

# Helmet that Allows Patient to Move Freely During Transcranial Magnetic Stimulation Treatments

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## Technology description

### Device Holds TMS Coil in Place, Making Non-Invasive Brain Stimulation More Effective

This helmet allows patients to move their heads while keeping an electromagnetic coil stable during transcranial magnetic stimulation (TMS), a non-invasive procedure that induces activity in different parts of the brain for research and treatment of neurological and psychiatric disorders, including depression. No product on the market satisfies the need for a stable TMS coil position while still allowing head movement. In TMS, doctors position a coil over the patient's head in order to focus the electromagnetic pulse at a region of the brain. The position of the handheld 4 kg coil has to be maintained so several pulses can be delivered, typically within a 40-minute period. Inadvertent movement of the coil by the operator or by patient head movement can result in shifting the aim of the electromagnetic pulses, disrupting the accuracy and validity of the procedure. University of Florida researchers have developed a device that eliminates those inadvertent movements by using the helmet to stabilize the coil. The fixed helmet allows for more accurate application of TMS, even while the patient is in motion.

## Technology

TMS procedures involve first positioning the coil on the patient's head, then maintaining the position for the duration of the therapy or study. In order to stabilize the coil, researchers at the University of Florida have designed a TMS helmet that locks the coil in place and allows for patient movement during procedures. The helmet is filled with polystyrene beads enclosed in a sealed, airtight fabric casing. A vacuum is drawn over the helmet, making it rigid and thereby fixating the coil in the correct position. This invention broadens the potential for TMS studies and therapies by eliminating discrepancies caused by movement of the coil.

## Application area

A TMS helmet that fixates coil position and allows patient movement during TMS procedures

## Advantages

Keeps TMS coil stable, improving efficiency and accuracy of therapies and studies

Allows for patient head movement during TMS procedures (e.g. while the patient is walking on a treadmill), broadening applications for TMS studies

Improves validity of TMS studies, enabling greater reproducibility of results

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