



# Different Types of Transcranial Magnetic Stimulation (TMS)

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## DESCRIPTION

Using magnetic fields to stimulate brain nerve cells, Transcranial Magnetic Stimulation (TMS) is a non-invasive treatment that reduces the symptoms of depression. To precisely pinpoint the location of the brain region to be investigated in TMS experiments, the study subject is first scanned using an fMRI machine. The effects of the electrical stimulation on performance are then evaluated after the electrical stimulation is given to the brain either before or during the participant's engagement in a cognitive task. If the presence of the stimulation affects the participant's ability to complete the task, the researchers can infer that this specific area of the brain is crucial for doing the activity.

The main benefit of TMS is that it enables scientists to make causal inferences about how different brain structures affect ideas, emotions, and behaviours. The brain region deactivates when the TMS pulses are delivered, and this deactivation is anticipated to affect the research participant's reactions. The brain regions involved in emotion and cognition, as well as their roles in how people perceive intention and approach moral reasoning, are currently being studied using TMS.

## DIFFERENT TYPES OF TMS

### Magnet strength

The tesla is the unit used to gauge a magnet's force. Similar to an MRI scanner, the majority of TMS magnets produce magnetic fields that are 1.5 T to 2 T in strength. However, because the TMS magnet is so much smaller than an MRI, the magnetic field's surface area is considerably less.

### Pulsation rate

A pulse is produced each time the magnetic field switches on and off. The frequency is measured in pulses per second (which is measured in hertz, abbreviated Hz). TMS can use high-

frequency pulses between 5 Hz and 10 Hz or low-frequency pulses at 1 Hz (5 pulses per second to 10 pulses per second). Repetitive TMS refers to TMS that utilises repeated pulses (rTMS).

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## APPLICATIONS

It's non-intrusive. No anaesthesia of any kind is also used in it. Although very uncommon, seizures are the most frequent serious side effect of TMS. The majority of the time, other side effects is minor and short-lived. Depending on the condition, TMS's success rates can vary, but the available research unambiguously demonstrates that it is effective. Lifesaving is possible. Major depressive disorder, one of the main ailments that TMS treats can be so severe that it results in suicide. When TMS helps to lessen or eliminate all of the symptoms of depression it can save lives. With other treatments, it can function harmoniously. TMS is frequently used in combination with other types of therapy, including drugs, counselling and other types of therapy.

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