Electrical stimulation to the brain makes learning easier

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(Medical Xpress) -- A new study presented at the British Science Festival by Professor Heidi Johansen-Berg from the University of Oxford shows that the application of small electrical currents to specific parts of the brain can increase activity and make learning easier.

The research began looking at the changes in the brain as an individual enters adulthood and what changes occur after a stroke. Researchers monitored brain activity through a functional MRI while stroke patients were re-learning motor skills. They wanted to look into whether invasive electric brain stimulation could improve recovery, however, in looking into this possibility, they discovered that the same stimulation in healthy adults increased the speed of learning.

Researchers used an experiment where individuals were told to memorize a sequence of buttons to press in an action similar to playing a piano. The individuals were fitted with a trans-cranial current stimulation device where small electrical currents were sent between two electrodes placed on specific areas of the brain. The electrodes were placed just above the left ear and above the right eye.

After only 10 minutes of this stimulation, known as transcranial direct current stimulation (TDCS), the participants showed a significant increase in the speed of their performance compared to those participants under placebo conditions.

Their research shows that electrical stimulation to areas of the brain responsible for motor skills could allow for these skills being learned more quickly. They hope that the same effect will occur when the stimulation is applied in other areas of the brain to increase educational learning.

In terms of stroke patients, Johansen-Berg believes this electrical stimulation could be used to complement current physiotherapy and increase the chances of patients relearning motor skills. Her team also sees the potential for this treatment in the training of athletes.

While ethical questions could arise on the use of this treatment for athletes and for increased educational performance, the benefits for stroke patients could mean the ability to walk or speak again.