

# New brain stimulation treatments help smokers quit

*Peer reviewed: Yes*

*Method of research: Systematic review*

*Subject of study: People*

A new systematic review published by the scientific journal *Addiction* has found that non-invasive brain stimulation (NIBS) may improve smoking abstinence rates 3 to 6 months after quitting, compared with sham brain stimulation.

In recent years, NIBS has emerged as a new therapeutic option for alcohol use disorder and other substance-related and addictive disorders. NIBS methods have showed promising results for the treatment of tobacco use disorder, but little is known about the effectiveness of NIBS on long-term abstinence.

A team of researchers from the University Hospital of Dijon, in France, conducted a systematic review and meta-analysis to assess the effectiveness of NIBS for long-term smoking cessation. The team searched several scientific databases for randomized controlled trials of NIBS on adult smokers seeking smoking cessation, with follow-up of more than 4 weeks and then combined the results to measure the overall effect of NIBS on smoking cessation. Seven studies were included, yielding 699 patients in total. In all included studies, the control groups received sham NIBS.

By pooling the 7 included studies, the risk ratio of sustained abstinence of any form of NIBS relative to sham NIBS was 2.39, meaning smokers who received NIBS had a 2.39 times higher likelihood of long-term smoking abstinence than smokers who received sham NIBS. The risk ratio was higher when looking at different types of NIBS or stimulation of specific parts of the brain. A high risk of bias was found in 4 included studies.

Lead author Dr Benjamin Petit says, "While our review appears modest, with only seven included studies, a low confidence level and a substantial inter-study variability, the results appear to be robust and we feel confident in suggesting that NIBS is a technique of interest for both short-term and sustained smoking cessation. In addition, we identified several scientific trials currently underway in this particular field. In the near future, NIBS might be recognized as a promising new option for assisting individuals who wish to stop smoking."

The two commonly used forms of NIBS are transcranial direct current stimulation (tDCS) and transcranial magnetic stimulation (TMS). TDCS sends a low-intensity direct current through the brain using electrodes placed on the patient's scalp. The weak electrical current modulates neuronal excitability. TMS uses a metallic coil placed against the patient's scalp. The coil generates magnetic pulses which induce brief electric currents in the cortical tissue. Depending on the frequency of the pulses, the excitability of the targeted area is either increased or decreased.

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For editors:

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***Addiction*** is a monthly international scientific journal publishing peer-reviewed research reports on alcohol, substances, tobacco, and gambling as well as editorials and other debate pieces. Owned by the Society for the Study of Addiction, it has been in continuous publication since 1884.