

# THE SILENT INJURY COMES HOME FROM WAR

By Barbara Stahura

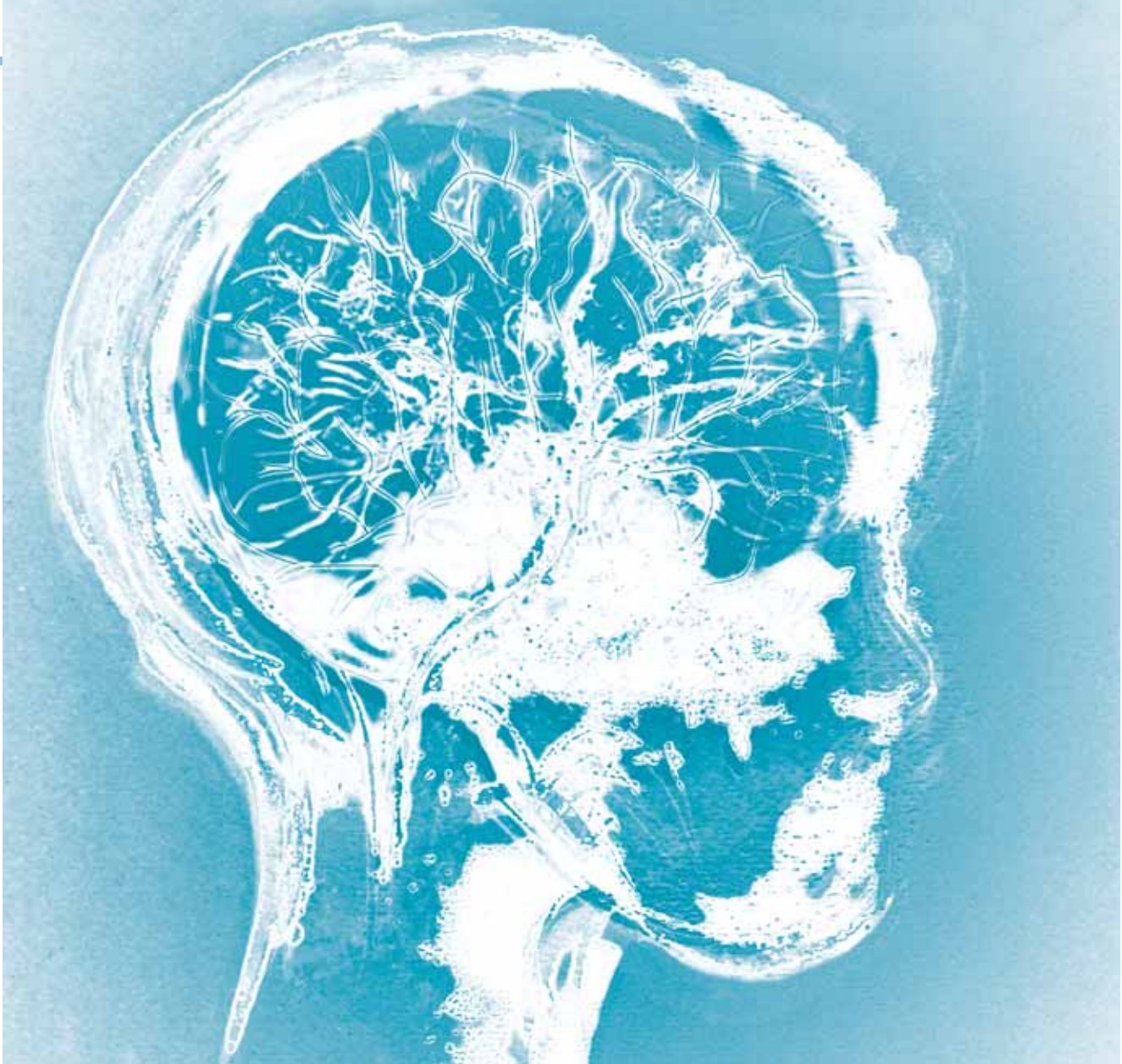
**T**he term “IED” has found its way into common parlance as the wars in Iraq and Afghanistan continue. It stands for “improvised explosive device.” While the word “improvised” seems to suggest a thrown-together, homemade bomb that might or might not work, the reality is much more terrifying. At least one IED produced enough deadly force to lift and flip a 25-ton armored vehicle off a roadway, killing the 14 Marines inside. Others turn cars into bombs that explode on street corners, killing or injuring civilians and military personnel who happen to be nearby. Others strapped to people become living bombs. IEDs have become the signature weapon of the insurgents. And one of the injuries they cause is becoming the Iraq war’s signature injury: traumatic brain injury, or TBI.

Traumatic brain injuries are caused by external force and can result from many things, including vehicle accidents, getting whacked on the head too hard during a football game or a boxing match, falls, domestic or street violence, gunshots, and shaken baby syndrome. In the United States, according to the National Institutes of Health, TBI is “a disorder of major public health significance,” striking more than 1.5 million people every year, with currently more than 5 million suffering permanent and damaging disabilities. And with this war, it appears that larger than usual numbers of military personnel are sustaining TBIs. This is due in large part to IEDs, although bullets, land

mines, and rocket-propelled grenades are doing much damage as well. In fact, all these devices are responsible for 70 percent of injuries in Iraq and Afghanistan.

Some TBIs come from wounds that penetrate the skull and the brain. These “open head” wounds are obvious and often horrendous. But others come from “closed head” injuries that can be invisible even to the most sophisticated neuro-imaging machines. A blow to the head that doesn’t even bruise the skin can cause one of these, and so can an explosion’s “concussive impact,” something against which helmets offer no protection.

Here’s why: The brain is the consistency of Jell-O, and it floats within the hard skull. When a powerful explosion’s blast wave – a shock wave of highly pressurized air followed by a blast wind of incredible force – collides with a human body, that body accelerates uncontrollably. And even if the head does not hit anything, the brain, which at first accelerates along with the head, instantly decelerates as it slams into the skull, and then it rebounds or, even deadlier, it twists. The area through which the blast wave travels can also play a role: In an open space, the damage to nearby humans may be less than if the blast wave ricochets off walls or other large obstacles, flinging the delicate brain in several directions before it subsides. All this violent activity can shear off or kill neural structures (and damage other internal organs), as well as cause brain bleeding and swelling. This can leave the victim with mild to severe



brain damage and with a life that may be horribly and irreversibly altered.

Concussive impact is being called modern warfare's growing threat. And right now, it's impossible to defend against.

### A Disquieting Trend

Head wounds and brain injuries have always been a part of war. Floyd "Shad" Meshad, psychiatric social worker, traumatologist, and president and founder of the National Veterans Foundation, sustained a mild TBI in a helicopter crash in Vietnam. "There were a lot of head wounds in Vietnam," he said. "Most of the GIs took off their helmets and flak jackets. It was 120 degrees and 100 percent humidity. And we didn't wear our helmets much in combat."

It's impossible to know how many soldiers in Vietnam and earlier wars sustained traumatic brain injuries, although it's been estimated that 20 percent of survivors did. In the current war, that percentage appears to be higher.

Beginning in January 2003, Walter Reed Army Medical Center in Washington, D.C., began studying a "a very select group of patients injured by a mechanism known to be high-risk for TBI," says Dr. Warren Lux, neurologist at the Defense and Veterans Brain Injury Center (DVBIC), headquartered at Walter Reed. He says that among these warfighters with severe injuries from a blast, motor vehicle accident, fall, or gunshot wound to the head, face, or neck, 50 to 60 percent sustained a TBI, with a little more than half of those being moderate to severe (see "What TBI Does"). When that select group is counted within the 1,116 patients treated there for all battle injuries through April 2005, the percentage with TBI is 31 percent. It's also possible, he says, that a few more had mild TBI that went unscreened.

Is this percentage really higher than in earlier wars? Lux cautions that no one really knows yet if that is true. Brain injury "has gotten more attention in this war," he said. Articles about brain-injured soldiers have appeared in publications from the *New England Journal of Medicine* to *People* to local newspapers. Additionally, general advances in clinical neuroscience might mean that

# What TBI Does



- MILD TBI CAUSES HEADACHE AND SUBTLE DECREMENTS IN ATTENTION, MEMORY, INFORMATION-PROCESSING SPEED, INFORMATION SYNTHESIS, AND ORGANIZATION AND TASK EXECUTION ASSOCIATED WITH ANXIETY, AND CAN CAUSE DEPRESSION, IRRITABILITY, AND LOST SELF-CONFIDENCE.
- MODERATE TBI CAN CAUSE SUBSTANTIAL LIFETIME IMPAIRMENTS OF COGNITIVE, VISUAL, MOTOR, EMOTIONAL, SOCIAL, SEXUAL, OR VOCATIONAL FUNCTIONING WITH ONGOING NEED FOR HOME ASSISTANCE, JOB ASSISTANCE, AND THERAPIES.
- SEVERE TBI CAN CAUSE DEATH, COMA, PERMANENT VEGETATIVE STATE, CHRONIC UNDER-AROUSAL, SERIOUS DISORDERS OF SWALLOWING OR COMMUNICATION, SEIZURES, STORMING, MUSCLE PARALYSIS, MUSCLE SPASTICITY, ABNORMAL BONE GROWTH, APATHY, DISINHIBITION, DEMENTIA, OR PSYCHOSIS.

“our case identification [of TBI] is better,” explained Lux. “We may be counting them better in this conflict.”

What might be further reasons for a higher percentage?

One, of course, is the large number of blasts occurring in close proximity to so many warfighters – far higher numbers than in any conflict in which U.S. military personnel have been involved to date.

And the other consists of several improvements that add up to one bittersweet fact: U.S. military personnel are surviving grievous wounds, even multiple traumatic amputations and severe brain injuries, that would have killed them before. They may survive, but they may never again be who they were, physically, emotionally, or mentally.

Those improvements include:

- Body armor that protects vital organs and Kevlar helmets that reduce penetrating brain injury (although their weight can add to injuries and they don’t protect against blast waves).

- Extraordinary medical care at the front. “Trauma care has gotten much better,” said Lux, “as has acute resuscitative care. And people are getting care very early after injury in remarkably sophisticated surgeries.”

- Improved med-evac systems, with seriously injured soldiers being airlifted to Landstuhl, Germany, or Walter Reed in “relatively short times with good monitoring,” according to Lux.

## The Trauma of Brain Injuries

Traumatic brain injury is often called “the secret epidemic,” said Rep. Bill Pascrell, D-N.J., co-chair of the Congressional Brain Injury Task Force. “We don’t know how many people are affected every year, civilian and military. Many people live through a brain injury only to be damaged.”

That damage can range from mildly irritating to devastating; it can be temporary or permanent. Depending

on the severity or location of the injury, the person may face lifelong physical, emotional, or cognitive disabilities. The personality can be altered for the worse, as can the body. The ability to work or maintain relationships or care for oneself can be reduced or destroyed. Abuse of alcohol and drugs is common among TBI survivors. (Ironically, says Meshad, some TBI survivors “may look drunk, but it’s the brain injury.”) A TBI can devastate the survivor’s family; they have a divorce rate above 75 percent and a high bankruptcy rate.

Another nickname for TBI is the “silent injury.” It often can go undiagnosed, particularly if it’s mild. The person can appear normal, but cognitive functions can be subtly disabled so as to create problems with concentration, decision-making, reasoning, memory, and emotional control. This can create perplexing difficulties that may appear to have no cause, especially if the symptoms don’t appear soon after a head injury. Anyone with an undiagnosed TBI is at heightened risk, but a soldier in a combat zone especially so, perhaps appearing fit for duty but unable to function reliably. This fact has not gone unnoticed by the military doctors.

Brian Glasser, MD, has investigated and written about medicine in wartime since Vietnam. In an article in the June 2005 *Harper’s Magazine*, he wrote, “Army neurologists fear that severe brain injuries are being underdiagnosed, that more subtle neurological problems are being missed in soldiers not injured enough to enter the evac chain but who have been exposed to the types of concussive injuries prevalent in today’s form of urban warfare.”

Adding to the danger, not much is known about concussive brain injuries. According to Lux, one speculation is that the brain might also be injured simply by a blast wave itself, which may somehow penetrate invisibly and cause damage at deep levels within this organ that controls everything that makes us who we are. And in an environment like Iraq today, where exposure to multiple

blasts is common, it's likely that many soldiers could sustain more than one TBI. This is called "second impact syndrome." Lux says it's exceedingly rare in most populations, but it could be more common in Iraq.

In July, the Department of Defense (DoD) announced that it planned to screen all troops returning from Iraq and Afghanistan for post-traumatic stress disorder and combat-related health problems within three to six months of returning home. While Glasser believes this is a positive development, he said, "There's no one I've talked to that doesn't believe [military personnel] need to be screened for brain injury before they go home."

And given the proximity of so many warfighters to explosions in this war, he added, "I think they should be checked if they're near a roadside bomb."

Meshad, who has years of experience working with brain-injured veterans, cautions that "the first three years home are critical. A lot of [TBI symptoms] are not obvious." He says that families should keep an eye on veterans who exhibit major depression, drastic mood swings, seizures, dizziness, or a changed personality. While these things can result from other causes, they can also be signs of TBI.

Glasser concurs, explaining that TBI can have a "delayed onset, or changes in behavior can be dismissed as 'he's out of sorts.'"

## Inadequate Funds and Space for TBI Care

Just as the brain is mysterious, so is brain injury. It's long been misunderstood and misdiagnosed, even often undiagnosed. But in the 1990s, TBI began to receive more notice, both within the military and the general population. Better acute care of brain injury has allowed more victims to survive, and improved rehabilitation (physical, occupational, and speech/cognitive) means that many survivors can recover farther than they would have in the past. Despite those advances, however, much more is needed.

In 1992, after Desert Storm, the federal government created a national center to study TBI resulting from warfare as well as care for those so injured. Known today as the Defense and Veterans Brain Injury Center (DVBIC), it has only one mission: "to serve active-duty military, their dependents, and veterans with traumatic brain injury (TBI) through state-of-the-art medical care, innovative clinical research initiatives, and educational programs."

Funded through the Department of Defense, DVBIC is a collaboration of DoD, the Department of Veterans Affairs healthcare system (with six VA sites around the country, plus DVBIC headquarters located at Walter Reed), and one civilian partner, Virginia NeuroCare in Charlottesville, Va.

Today, these facilities are providing excellent medical care and rehabilitation services to brain-injured



Above: Capt. Greg Spencer, right, commander of Alpha Company 1-13 Armored Battalion, and Spc. Bladimir Joseph search through the wreckage of a previously exploded car bomb in northern Baghdad. Later, soldiers in their company would find an IED hidden inside a palm log. The use of IEDs by insurgents has been a major contributor to a higher percentage of TBIs in the Global War on Terror than in previous U.S. campaigns.

active-duty personnel and veterans of Iraq and Afghanistan. DVBIC is also conducting various studies of brain injury and its prevention and care; one involves investigating head injuries suffered by professional football players to see if there are any similarities to military injuries.

The need may be outstripping the available beds, however. For instance, the VA hospital in Palo Alto, Calif., part of the DVBIC system, has only 24 beds. Additionally, the VA medical system currently is unprepared and underfunded to provide the long-term – even lifetime – care and services that will be needed for many of these soldiers, especially given the severity of many other injuries from Iraq, like those that have left soldiers without one or more limbs.

According to Pascrell, the Congressional Brain Injury Task Force is working closely with the DVBIC to help provide increased funding and services. He adds that all the publicity about brain-injured warfighters in the popular press has been helping the cause.

In 1996, Congress authorized the Federal TBI Program with the Traumatic Brain Injury Act, which provided federal funding to conduct expanded studies and establish innovative TBI programs around the country. The Brain Injury Association of America called it "a foundation for coordinated and balanced public policy in prevention, education, research, and community-living for people living with a TBI and their families." It was reauthorized as part of the Children's Health Act of 2000. Tragically, funding was eliminated in the 2006 federal budget. Pascrell says a measure to

Right: Sgt. Christopher Turner, a medic with the 82nd Airborne Division's 307th Engineer Battalion, which is currently attached to Task Force Red Falcon in Eastern Afghanistan, checks a patient's IV bag while overseeing the battalion aid station during Operation Neptune in August 2005. Vastly improved medical care for military personnel has meant that many survive injuries that would formerly have killed them.

restore funds has passed the House but, at the time of this writing, the Senate had not yet voted on the measure. Lux is hopeful, saying, "Scuttlebutt has it that the TBI Act will be funded."

If funding for the TBI Act is not adequately restored, not only will civilian TBI survivors and their families suffer from lack of care, so will the military survivors no longer on active duty or those unable to access care at an appropriate VA facility. Even if they are fortunate enough to obtain coverage from a private carrier, it may not help. Many HMOs and medical insurance providers deny coverage for outpatient services so necessary for improved outcomes with TBI patients, such as cognitive therapy that helps improve mental function.

A new law will help a little: Under a new rider to Servicemembers' Group Life Insurance, severely injured warfighters who fought in Iraq and Afghanistan will receive payments of \$25,000 to \$100,000. This includes those with TBI. It will be retroactive to Oct. 7, 2001, the start of Operation Enduring Freedom in Afghanistan.

### TBI Is Society's Issue

As long as IEDs and other explosives continue to be used in Iraq (or in any war, for that matter), TBI will continue to be a problem in warfare, to one degree or another. New types of helmets in development and being tested — such as the Advanced Combat Helmet (ACH) and the special forces' Modular Integrated Communications Helmet (MICH) — might help prevent some of the brain damage from blast waves. Yet, as Shad Meshad said, "If an explosion takes out the side of a building and kills 83 people, any type of [armor] won't help."



U.S. ARMY PHOTO BY PFC. MIKE PRYOR, 82ND AIRBORNE DIVISION PUBLIC AFFAIRS

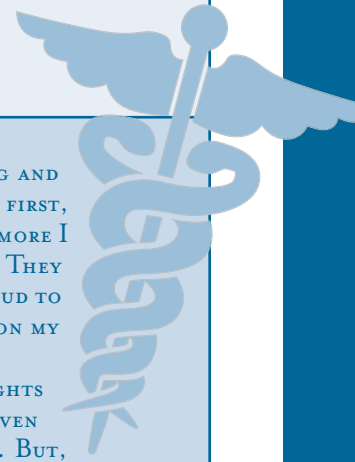
If there is anything at all positive in this situation, said Lux, it is that "this conflict will certainly give us a cohort of people to follow over a long period of time, for years or even decades," so that what is learned from them might possibly help future TBI survivors or aid in strategies to prevent or lessen brain injuries.

In any case, this is a situation that will not disappear. And it will affect not only the survivors, or their families, or the armed forces.

"Outside the military, this will become a societal issue," said Lux. "This will be a problem in the aftermath of this conflict. We will all have a responsibility to deal with it."

**Better acute care of brain injury has allowed more victims to survive, and improved rehabilitation (physical, occupational, and speech/cognitive) means that many survivors can recover further than they would have in the past. Despite those advances, however, much more is needed.**

# A Miraculous 99 Percent



NEWS OF TRAUMATIC BRAIN INJURIES (TBIs) AMONG TROOPS RETURNING FROM IRAQ IS DISTURBING TO BILL ROPER OF HILTON HEAD ISLAND, S.C., AND CULVER CITY, CALIF. HE KNOWS FIRSTHAND HOW DEVASTATING THOSE INJURIES CAN BE. WHILE A SPECIALIST 4TH CLASS IN VIETNAM, HE WAS RIDING IN A JEEP THAT FLIPPED NEAR LONG BINH DURING THE 1968 TET OFFENSIVE. HIS HEAD SLAMMED TO THE GROUND, AND HIS BRAIN IMMEDIATELY BEGAN TO SWELL. NEUROSURGEON FLOYD ROBINSON AT THE NEARBY 24TH EVAC HOSPITAL SAVED HIS LIFE BY DRILLING HOLES IN HIS SKULL TO RELIEVE THE INTERNAL PRESSURE. HOWEVER, ROPER WAS IN A DEEP COMA, AND THE SEVERE INJURY TO THE RIGHT SIDE OF HIS BRAIN PARALYZED THE LEFT SIDE OF HIS BODY. HE LINGERED BETWEEN UNCONSCIOUSNESS AND CONSCIOUSNESS FOR A PROLONGED TIME. HIS CONDITION WAS SO BLEAK, THE ARMY SENT HIS FAMILY A TELEGRAM SAYING HE WASN'T EXPECTED TO RECOVER. HE HAS NO MEMORY OF THE EVENTS FROM A PERIOD PRIOR TO THE ACCIDENT TO MANY WEEKS AFTERWARD; HE LATER LEARNED THE DETAILS FROM HIS MEDICAL RECORDS AND CONVERSATIONS WITH PEOPLE WHO HAD BEEN WITH HIM THEN.

EVENTUALLY, ROPER WAS TAKEN TO WALTER REED ARMY MEDICAL CENTER IN WASHINGTON, D.C., FOR REHABILITATION. THE DOCTORS THERE TOLD HIM THE SEVERITY OF HIS BRAIN DAMAGE MEANT HE WOULD FOREVER BE A PARAPLEGIC. FOR ROPER, THOUGH, THAT WAS NOT ACCEPTABLE. HAVING BEEN A GOOD ATHLETE BEFORE ENTERING THE MILITARY, HE WAS USED TO HARD PHYSICAL EXERCISE. AND HE'S ALWAYS BEEN DETERMINED. "I WASN'T GIFTED NATURALLY," HE SAID. "BUT I WORKED HARDER THAN THE OTHER GUYS. I HAD ALWAYS BEEN ABLE TO DO WHATEVER I WANTED TO DO."

SO WHEN HE BEGAN HIS REHAB, "I ALWAYS DID MORE THAN THE THERAPIST TOLD ME TO DO," HE RECALLED. "I KNEW I COULD BE NORMAL AGAIN IF I TRIED HARD ENOUGH.

I'D WALK AND FALL DOWN. I KEPT FALLING AND FALLING. BUT EVENTUALLY I WALKED. AT FIRST, I COULD ONLY SHUFFLE AROUND, BUT THE MORE I USED MY LEFT LEG, THE BETTER IT GOT. THEY OFFERED ME A WALKER, BUT I WAS TOO PROUD TO TAKE IT. I WALKED OUT OF THE HOSPITAL ON MY OWN."

ROPER ALSO BEGAN LIFTING WEIGHTS WHILE IN WALTER REED. "I COULDN'T EVEN HOLD ANYTHING AT FIRST," HE RECALLED. BUT, JUST AS HE TRAINED HIS LEFT LEG TO WORK AGAIN, HE DID THE SAME TO HIS LEFT HAND AND ARM.

AFTER HIS RELEASE FROM REHAB, HE CONTINUED TO LIFT WEIGHTS AND RUN, EVEN RUNNING MARATHONS. TODAY A SUCCESSFUL BUSINESSMAN, ROPER HAS ONLY A SLIGHT RESIDUAL WEAKNESS ON HIS LEFT SIDE, AND HE STILL EXERCISES REGULARLY TO HOLD THAT AT BAY. HE LIMPS WHEN TIRED, AND IT'S HARD TO CARRY A CUP OF COFFEE IN HIS LEFT HAND WITHOUT SPILLING IT. YET, HE CHARACTERIZES HIS RECOVERY AS "NOT 100 PERCENT, BUT 99. MIRACULOUS."

ROPER UNDERSTANDS THAT RECOVERY FROM TBI OFTEN DEPENDS ON THE TYPE AND SEVERITY OF THE INJURY; HE KNOWS HE WAS VERY FORTUNATE. YET HE BELIEVES THAT MOST PEOPLE CAN RECOVER FARTHER THAN THEY OR THEIR DOCTORS BELIEVE IS POSSIBLE — IF ONLY THEY WORK HARD ENOUGH AT IT.

"MY RECOVERY WAS ALL ABOUT THE POWER WITHIN MYSELF AND BEING ABLE TO TAP INTO IT," HE EXPLAINED. "EVERYBODY HAS THIS POWER. THE POWER OF ALL CREATION IS WITHIN EVERYONE. SO, IT'S NOT HOPELESS. YOU CAN BE WHAT YOU WANT TO BE AND OVERCOME YOUR INJURY, BUT YOU MUST BE WILLING TO DO WHAT YOU THINK YOU CAN. YOU MUST BE WILLING TO TAP INTO THAT POWER."

ROPER CAN BE REACHED AT [W2003ROPER@AOL.COM](mailto:W2003ROPER@AOL.COM).

— BY BARBARA STAHURA

## TBI Resources

- Defense and Veterans Brain Injury Center: [www.dvbic.org](http://www.dvbic.org)
- Military Severely Injured Joint Support Operations Center: 888-774-1361 — registered nurses and social workers can assist injured service members and their families

- National Institute of Neurological Disorders and Stroke: [www.ninds.nih.gov/disorders/tbi/tbi.htm](http://www.ninds.nih.gov/disorders/tbi/tbi.htm)
- National Veterans Foundation ([www.nvf.org](http://www.nvf.org)) hotline: 1-888-777-4443
- Brain Injury Association of America: [www.biausa.org](http://www.biausa.org)
- Congressional Brain Injury Task Force: [www.pascrell.house.gov/display2.cfm?id=1270&type=Bills%20Views](http://www.pascrell.house.gov/display2.cfm?id=1270&type=Bills%20Views)