Health & Science

Mindfulness and meditation training could ease PTSD symptoms, researchers say

By David Kohn  February 18, 2013

Over the past nine years, more than 2 million American soldiers have served in Iraq and Afghanistan. As many as several hundred thousand may now suffer from post-traumatic stress disorder, experts say. They struggle with anxiety, anger, depression, flashbacks and nightmares. The ailment can take years to emerge, and many more cases are likely to appear.

PTSD is usually treated with drugs, behavioral therapy and other approaches. But for many, these methods don’t work. Now, researchers are looking at a new method that might limit future cases of PTSD and ease symptoms for those who have it: meditation.

With its emphasis on cultivating tranquillity, meditation might seem like an odd fit for the military. But the researchers say that a particular type, known as mindfulness, may prove to be an important therapeutic tool to help reduce stress and increase focus.

Practitioners of mindfulness meditation focus on a single thing happening in the moment, such as breathing, for a set period of time, generally at least 15 or 20 minutes. Studies have found that for regular practitioners, mindfulness has physical and emotional benefits.

“It’s clear that mindfulness can lower stress in many contexts,” says Elizabeth Stanley, an associate professor of security studies at Georgetown University who has been involved in the studies and began practicing meditation to deal with her PTSD. “We think it can work for soldiers dealing with the extreme stress of combat.”

Stanley says she believes meditation should be as much a part of basic training as learning to fire a weapon or march in formation.

The research by Stanley and her colleagues has attracted the attention of some military leaders, including the commander of all allied forces in Afghanistan.
A former Army military intelligence officer, Stanley is not a scientist, but her research collaborators are psychologists and neuroscientists. In 2010, they published the results of a pilot study that found that mindfulness protected soldiers from anxiety and other stress-related negative emotions. They have completed two other studies whose findings have not been published.

The pilot study focused on 60 Marine reservists who were going through two months of intense training before being deployed to Iraq. Some received regular instruction in mindfulness meditation and were asked to meditate for 15 minutes a day; the other group got no meditation training. The researchers found that after two months, the meditation group reported significantly lower levels of stress and anxiety.

The study found that mindfulness training had another benefit: It made the soldiers smarter. Specifically, it improved their capacity to retain new information, which is known as expanding their working memory. Participants were asked to remember letters from the alphabet while doing simple arithmetic. Those who had received the mindfulness training and meditated every day did significantly better at this task than those who didn’t receive such training, and those who meditated more did better than those who meditated less.

Marine medic Del Cochran was among those in the meditation group. Like many participants in the study, he was initially skeptical: “No one wanted to do it. We thought it was a waste of time.”

But Cochran was suffering from problems related to combat stress: After returning home from an eight-month tour in Iraq in 2004, he’d struggled. His marriage was in trouble, he was drinking a lot and he was constantly angry. So he was willing to try anything. As the meditation training progressed, Cochran said he found that he was calmer and less angry.

When his unit was deployed to Iraq in 2008, the study was put on hold. But Cochran, now 50, continued to meditate in Iraq, putting aside 15 minutes a day to practice. He says that many others in his unit did the same and that some who hadn’t had the training also took up meditating when they saw how it seemed to help with stress.

After the soldiers returned from Iraq, they were retested. University of Miami neuroscientist Amish Jha, one of Stanley’s collaborators, says that those who continued practicing meditation in Iraq showed improved working memory in follow-up tests. The researchers were surprised, Jha says, because stressful experiences tend to degrade working memory.

Cochran says he believes meditation helped him stay much calmer during his second tour in Iraq. “The first tour, I was freaked out all the time,” he says. “There was so much static. With meditation, you’re much more in tune — what is a target, what is not a target. You are much more focused on what you are doing.”

He says this increased sense of control continued when he returned home. Now a battalion medical chief for a Marine reserve unit in Cape Coral, Fla., he meditates 15 minutes a day, usually during lunch. “For me, meditation was a lifesaver,” he says.

Stanley and her colleagues have followed up this pilot study with more research, funded by the Department of Defense. One study looked at 320 Marines based at Camp Pendleton, Calif., who were preparing to go to Afghanistan. At the time, they were
undergoing an immersion course that closely simulated combat through realistic live-action scenarios, such as going on patrol, driving in a convoy and meeting with a local sheik. This training takes place in a mock Afghan village, a square block peopled by Pashto-speaking actors dressed in traditional Afghan clothing. As in real life, the situations turn chaotic: The sheik suddenly gets angry, or an insurgent detonates a suicide bomb.

Some of the Marines were given mindfulness training. During the immersion sessions, researchers monitored all of the Marines’ blood pressure, heart rate and breathing as well as a range of neurochemicals related to stress. The researchers found that the mindfulness group was not only calmer during and after the immersion exercises but also responded faster when a threat appeared.

This is crucial, says Tom Minor, a University of California at San Diego neuroscientist who was one of the researchers. “That was one thing we worried about: ‘Are we going to take a bunch of Marines and turn them into chanting monks who couldn’t generate a stress response?’ But they didn’t get too relaxed.”

Meditation seems to produce its effects via a range of mechanisms, according to the researchers. Minor and others have found that mindfulness increases levels of insulin-like growth factor 1, a hormone that repairs cellular damage caused by stress. At the same time, it decreases levels of cortisol and neuropeptide Y, stress-related chemicals that, over time, can damage tissues.

Mindfulness also alters brain circuitry. Using MRI scans, Martin Paulus, another UCSD neuroscientist, found that meditation increases activity in the insula. This region of the brain plays a major role in the perception of bodily sensation — whether a given signal is interpreted as innocuous, painful or pleasurable. Paulus says that an active insula may improve the ability to handle stress and trauma by making the body’s physical and emotional signals more noticeable.

“Once you’re aware of the signals, they have less power over you,” he says. “Think of it like a thermostat: If you aren’t feeling what’s going on, you can’t adjust to it.” He and other researchers have also found that meditation boosts activity in the frontal cortex and the parietal cortex, two brain regions that play a role in controlling emotions.

Stanley’s interest in mindfulness stems from her experience. In 1996, she was sent to Bosnia by the Army. She did not see combat, but it was a stressful assignment: She was working 18 hours a day, living in spartan barracks without running water and
trying to learn Croatian because her unit needed translators. After a few months of this, she developed insomnia, severe asthma and depression. She was given a diagnosis of PTSD and left the military to pursue a doctorate in government at Harvard.

During the next several years, she tried a range of treatments for her PTSD, but her symptoms persisted. In desperation, she began experimenting with mindfulness. While at a meditation retreat a few months later, the light switched on. “My mind was much stiller,” she says. “I felt very spacious. It was so beautiful.”

She kept meditating, and within two years, her emotional and physical symptoms disappeared. She now practices for 15 or 20 minutes a day, sometimes meditating at her desk or while walking.

Stanley’s work focused on new strategies to improve soldiers’ performance, and she became convinced that mindfulness was a valuable technique. She says the military should see mindfulness as a necessity, as important to mental fitness as regular exercise is to physical fitness.

Last year, Stanley says, she gave mindfulness training to several Marine leaders, among them Gen. Joseph F. Dunford, who took charge of all allied forces in Afghanistan this month. Dunford was not available for comment, but according to Marine Corps spokesman Paul Kennedy, the general is intrigued by the potential uses of meditation.

“I’m convinced this could have a place in the Marine Corps. It makes sense to me,” says Maj. Gen. Melvin Spiese, who commands the 1st Marine Expeditionary Force and was trained in mindfulness by Stanley.

The Pentagon is also interested. Frank DiGiovanni, who oversees training for all branches of the U.S. military, is evaluating several mindfulness approaches, including Stanley’s, to improve performance and reduce stress.

“This is a tool that we should look seriously at,” he says. “It’s something that has real potential.”

Kohn is a medicine and science writer based in Baltimore.