



# NeuRA

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## SCHIZOPHRENIA Factsheet

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### What is transcranial magnetic stimulation (TMS)?

TMS is a procedure that uses an electromagnetic coil placed over the scalp to stimulate the nerve cells beneath it. In general, low frequency stimulation reduces nerve cell activity and high frequency stimulation increases nerve cell activity. Repetitive TMS (rTMS) has been tested as a possible treatment for schizophrenia. While most people with schizophrenia respond adequately to antipsychotic medication, some find it is not completely effective; rTMS may be of use in these circumstances.

### What is the evidence for rTMS?

For positive symptoms, moderate to high quality evidence shows low frequency rTMS (1Hz) applied via continuous stimulation to the left temporo-parietal cortex can reduce the severity of auditory hallucinations in the short term (medium-sized effect). The evidence is uncertain of any benefit over the longer term (>1-month post-treatment), and there was no clear benefit for other positive symptoms.

For negative symptoms, moderate to high quality evidence shows small to medium-sized improvements with rTMS applied to the dorsolateral prefrontal cortex (mostly left side). Negative symptoms were most improved in studies with a pulse frequency of 20 to 50Hz, in those with motor threshold intensity of 110%, and in those with a trial duration over 3 weeks. However, positive symptoms were worsened in studies using these parameters.

For cognition, moderate to high quality evidence indicates a small benefit of rTMS applied to the left DLPFC for <30,000 pulses for improving working memory, with no improvements in other cognitive domains. The effect for working memory may last for up to 3 months.

Moderate to high quality evidence finds a small placebo effect of improved auditory hallucinations with sham rTMS; either non-active sham, or active sham with 45° or 90° tilt away from the stimulation site. There was more headache reported with active rTMS than sham rTMS.

Moderate to low quality evidence finds no clear benefit of rTMS for symptoms in people who are resistant to clozapine, although this analysis consisted of a very small sample, and location and type of application varied across studies.

**For more information see the technical table**



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*NeuRA (Neuroscience Research Australia) is one of the largest independent medical and clinical research institutes in Australia and an international leader in neurological research.*

*Diseases of the brain and nervous system pose the greatest health, economic and social burden of any disease group because they are chronic, debilitating and have no known cures.*

*Medical research is the cornerstone of efforts to advance the health and wellbeing of families and the community. Our dedicated scientists are focussed on transforming their research into significant and practical benefits for all patients.*

*While we hope you find this information useful, it is always important to discuss any questions about schizophrenia or its treatment with your doctor or other health care provider.*

### HOW YOUR SUPPORT HELPS

We are able to make significant advances due to the generosity of countless people. Your donation allows us to continue to work towards transforming lives. For information on how you can support our research, phone **1300 888 019** or make a secure donation at [neura.edu.au/donate/schizophrenia](http://neura.edu.au/donate/schizophrenia).