research Fellow at QBI.

But what the researchers have found is that the effects of stimulation upon a brain's plasticity are dependent on attention.

"When we ask people to undertake a visual task that is irrelevant to the brain stimulation, but that demands a great deal of their attention, we observe a reduction in plasticity," Kamke explains.

When the task does not require much attention, however, the brain's plastic response is apparent.

While practical applications remain several steps away, the team hopes that this knowledge may help researchers develop more effective strategies for physical therapy after stroke.

The article can be found at: [Kamke MR et al. \(2012\) Visual Attentional Load Influences Plasticity in the Human Motor Cortex.](#)

Source: [Queensland Brain Institute.](#)

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