**By ERIC NEWHOUSE**

 There are some common truths about post-traumatic stress disorder that are generally accepted. Combat causes trauma and extensive combat causes PTSD, which is a natural reaction to unnatural conditions – it’s a mechanism designed to keep a soldier alive in a world that’s out to kill him.

So PTSD is a learned behavior by a plastic brain that is molded by the conditions that surround it. The problem with PTSD is that symptoms like hypervigilance continue even after the warrior leaves the battlefield. Night terrors and flashbacks continue to make the battlefield threats seem current.

How to help vets unlearn those survival tactics is a critical question for our society today, particularly since American soldiers have been in combat around the world virtually nonstop for the past half century.

**Wounded Soul Syndrome**

But that’s just half the issue of PTSD because it only involves what others are trying to do to you. The other half is what you did to others – or failed to do for them. And this half goes largely unrecognized by the medical community.

Killing violates our inborn moral code and failing to save our buddies leaves us feeling powerless. Both cause what I’ve come to think of as the wounded soul syndrome. Anger, guilt and depression are common symptoms, as is survivor guilt. Therapists such as Jonathan Shay, a recipient of a MacArthur Foundation "genius" grant; Edward Tick, director of the private group Soldier’s Heart;  and Brett Litz, a VA psychologist, argue that what happens in war may more accurately be called a moral injury — a deep soul wound that pierces a person's identity, sense of morality and relationship to society.

Both aspects of PTSD generally occur simultaneously.

Let me give you an example: my friend Jack Jager, who was a scout dog handler during the war in Vietnam. That meant he lived in the field, using his dogs like bird dogs to flush out enemy soldiers or to sniff out mines and booby traps. That put him on the cutting edge of combat.

 “We got overrun once, and that was my last combat experience,” he told me. “We ran into a camp of NVA regulars, and our battalion commander told us to withdraw a little. But in the evening, we got surrounded. Later I found out it was called the Easter Massacre because it happened on Easter Sunday. Out of the 21 men in our squad, we had 11 killed and six wounded. I remember a guy with his arm blown off asking how the hell he could load his rifle with just one hand. So we withdrew. We had a river at our backs, and two guys who were mortally wounded tried to do their best to hold them off. We slipped into the river, floated downstream, got out on the riverbank, and spent most of the day eluding them.”

Jack came home and tried to live a normal, civilian life, but couldn't. He was nervous about living inside, so he found a wooded area behind his apartment, built a camp and lived there with his dogs for protection.

His breaking point came when his mom asked him what had happened to him over there. But he couldn't tell her. Instead, he fled to Montana, got an isolated job as a long-haul trucker, drank heavily, and fell in and out of four marriages.

"I felt very guilty," Jack told me a few years ago. "There are things I did that I feel very guilty about. I was brought up right, brought up to do right, but in war the compassion is not there. Human beings were not made to kill each other. I saw some soldiers who just could not pull the trigger on an adversary face to face, and they died. After all the depravity of war was over, I was afraid people would know what I was, so I just ran away from it."

**Treating PTSD**

That’s an extreme, but fairly typical example of a vet with PTSD that has not been treated. And it’s typical of most ’Nam vets -- PTSD didn’t exist as a medical diagnosis until 1980, so their disorders largely went untreated.

 Not surprisingly, treatment options are still evolving.

 Over the years, the VA has relied on group therapy and individual counseling on the theory that talking about trauma will lessen its severity. This approach, part of cognitive behavioral therapy, frequently relies on psychotropic medications to numb vets down between sessions and to dull their chronic pain.

Retired Brig. Gen. Rebecca Halstead told a conference at the University of Nevada-Las Vegas a few years ago that she was prescribed a brown paper lunch bag full of medications – I counted 15 different pill bottles in a slide that she showed – for chronic pain due to fibromyalgia. Her advice: “Replace pills with physical fitness.”

 "Pharmaceuticals are just a mask because they don't deal with a problem," agreed Hardie Higgins, a retired Army lieutenant colonel who served 20 years as a chaplain and who is also author of a book, To Make the Wounded Whole: Healing the Spiritual Wounds of PTSD*.*

Another form of CBT is prolonged exposure treatment, which forces vets to face their fears so they can learn that the consequences they would fear in combat are no longer a threat in civilian life. Psychiatrists argue that the brain can unlearn some combat-inspired behaviors, but most vets find the task daunting.

 Some VA centers are offering courses in Tai Chi and Qigong. “I’ve been working with vets for the past 20 years, and I’ve found that someone with TBI (traumatic brain injury) or chronic pain will quickly become very frustrated with Tai Chi, which appears simple but is actually fairly complex to learn,” Sifu Chris Bouguyon told me. “Qigong, the grandfather to Tai Chi, can be broken down into simpler parts using basic principles which allow vets the opportunity to learn useful tools for their daily lives and to become self aware on a physical, mental and emotional level.”

 Qigong is one of the energy system therapies, like acupuncture and acupressure, that posits that that the chi, or life energy, flowing through the body will become stagnant if blocked. It’s a forerunner of EMDR (eye movement desensitization and reprocessing) and EFT (emotional freedom techniques), both of which involve remembering past traumas, then using immediate motions like rolling the eyes or tapping acupressure points in the body to help defuse their emotional content.

 But remember that these are treatments only for traditional PTSD. There are different therapies for the wounded soul syndrome. Dr. Tick, author of War and the Soul, told me: "We really don't have the words in our language to express our spiritual loss, but when I describe it to combat vets, they understand it immediately."

**Wounded souls**

 Retired Marine Capt. Timothy Kudo expressed that moral pain in a guest column recently published by the Washington Post.

“I held two seemingly contradictory beliefs: Killing is always wrong, but in war, it is necessary. How could something be both immoral and necessary? I didn’t have time to resolve this question before deploying,” wrote Kudo, who had deployed to Iraq in 2009 and to Afghanistan in 2010-11. “And in the first few months, I fell right into killing without thinking twice. We were simply too busy to worry about the morality of what we were doing. But one day on patrol in Afghanistan in 2010, my patrol got into a firefight and ended up killing two people on a motorcycle we thought were about to attack us. They ignored or didn’t understand our warnings to stop, and according to the military’s ‘escalation of force’ guidelines, we were authorized to shoot them in self-defense. Although we thought they were armed, they turned out to be civilians. One looked no older than 16.”

Kudo, who returned to become a graduate student at New York University, said he thinks about killing those people on the motorcycle every day. He also remembers the first time a Marine several miles away asked him over the radio whether his unit could kill someone burying a bomb. The decision fell on him alone, and he said yes.

“Many veterans are unable to reconcile such actions in war with the biblical commandment ‘Thou shalt not kill.’ When they come home from an environment where killing is not only accepted but is a metric of success, the transition to one where killing is wrong can be incomprehensible,” Kudo wrote. “This incongruity can have devastating effects. After more than 10 years of war, the military lost more active-duty members last year to suicide than to enemy fire. More worrisome, the Department of Veterans Affairs estimates that one in five Americans who commit suicide is a veteran, despite the fact that veterans make up just 13 percent of the population.

“While I don’t know why individual veterans resort to suicide, I can say that the ethical damage of war may be worse than the physical injuries we sustain,” he said. “To properly wage war, you have to recalibrate your moral compass. Once you return from the battlefield, it is difficult or impossible to repair it.”

Kudo also said he didn’t return from Afghanistan as the same person – “I’m no longer the ‘good’ person I once thought I was.” He said he wrestles with justifying his actions, but that he’s beginning to believe that killing, even in war, is wrong.

I remember talking with the grieving family of a young Marine killed in Iraq. As we stood in the cemetery, a snow-swept knoll in northeastern Montana, his mom recalled her son's last visit home a few months before and how devastated he'd been by an incident there. The 20-year-old had told his family that he and his friends had been tossing candy to a bunch of Iraqi kids when one pressed too close. Warned to stay away, one kid kept advancing. And finally, remembering the stories of bad guys who carried knives or guns or bombs strapped across their chests, this young Marine shot the kid.

When they checked the kid's body, he was unarmed. "Mom, I killed an innocent Iraqi goat-herd," her son had said over and over again.

Killing goes against the moral code of virtually every society, so what a soldier does in a combat situation redefines him in his own mind. He knows he has crossed a moral line. And he knows that having done it once, he can always do it again. Worse, he knows that his family and friends will also know that about him.

As a Christian, there's only one thing that's worse. I believe that God handed down a set of laws written in stone that say very explicitly: "Thou shalt not murder." Later, that commandment was imprinted on our hearts, hard-wired into our psyche, as it were. So breaking that law also separates me from my Creator, providing a triple whammy.

"A chaplain at Walter Reed (Medical Center in Washington, D.C.) told me once that healing involves renegotiating your covenant with God," said Tick, adding that conventional medicine doesn't take that aspect into account. "I've talked with a number of vets who say they are treated as victims, but that they know they were the perpetrators," he said.

**Atonement**

Drawing on the Native American culture, Tick also counsels a path of atonement to healing. He noted that the Lakota Sioux have a term for combat stress that can be translated as "his spirit has left him" or "his spirit has been emptied."  And he cited a Flathead Indian "victory song" in which a returning warrior asks forgiveness for the damage he has done to the cosmos.

War creates an identity crisis for returning vets, Tick told me; they initially transform from civilians to warriors, but they never can return to being civilians again, So healing involves asking atonement for what they have done, creating a new post-warrior identity for themselves, and sharing their experiences with the community. That lifelong journey can lead to acceptance and spiritual peace again. Failure to do that leads to nightmares and flashbacks as the suppressed combat experiences struggle to be recognized. "Holistic medicine looks for true healing, not just symptom management," said Tick.

My friend Mike Orban is a ’Nam vet who never really recovered from losing his soul in combat. His book, Souled Out, examined his years of pain with searing detail and unflinching honesty. It also detailed his struggle for atonement.

Mike wrote about his year-long fight in 1971 to stay alive on the killing fields of Tay Ninh Province in the Central Highlands, with every sense on high alert to protect him from ever-present danger. He wrote about how empty it made him feel when he realized there was no legitimate purpose to his mission, that he was merely killing others so they wouldn’t kill him. And he wrote about the anger he felt toward the Washington bureaucrats who so needlessly sacrificed the lives of young American soldiers that they deemed expendable.

But unlike so many war books, this part is designed merely to give us a taste of what Mike went through. Most of Souled Out is about the aftermath of war and how he no longer fit in. Mike compared himself to an abandoned house with a leaking roof, sagging floors, dirt-smeared windows and rotting furniture on the inside, but with a fresh coat of paint on the outside. All his energy for the next five years went to keeping up that façade.

But it wasn’t until 1976 when he volunteered to go to Africa with the Peace Corps that he noticed a huge positive change. Part of it was the beauty of the jungles of PC Gabon, and part of it was living among rural natives so close to nature. But finally he realized that he simply needed to help others to make up for the harm he had inflicted in combat. It felt so good that after three years in Gabon, he joined USAID for another two years in Cameroon.

Returning to America in 1980, he began a long slide downward, working just enough to pay for food and alcohol as he scrounged off his brothers and sisters and as he did his best to avoid facing the major problems in his life.

At the end of that long road, Mike faced a grim choice: suicide or recovery. And recovery meant facing the demons that he had worked so hard to avoid. But in 2001, he committed himself to a 90-day inpatient PTSD program at the VA hospital in Tomah, Wis., to begin that process.

In some respects, Souled Out is just one of many books detailing the odyssey of a warrior coming home from war. But it’s much more than that because at the end of the day, Mike summoned up the courage, energy and resolve to fix the roof and the floor, pitch out the rotting furniture, clean the place up and slap a fresh coat of paint on the walls inside so he can live again in that once-abandoned house.

Like every restored home, there are always new problems and fresh additions to the maintenance list. But there’s a real joy in seeing fresh life in this house … and in my friend Mike.

**Forgiveness**

Higgins argues that the battlefield strips away the belief system that soldiers grew up with, leaving them empty. "The key to recovery for victims of PTSD is, I believe, to assist them in discovering the redemptive meaning of their suffering and how to use that suffering to add meaning to their future life," he said.

One of the vets he has been counseling was crippled emotionally for decades by the memory of clubbing a Vietnamese boy to death with a rifle butt. Higgins reached out for healing by setting two chairs in a room, then asking the vet to sit in one and explain why he clubbed the boy, then move to the other chair to let the boy talk with the soldier.  "He explained to the kid that he was just a soldier doing his job and he was sorry," Higgins said. "Then I put him in the other chair and said, 'Now you're the little kid. What do you want to say to the soldier?' And it was amazing how much more forgiving that little kid was. He said, 'I know you were just a soldier and you didn't know what you were doing.' When you hear that kid talking about forgiveness, there's some real healing going on."

Higgins also uses the Bible to help vets lift their levels of guilt. He reminds them of that familiar verse in the Lord's Prayer: "Forgive us our trespasses as we forgive those who trespass against us."  That's a deceptively simple phrase, but it really means that God will forgive me if I forgive others. And if God forgives me, I have to forgive myself, too.

**Exercise as therapy**

Self-forgiveness means giving yourself permission to enjoy life again, and one of the best things you can do is find recreation that’s fun. But it should also be something physical. That’s because exercise is therapeutic in helping produce new brain cells.

There are some fascinating medical studies that link heightened anxiety levels to deficits in new brain cell development.

“This realization could lead to novel approaches to treating a variety of anxiety disorders, including post-traumatic stress disorder (PTSD), because people who suffer from such conditions have trouble telling the difference between situations that merit fear and those that are innocuous,” said two Columbia University neurology professors, Mazen A. Kheirbek and Rene Hen, writing in the July 2014 issue of Scientific American magazine.

For years, scientists believed that adult humans stopped producing new neurons, but then about 20 years ago, evidence from the brains of adult rodents, monkeys, and even humans showed that new neurons are being produced continuously in two areas of the brain, one of which is involved with smell and the other involved in learning, memory, and emotion.

According to Kheirbek and Hen, one of the learning and memory functions that appear to involve new neurons involves pattern completion, which is laying a memory down so that it can be retrieved. The other involves pattern separation, which is recording details of an event so that it can be distinguished from other events.

The neurologists tested their theory in lab mice by shutting down neurogenesis, or the production of new neurons, in some mice and boosting it in others. Then they took the mice from their safe home cage and put them in another cage in which they got a mild electric shock.

“Animals lacking new neurons remained overly skittish, reacting in alarm in both environments, even after repeated trips to the harmless box proceeded without incident,” they reported. But that didn’t happen with mice with an increased number of new brain cells.

Several other studies have also shown that mice lacking in new neurons have been unable to distinguish between safety and danger, the neurologists said.

“If neurogenesis is, in fact, involved in pattern separation in humans, the finding could offer insights into the cause of anxiety disorders such as PTSD,” said the article, Add Neurons, Subtract Anxiety. “Psychologists have long suspected that the overgeneralization of memory contributes to anxiety disorders, which are marked by an exaggerated, sometimes crippling, fear response, even when the environment holds no immediate threat. Such inappropriate generalization could be the result of a diminished ability to distinguish between a past trauma and an innocuous event that shares some similarity with the traumatic event – for example, a picnic that is interrupted by an unexpected loud noise.

“Individuals with a normal capacity for pattern separation might flinch at the sudden boom but quickly realize that the park is not a war zone and continue with their lunch,” it said. “A veteran with impaired ability to carry out pattern separation, on the other hand, may be unable to separate the sound of a car backfiring from the memory of a battlefield – a mistake that could precipitate a full-blown panic attack.”

Researchers have found that most humans continue to add about 1,400 new brain cells per day to the hippocampus well into old age. While the authors speculated about a deficit in neuron production, they suggested no reason why so many vets would be experiencing this disorder.

They did, however, explain what cures the condition: exercise. Mice running on a wheel in their cages showed increased rates of neurogenesis.

And that may well explain why vets who are kayaking, whitewater rafting, hiking, and mountain climbing are able to alleviate the symptoms of PTSD. They’re producing more new brain cells and reducing their anxiety levels.

**Out on a raging river**

 One form of therapy for vets is whitewater rafting down the Lochsa River, a 20-mile stretch of wild and scenic river in western Idaho that boasts 25 class 3-4-and-5 rapids. I floated the Lochsa a few years ago, and it was a once-in-a-lifetime thrill for me. Now vets are floating it together as part of the X Sports 4 Vets program.

“When I got out on the river, it was like team-building,” said Brandon Bryant, an Air Force vet. “It was exciting without the inherent danger of going out in the field.”

During five and a half years in the Air Force, Bryant fought the war from a cubicle in Las Vegas, where he was the co-pilot of a UAV (unmanned aerial vehicle) Predator.  “When we shot missiles, I was the one who guided them into the target,” he told me.

But the first deaths he witnessed were American soldiers returning from a mission in Iraq just after dawn.

“We saw something that looked like a buried IED (improvised explosive device) in the road, but we couldn’t stop them. The first vehicle went over it. Then the second went over it. It exploded, and everyone died,” he said. “I was 19 at the time and I felt guilty, as though I was responsible for the deaths of our military members. That’s when I knew I would never be the same again.”

In one sense, it was like being a bombardier in Vietnam. In another, it was a lot worse.

“We flew the Predator by satellite in Iraq and Afghanistan, gathering intelligence for a week or so unless our guys were under attack,” he said. “Then we found out where the bad guys were shooting from, and we would drop bombs on them.  I could see the aftermath of every strike.”

When Bryant returned home, he was diagnosed with 100 percent PTSD. He carried a lot of guilt and a lot of anger at people who had little regard for their own lives or the lives of others. And he isolated himself from most civilians, including his own family, who couldn’t understand what he’d been through.

That changed on the river.

“Being in combat, that adrenaline rush comes with worry,” said Bryant. “Deep in your gut, you’re not sure if something bad is going to happen until it’s all over. But out on the river, you know that if something bad happens, you’ve got a lot of guys around to help you. So there’s no risk of dying.”

I’m with Bryant to a point, but when I floated the Lochsa, I knew there was a risk of death. I felt we were challenging a huge natural element, something that was dangerous but not malevolent, something that could kill you but didn’t necessarily want to.

There was a lot of teamwork involved in pulling the oars together strongly so we could power the raft over a curl of boiling whitewater without it flipping backward and dumping us into the frigid water.

And when one of my friends, sitting in the seat directly in front of me, got washed into the river, I jumped to my feet, pushed an oar at him, pulled him over to the side of the raft, grabbed the shoulder pads of his life vest, lifted him as high as I could and then fell backward, dragging him on top of me into the raft. What a rush that was!

Adrenaline is a huge part of floating the Lochsa River, just as it’s a huge part of surviving combat. But we now know that adrenaline also plays a large role in enhancing memory for emotional events, so that voluntary exercise that involves an adrenaline rush may facilitate the “learning” of safety and the consolidation of new, positive memories.

Paul Gasser, a neuroscientist at Marquette University in Milwaukee, said that just the exercise from extreme sports reduces stress. “Exercise is at least as effective an antidepressant as any of the pharmaceutical treatments,” he told me recently.

Gasser and his colleagues have been tracking adrenaline and a hormone called cortisol in both humans and laboratory animals. Adrenaline is secreted into the bloodstream instantly by the adrenal gland during “fight-or-flight” situations because it enhances quick bursts of energy for survival purposes, heightened memory function, and a lower sensitivity to pain. Cortisol, an important stress hormone also secreted by the adrenal gland, acts more slowly to facilitate adaption and recovery after stress.

            Neurologists have found that PTSD patients appear to have lower baseline cortisol levels and a decreased cortisol response to stress.  This means that these patients appear to have lower levels of the hormone that is critical for relaxing after stress. They say that this may be a risk factor for PTSD, and increasing that cortisol response could facilitate recovery.

Both adrenaline and cortisol are produced during periods of voluntary exercise. Elevating the adrenaline levels during voluntary exercise and the cortisol levels after exercise appears to help the body recover better after stress, said Gasser.

Steve Hale, who deployed to Iraq in 2004-05 with the Washington National Guard, can speak first-hand to the benefits of the X Sports 4 Vets program in Missoula, Mont. “I gave it a shot and really saw the value of it,” he told me. “I got a connection between me and the experience and between me and the other guys. It was almost like being born again.”

Combat had changed his perspective. “I really believed in the mission until the first bullet skipped across the hood of the vehicle,” he said. “Then it was all about self-preservation and helping your buddy get home, too.”

When he got home, he wasn’t exactly sure who he was, except that he wasn’t the same person he had been before Iraq. Like Bryant, Hale was depressed and tended to isolate himself from others. But that made it hard for him to understand that he wasn’t alone with his problems. Working and bonding with other vets has given him a chance to see how they are resolving their common problems, said Hale.

And then there’s that adrenaline rush that Gasser talks about.

“You’re on the edge to where it could be dangerous, but it’s not,” said Hale. “People talk about numbing, but this makes you feel again. It’s good to have a pucker factor and your heart race. It’s a good positive outlet, not like getting drunk and getting into fights which is how we used to cope. But you can’t sustain that morally or legally. This is constructive versus destructive.

“Every time I get out on the river, I come home with stories and big pleasant memories,” said Hale. “It does me a lot more good than the pills they’ve been throwing at me.”