

Brain stimulation improves dexterity

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Applying electrical stimulation to the scalp and the underlying motor regions of the brain could make you more skilled at delicate tasks. Research published today in the open access journal *BMC Neuroscience* shows that a non-invasive brain-stimulation technique, transcranial direct current stimulation (tDCS), is able to improve the use of a person's non-dominant hand.

Drs. Gottfried Schlaug and Bradley Vines from Beth Israel Deaconess Medical Center and Harvard Medical School, tested the effects of using tDCS over one side or both sides of the brain on sixteen healthy, right-handed volunteers, as well as testing the effect of simply pretending to carry out the procedure. The volunteers were not aware of which of the three procedures they were receiving. The test involved using the fingers of the left hand to key in a series of numbers displayed on a computer screen.

The results were striking; stimulating the brain over both the right and left motor regions ('dual hemisphere' tDCS) resulted in a 24% improvement in the subjects' scores. This was significantly better than stimulating the brain only over one motor region or using the sham treatment (16% and 12% improvements, respectively).

tDCS involves attaching electrodes to the scalp and passing a weak direct current through the scalp and skull to alter the excitability of the underlying brain tissue. The treatment has two principal modes depending on the direction in which the current runs between the two electrodes. Brain tissue that underlies the positive electrode (anode)

becomes more excitable and the reverse is true for brain tissue that underlies the negative electrode (cathode). No relevant negative side effects have been reported with this type of non-invasive brain stimulation. It is not to be confused with electroconvulsive therapy, which uses currents around a thousand times higher.

According to Schlaug, "The results of our study are relevant to clinical research on motor recovery after stroke. They point to the possibility that stimulating both sides of the brain simultaneously, using the effects of the direct current to block unwanted effects of one motor region while using the opposite effects of the direct current treatment on the other motor region to enhance and facilitate the function of that motor region might catalyze motor recovery".

Source: BioMed Central

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