

Blood tests could predict combat fitness

Program also may yield ways to help troops cope with stress

By Kelly Kennedy
STAFF WRITER

A syringe full of blood may answer a question plaguing military leaders since the dawn of war: Which soldiers are fit for combat?

Basic trainees at Fort Benning, Ga., donated blood so scientists can look for “markers” to try to predict whether soldiers are physically and mentally fit.

“We can get a snapshot of how much stress you have loaded up in you,” said Maj. Roger Bannon, project manager for the study. “If you have high levels of stress, you break down in physical or psychological ways.”

By looking for stress markers in the blood, such as hormones, immunity responses, or proteins released in response to stress, scientists say they can judge how stressed out soldiers are. And, if they catch those markers early, the scientists say they can prevent stress fractures, post-traumatic stress disorder, ulcers and even the common cold.

Or, they can catch soldiers who shouldn’t be in the Army in the first place.

“Stress is the central risk factor,” Bannon said. “Ultimately it’s going to save lives because we’ll be able to deploy a healthier force.”

To test that theory, scientists and doctors took blood and urine samples from 350 soldiers entering two basic training companies at Fort Benning in September. Doctors also measured troops’ body mass index, had them take the Harvard Step Test to check for

cardiovascular fitness and then asked them to fill out a questionnaire about events in their pasts that could have been stressful, such as child abuse, sexual assault or broken bones.

Then, as the soldiers make their way through basic training and advanced individual training, the scientists will be right there beside them to watch how they manage stress and to give the soldiers the battery of tests again at the end of the 12-week cycle.

They’re also there to see who washes out.

After the scientists have gathered all of the data, Bannon said they’ll “crunch the numbers” to see if there are correlations between the test results and the success of each soldier.

In the spring, the researchers will start the same process with female trainees at Fort Jackson, S.C. — the soldiers at Fort Benning are all men.

Next fall, the scientists will start the next phase of the study: One brand-new flock of basic trainees will go through the battery of tests and then continue with training as normal. That’s the control group. At the same time, a second group of soldiers will go through the same tests, but then scientists will change their training to try to address potential problems defined by the tests.

For example, if a soldier has an immunity response — or is producing enzymes in response to bacteria, toxin or viruses — he might be held away from other sol-



RICK KOZAK/STAFF

Blood and urine samples were taken from 350 soldiers in basic training at Fort Benning, Ga., in an effort to predict if soldiers are physically and mentally fit by looking for stress markers.

diers for a week because he’s more susceptible to colds and flus. Or, if soldiers show signs of fatigue, Bannon said, the scientists might load them up with zinc and magnesium tablets.

And everyone in the second group will learn stress coping skills.

Bannon compared fixing the stress fractures, ulcers and mental breakdowns to dealing with a disease.

Identifying the ‘virus’

“It’s like AIDS,” Bannon said. “You have to identify the virus, and then you come up with the vaccine.”

But no one knew there was a “virus” until Col. Robert Gonzalez arrived at Fort Benning in 2005 after spending more than a year in Afghanistan with the 25th Infantry Division.

“I realized something was going wrong,” he said. “If soldiers can’t make it through basic training without injuries or fatigue, how are they going to make it through combat?”

He said 30 percent of soldiers returning from duty in Iraq and Afghanistan are returning with symptoms of PTSD — and that’s with the best food, lodging and exercise facilities available. And that 30 percent doesn’t include those sent home because of stress fractures, heart attacks or illness — all stress-related problems, he said.

Then he read an article showing that the Centers for Disease Control and Prevention had isolated a

marker — the protein complement C4A — in the blood of Desert Storm veterans experiencing PTSD.

“That is the most important marker,” he said. “It shows when someone is actually undergoing physical exertion.”

He also learned another fact: Humans stow away C4A in the blood, and scientists can see how much stress a person has had throughout his life.

“It’s all stored in our brains and expressed through our bodies as we go through life,” Bannon said.

Within a year of his arrival, Gonzalez had the Army, CDC, Emory University, Augusta State University and Walter Reed Army Institute of Research onboard for the study — along with 350 soldiers who volunteered for the study.

“It blew me away — 99 percent of the soldiers we asked volunteered. It’s the Millennium Generation,” Gonzalez said. “They are not embarrassed about talking about who they are.”

The researchers have already had some inadvertent successes. One soldier arrived with a skin graft over 40 percent of his body after a bad burn.

“He made it through his first medical exam, but there’s no way he could make it through Iraq without overheating,” Gonzalez said. The medical screening “we have at [Military Entrance Processing Stations] might not suffice.”

And while taking the questionnaire three weeks ago, three sol-

diers broke down emotionally when confronted with questions about experiences they’d had. “These three kids couldn’t even handle the test,” Bannon said. “How can you go into combat if you can’t do an entry exam?”

Two of the soldiers were re-processed to help with coping skills, and the third was let go for a pre-existing mental disorder.

In the first three weeks of training, three more soldiers dropped out.

“This morning we had a guy say, ‘I want to quit. I can’t take it,’” Bannon said. “He has poor coping skills. He should never be here in the first place.”

Another soldier “blew up and threw his mattress into a light fixture,” Bannon said. “He just lost it. What we’re saying is, maybe we can predict that kind of behavior and help him with coping mechanisms.”

The idea isn’t to keep people who have dealt with a lot of stress out of the Army. The point is to find out which soldiers handle that stress well and why, and which soldiers handle it poorly and what they need to handle it better. And the questionnaire will help commanders understand their troops and prepare them for combat stress.

“They need to understand what today’s recruit is like — from their extracurricular activities to their childhood traumas,” Bannon said. “If you can understand who your population is, then you can serve them better.” □

Study: PTSD, depression can take months to surface

By Gayle S. Putrich
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A new study has put hard data behind a somewhat intuitive notion — troops returning from war with severe injuries are more likely to develop post-traumatic stress disorder or depression.

The first-of-its-kind report, published in the October issue of the American Psychiatric Journal shows that for the severely injured, it takes time for mental wounds to surface, and when they

do, they can be a surprise.

Eighty percent of troops diagnosed with PTSD or depression seven months after their injury, for example, had shown no signs of mental stress a month after their injury.

The study also found that although 4 percent of those surveyed demonstrated signs of PTSD or depression after they had been home for one month, the number jumped to 12 percent at four months.

The 613 soldiers studied were among those most seriously injured in combat in Iraq and Afghanistan between March 2003 and September 2004 and evacuated to Walter Reed Army Medical Center in Washington. It is the first study to directly link the course of post-trauma depression and PTSD to serious injuries, according to the American Psychiatric Association.

Although some of the results may not come as a surprise, “what

we really don’t know yet is what changed with these individuals over three months or seven months,” said Dr. Thomas Grieger, who headed the study.

If troops with severe injuries are more likely to develop PTSD or depression as time passes, the need for long-term, follow-up mental health care becomes crucial.

“Early screening is not going to identify a large portion ... of those who end up with PTSD or depres-

sion,” Grieger said.

For primary care doctors, it’s important to recognize [that troops] reporting high levels of pain or physical problems “should be screened and considered for mental health referral,” he said.

Grieger said that he and others at the Uniformed Services University of the Health Sciences are examining several options for long-term, follow-up studies. One issue that needs to be worked out is a collaborative framework with the Department of Veterans Affairs to track the care individuals receive after they leave service. □