

# Can Magnets Stop Your Migraine?

*Transcranial magnetic stimulation (TMS) devices are FDA-approved for the prevention and acute treatment of migraine headache. What is TMS, and how does it work? Could TMS be a good fit for you?*

TMS uses magnets to generate electricity that activates nerve cells in the brain. Originally, TMS was used as a research tool to evaluate how the brain functions, and subsequently, it proved to be effective in treating depression. TMS can be delivered in single pulses (“single-pulse TMS”) or in a train of pulses (“repetitive TMS”).

Results from studies conducted in Europe, Asia, and the United States have shown promise for TMS as a treatment to reduce and prevent migraine. It is thought that TMS activates an electrical current that “relaxes” brain cells and reduces the brain hyperactivity associated with migraine.

In late 2013, the Food and Drug Administration approved the first handheld TMS device (Cerenia, made by eNeura); Cerenia delivers single TMS pulses to specifically treat migraine with aura. More recently, a smaller device called SpringTMS (also from eNeura), the only TMS option available in the U.S. market, has been shown to decrease headache frequency in adults with migraine. The latest version of this device is called the “TMS mini,” as it no longer has bulky handles and can fit in a large purse or backpack. TMS can be used on an “as needed” basis as an acute migraine treatment (to stop or reduce an individual attack) or daily as a preventive therapy intended to reduce



*Transcranial magnetic stimulation for migraine*

the frequency and severity of migraine headaches.

The low incidence of side effects makes TMS an especially attractive migraine treatment. The most common side effects are transient lightheadedness, scalp discomfort, facial twitching, and headache. The most serious (albeit rare) side effect is acute seizure activity, which is why your provider needs to know whether you have ever had a seizure or if you have a family history of epilepsy.

TMS is contraindicated if you have a history of epilepsy or stroke, an implanted cardiac defibrillator (ICD), a vagus nerve stimulator, cardiac pacemaker, or metal implants in your head, neck, or upper body. Consult with your doctor before trying TMS if you have a history of any brain injury, an implanted device, or a





your headache specialist (you will need a prescription).

What are the advantages of TMS? For one, it is designed to be a portable self-treatment so patients can deliver a non-invasive brief magnetic pulse in the comfort of their home rather than going to a clinic. It is also one of the few treatment options available for migraine that can both stop an acute attack and also help prevent future attacks. Particularly because side effects tend to be less, many patients prefer the option of using a non-pharmacologic therapy to manage their migraine. In patients with migraine that is resistant to standard treatment, TMS offers a different mechanistic approach and may be worth considering either as a primary treatment or in addition to other therapies.

At the George Washington University Headache Center, a research study is being initiated to investigate whether repetitive TMS (rTMS) can prevent chronic migraine, a severe and debilitating variant of migraine. If the results of this study are positive, rTMS will represent the first non-pharmacologic evidence-based treatment option for those who are experiencing chronic migraine. **■**



family history of seizures.

Before using TMS, you need to remove metal jewelry, eyeglasses, or other metal from your body and stand at least two feet from all metal objects and other individuals. To use the SpringTMS device, you hold the device in your hands and apply it to the

back of the head, pressing firmly against the scalp (there is a curve that allows the device to rest snugly and comfortably). Press the switch and hold the device in place for at least two seconds—a click means the magnetic pulse was delivered successfully. Remove the device from the back of your head, and you will see the POWER button light lit up to show the treatment is complete. You can use the device for another pulse at this point if needed. The device will automatically shut down after two pulses, as delivering too many pulses in a row can cause the device to overheat.

At the time of this article's publication, one cannot purchase the TMS mini device. Instead, you rent it from eNeura, and it is shipped to you. If you are interested in trying TMS to acutely treat or prevent your migraine headaches, consult with

**...one of the few treatment options available for migraine that can both stop an acute attack and also help prevent future attacks.**

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