

PENTAGON'S BRAIN-POWERED VIDEOGAMES MIGHT TREAT PTSD



SOLDIERS AND VETERANS looking to alleviate the devastating symptoms of post-traumatic stress disorder might soon have a new way to help themselves. Strangely, it involves using their gray matter to control a videogame.

The process is known as neurofeedback, or NF, and it's the latest in a long, increasingly out-there list of potential PTSD remedies — from neck injections to memory-zapping drugs — being studied by military researchers. This week, scientists at San Diego's Naval Medical Center announced plans for a clinical trial on 80 patients, designed to compare neurofeedback with a sham control procedure. The trial, the first of its kind, is meant to determine whether or not NF can avail soldiers of symptoms like nightmares, anxiety attacks and flashbacks.

“The proposed study could expand treatment alternatives for servicemen with PTSD,” the announcement reads. “If [neurofeedback] is shown to improve symptom reduction [...] it would offer a non-pharmacological intervention that would avoid undesirable side effects, and accelerate recovery.”

While the idea sounds pretty odd, the process of neurofeedback isn't so intimidating (and I would know, having undergone the procedure myself for *The Daily* last year). A clinician affixes EEG electrodes to specific regions on a patient's scalp, designed to read the output of the patient's brain activity. Then, as the clinician monitors those brain waves from a computer console, the patient controls the key element of a videogame — like a car racing through a winding tunnel — using nothing more than their mind.

If a patient's brain activity remains calm and steady, the videogame responds with enhanced performance — the car moves more quickly and navigates smoothly. If activity is wonkier and less controlled, that race car will veer out of control and, say, smash into a brick wall. Game over.

The idea behind NF is grounded in the emerging science of brain plasticity, or the ability of the adult brain (previously thought to reach stasis in adulthood) to change throughout life. Neurofeedback clinicians suspect that the brain, in “seeing” its own activity on-screen, is spurred to fix defects in order to work on a more optimal level. Over a series of several sessions, those repairs then supposedly become more permanently entrenched.

“When the brain sees itself interacting with the world, it becomes interested in that,” Dr. Siegfried Othmer, chief scientist at LA's EEG Institute and responsible, along with his neurobiologist wife Sue, for “The Othmer Method” — a specific approach to neurofeedback being used in the military trial — told me

last year. “Likewise, when it sees the signal on-screen and realizes it’s in charge, it becomes interested. You might not notice, but the brain takes notice.”

The realm of brain plasticity is relatively new, but neurofeedback actually isn’t. The procedure first gained notoriety in the 1960s as a treatment for everything from migraine headaches to bed-wetting. Still, in part because of a paucity of mainstream scientific research, the approach has long been relegated to the realm of bunk science. “I think the practice has gotten ahead of the science,” Dr. Andrew Leuchter, a professor at UCLA’s Semel Institute for Neuroscience and Human Behavior, told me. “It wouldn’t be surprising ... if much of the benefit was attributable to the placebo response.”

Despite such mainstream skepticism, neurofeedback is already being used by several military doctors and psychologists. Maj. Michael Villaneuva — nicknamed “The Wizard” by his patients — has performed NF on several hundred active-duty soldiers, and even brought his game console and electrodes on a deployment to Afghanistan this year. And Dr. Jerry Wesch, who leads a PTSD recovery program at Fort Hood, describes the results of his own neurofeedback trials on patients as “jaw dropping.”

Upwards of a thousand former soldiers have also tried neurofeedback, thanks to Homecoming 4 Veterans, a non-profit started by the Othmers that offers free NF to veterans through a network of 200 practitioners nationwide. The two are also responsible for training Villaneuva and other military docs in the art of NF.

Already, the Othmers are confident that the military’s clinical trial, expected to kick off in December, will yield positive results. And they hope that the trial, once complete, lends more credence to the therapy they’ve helped pioneer. “I think the trial could be huge, not only with [medical] academia, but for clinicians,” Sue tells Danger Room. “They’re often wary of adapting procedures that haven’t seen evidence-based study. So this checks off an important box.”

But the trial won’t be easy: Controlled tests of processes, rather than pharmaceuticals, are notoriously tough. That’s because designing and executing a “sham” procedure is much more difficult than, say, just doling out sugar pills instead of the real drug.

Then again, for soldiers who credit neurofeedback with their recovery from PTSD, the execution or academic impact of a clinical trial is hardly the most important thing. “How it works doesn’t matter to me,” Staff Sgt. Justin Roberts, who underwent the process at Fort Hood, told me. “Just as long as it does.”