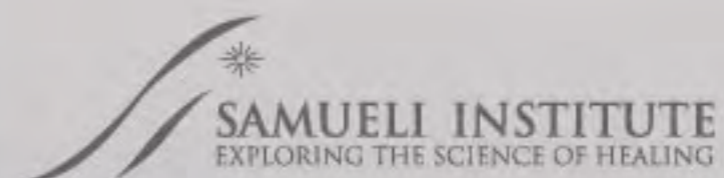


Please visit www.SamueliInstitute.org/MilitaryResearch to see an online version of this report including videos, interactive content and additional information.



TRANSLATING EVIDENCE INTO ACTION FOR THE UNITED STATES MILITARY



TRAILBLAZING RESEARCH PROGRAM AIMED AT MILITARY AND VETERANS NEEDS

By collaborating with the military, Samueli Institute helped shape the thinking and approaches that have been incorporated in military training and into the expansion of therapeutic tools to help improve performance, deal with pain, and cope with the trauma and stress of war.

The research programs behind these advances include MILVET, MILCAM and VET-HEAL. They were charged with researching the potential benefits of complementary and alternative medicine, or CAM (also referred to as integrative medicine), to augment the care service members and veterans receive.

These programs encompassed the first structured research program created to understand the nature, value and validity of complementary and integrative approaches to health and healing, with special emphasis on military and veterans needs.

By conducting high-quality research, Samueli Institute established what works to help leaders make sound, evidence-based decisions—allowing the military both to respond to the changing needs of mission, tactics and technology, and to help service members and veterans recover from more than a decade of war.



Cutting-Edge Research

Samueli Institute research improves human performance

[WATCH VIDEO ▶](#)

THE SOLUTION IS AT HAND

Time and time again our research and consulting work with the military and Veterans Health Administration has shown that evidence points not toward a new program, but to a coordinated approach that focuses on the service member as a whole person whose performance is enhanced when peers, leaders and support services come together as a unified system.

By improving trust in leadership, resilience and performance from a whole-systems view beginning with recruitment and ending with retirement or separation, the military is investing in mission readiness. Samueli Institute's research revealed the value of particular stress reducing, resilience building, and restorative practices without prejudice of the vendor of proprietary programs or training plans.

The modalities are supported by evidence and are widely available at a low cost, can be self-initiated and woven into existing military curricula and essential programs. Samueli Institute's systematic, multi-method approach to research on healing enhances performance and provides safer and more effective treatments for pain, chronic disease and stress conditions.



"Integrative medicine has proven utility in maintaining and restoring health—our physicians, nurses and others need to be aware of their potential."

Lt. General (retired) Eric Schoomaker, MD, PhD

RESEARCHERS EMBEDDED FROM SEA TO SHINING SEA

From studying low back pain in an Army medical center in Washington State—to evaluating resilience programs at Fort Hood, Texas—to testing Yoga Nidra for Post-Traumatic Stress at Walter Reed in Washington, DC, Samueli Institute joined forces with military stakeholders across the country to provide accurate and relevant information on the rationale, feasibility, effectiveness and benefits of integrative health care.

We identify, describe and evaluate complementary and integrative health care practices and assess how they work in real-life settings, including military medical centers, veterans medical centers, and military and civilian environments.

★ Interactive Map

Click on a location to see current and past research projects.

We are privileged to work with our military and veteran partners to conduct research and program evaluations on pain, stress and human performance in the following Department of Defense locations:



MANAGING ACUTE AND CHRONIC PAIN

Whether brought on by a sudden injury like the blast of an improvised explosive device or built over time from the heavy equipment service members carry, acute and chronic pain can be disabling and a major cause of lost work productivity, increased medical costs and decreased quality of life.

PAIN COMES TO THE FOREFRONT OF CARE

Thanks to improved body armor and battlefield medicine, modern military medicine is unparalleled in its ability to save warriors on the battlefield. However, this has resulted in new challenges: managing the sheer volume of patient's pain without overmedication, minimizing treatment side effects when dealing with **complicated injuries like Traumatic Brain Injuries and Post-Traumatic Stress**, and relieving the pain of medically unstable patients during transport.

Through our research and by serving as medical experts and thought leaders, our main accomplishments in combatting pain are in the areas of acupuncture, chiropractic care and integrative pain management care.



PAIN TAKES ITS TOLL

More than
25,000

service members have suffered a traumatic brain injury since 2000
Defense Medical Surveillance System, 2013.

Low back pain

accounts for 85 billion dollars of direct health care costs annually
The Spine Journal, 2012.

13%

The percentage of service members who left their units with back pain as their primary diagnosis and eventually returned to duty in the field
Lancet, 2010.



QUICK LINKS:

- Acupuncture
- Chiropractic Care



VIEW TIMELINE

See a selection of related research projects.

EVIDENCE POINTS TO ACUPUNCTURE

Much has been reported in mainstream media and by the Department of Defense (DoD) about overmedication of service members with pain. Approaches that may achieve greater pain relief with fewer medications are more appealing than ever.

Samueli Institute has worked with DoD clinicians, researchers and leaders to study the feasibility and impact of introducing acupuncture into pain treatment in primary care, specialty pain programs, and even in preparation of wounded and ill members for airvac from Germany.

A recent look at the literature analyzing the value of acupuncture showed where acupuncture has been found effective and which areas required more research. [View results.](#)

BATTLEFIELD ACUPUNCTURE

Although traditional acupuncture is based on more than 2,000 points along 20 pathways in the body called meridians; Battlefield Acupuncture simplifies the treatment by focusing on five easy-access points within the ear to provide pain relief.

One promising solution is acupuncture, which combats pain while avoiding narcotic side effects such as depression, fatigue, drug misuse and isolation.

After two promising pilot studies, the United States Air Force and Samueli Institute developed the first known training program to teach military primary care physicians this simple procedure. The 2008 training program brought Battlefield Acupuncture into primary care, where it can be used as a first-line treatment to quickly and conveniently deliver relief to patients presenting with acute and chronic pain.

We are now studying how Battlefield Acupuncture compares with full-body acupuncture and conventional treatment for headaches due to a traumatic brain injury.



EMPLOYING SMART STRATEGIES NATIONWIDE

Additionally, we are working with all three services on a program to evaluate Battlefield Acupuncture training; make the practice more widely available; assess the short- and long-term impacts on pain management; and measure the cost of treatment.



Acupuncture

A drugless approach to pain management

[WATCH VIDEO ▶](#)



EASING THE BURDEN OF LOW BACK PAIN

With low back pain decreasing the quality of life for so many service members, Samueli Institute partnered with RAND Corp. to learn what works and to put good practices into use.

The research team set out to answer key questions vital in determining the true impact of chiropractic services.

IS IT EFFECTIVE?

2013 Study Demonstrates Significant Improvement in Low Back Pain for Active Duty Military Patients Receiving Chiropractic Care

Evaluating claims in health care requires a streamlined, systematic and valid process for assessing the safety and effectiveness of these claims.

This pragmatic, patient-centered, two-arm randomized controlled trial pilot study was conducted from 2008 to 2009 at William Beaumont Army Medical Center, Fort Bliss, El Paso, Texas.

The study found that patients with acute low back pain receiving a combination of chiropractic manipulative therapy and standard medical care experienced a statistically and clinically significant reduction in their back pain and

"It is critical that we explore drugless approaches to reduce pain. Chiropractic manipulation is an important option to consider for musculoskeletal disorders, which are the most prevalent pain complaints in the military."

Wayne B. Jonas
MD President and CEO
Samueli Institute

improved physical functioning when compared to those receiving standard medical care alone.



RESULTS



73% of participants in the standard medical care plus chiropractic manipulative therapy group rated their "global improvement as pain completely gone, much better or moderately better," compared to 17 percent in the standard medical care group.

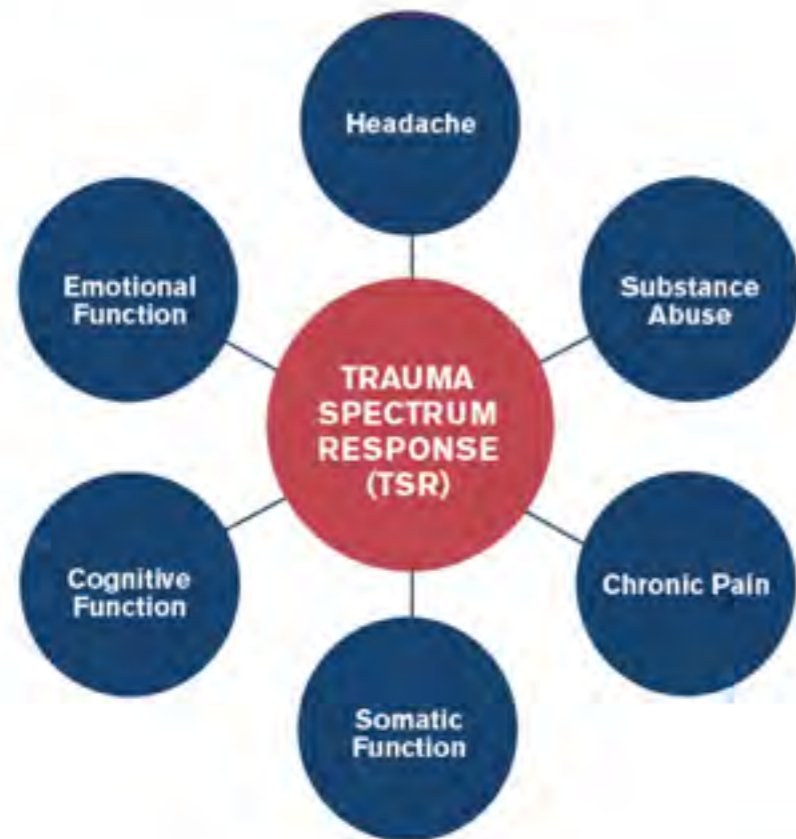
EVALUATE, LEARN, IMPLEMENT

To help the Department of Veterans Affairs (VA) maximize the quality of their chiropractic services, Samueli Institute completed an observational comparative case study to support improvements in the expansion of chiropractic care and the introduction of other new services.

Key lessons learned will allow the VA to deploy their resources efficiently to support improvements in the expansion of chiropractic care.

PREVENTING AND TREATING TRAUMA AND STRESS DISORDERS

The past decade of multiple deployments and prolonged exposure to chronic stress has triggered the onset, development, or progression of many disease processes including depression, anxiety, chronic pain, drug and alcohol abuse, and/or dysfunctions in sleep, appetite and energy. We call these co-occurring symptoms the **Trauma Spectrum Response**.



MILITARY FAMILIES ARE FEELING THE STRESS



More than **300,000** service members suffer from PTSD or severe depression *RAND 2008*



Nearly each day of FY2012, one service member committed suicide for a total of **350 deaths**, which exceeds the figure of active duty personnel who died from combat. Through April of FY2013, the numbers increased to nearly one suicide every 18 hours.



7 in 10 deaths are from preventable chronic diseases *Health Affairs, Nolte and McKee, 2008*

UNTRIGGER THE STRESS RESPONSE

By activating the parasympathetic nervous system, mind-body approaches like meditation, yoga and guided imagery, can teach the body to turn off the stress response.

These treatments are an alternative for those who refuse, delay, or feel stigmatized by conventional mental health treatments.

Samueli Institute's work in this area has centered around evaluating cost-effective mind-body approaches

and skills training, and on the diagnosis and assessment of stress-related disorders.



VIEW TIMELINE

See a selection of related research projects.

QUICK LINKS:

- Healing Touch & PTSD
- Evaluation of Stress and Anger Management Programs

ENGAGING THE NATURAL ABILITY TO HEAL

After an injury the human body has a remarkable capacity to self-heal, progressing from hurt to healed with time. But prolonged recovery time can be a drain on a patient's resources, including their emotional and spiritual resilience.

Engaging the patient in the process can optimize their body's healing capacity.

Samueli Institute researchers work collaboratively with military experts to develop and evaluate techniques that stimulate natural healing. These self-care tools empower injured service members and make them an active participant in their recovery.

LEVERAGING TECHNOLOGY TO RECOVER BETTER AT HOME

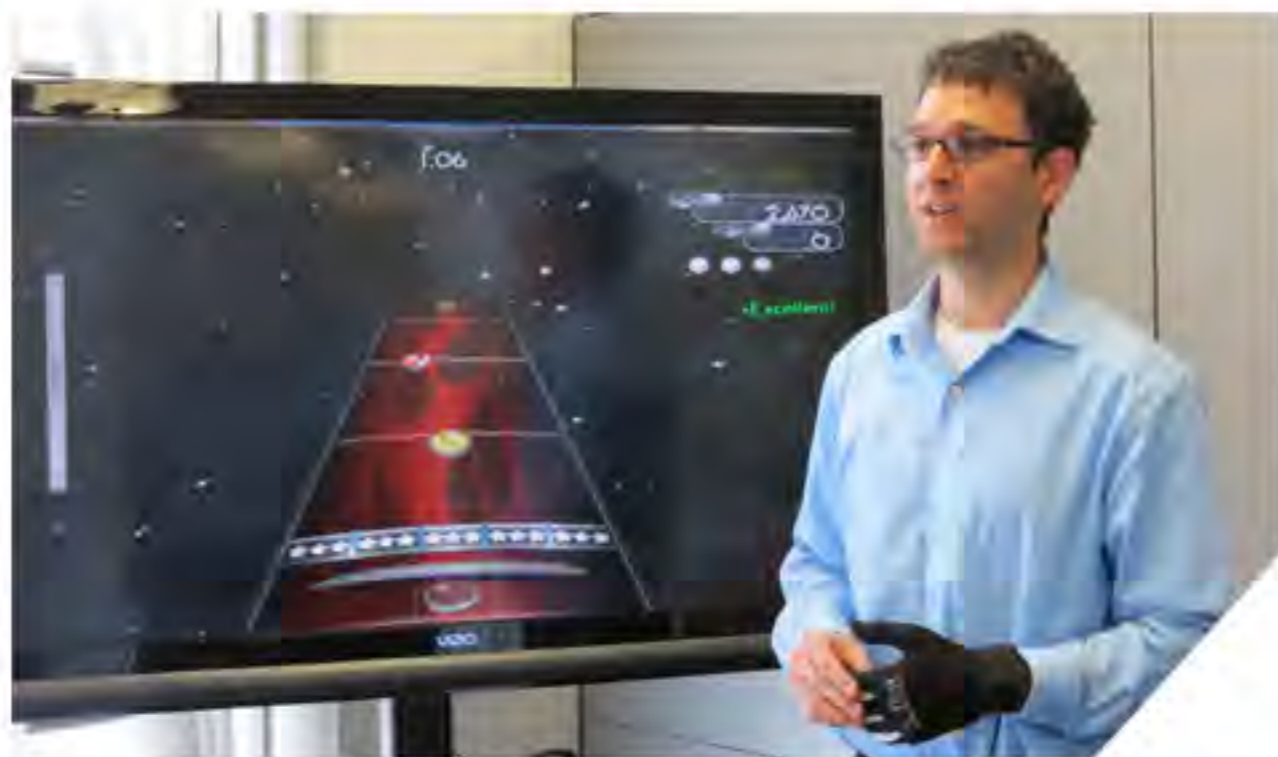
Samueli Institute experts and University of California Irvine engineers are developing "smart home" tools specifically designed to help active-duty service members with traumatic brain injuries and other war-related trauma heal at home.



Smart Home Tools

Empowering warfighters to take charge of their health

[WATCH VIDEO ▶](#)



"The tools are not only designed to enhance balance and dexterity, they also add an element of fun."

William Beckner
Senior Director
Samueli Institute

In 2005, Samueli Institute supported a pilot study at Walter Reed Army Medical Center that showed a meditative technique based on the ancient practice of Yoga Nidra showed promise for reducing physical and emotional tension and encouraging deep relaxation in service members with post-traumatic stress. It led to the immediate and continued use of Yoga Nidra for wounded warriors at Walter Reed.

GUIDED IMAGERY RELAXES POST-TRAUMATIC STRESS SYMPTOMS

A 2012 study published in *Military Medicine* by Samueli Institute and Scripps Center for Integrative Medicine found that Marines with post-traumatic stress symptoms reported improved quality of life when provided Healing Touch combined with guided imagery.

Healing Touch, a practitioner-based treatment aimed at eliciting the healing response, combined with guided imagery, a self-care therapy aimed at eliciting relaxation and enhancing trust and self-esteem, produced a significant improvement for participants in a randomized controlled study. Participants reported reduced cynicism and depression after three weeks of treatment.

MEDITATION TECHNIQUE SHOWS PROMISE FOR POST-TRAUMATIC STRESS

Injury and trauma exposure can induce a constellation of symptoms that include depression, anxiety, anger, pain, and drug desensitization. Samueli Institute's research indicates that yoga and other mind-body techniques can be effective tools in managing the symptoms of post-traumatic stress.

By providing this research to the military, leaders can quickly and responsibly deploy proven care practices to those who need it.



Military bases across the country have integrated stress and resilience programs into their training and medical response. Samuelli Institute works as a non-partisan evaluator to improve the effectiveness of these programs and to ensure that service members have access to the highest quality, research-backed programs.

EVALUATING TRAINING PROGRAMS NATIONWIDE

Can a training decrease stress?

Samuelli Institute's evaluation of the WAROPS® (Warrior Optimization Systems) Training Program found preliminary evidence of health-related

benefits in the group of soldiers who participated in the training and regularly used the skills, as evidenced by greater self-reported resilience, fewer post-traumatic stress symptoms, better post-deployment reintegration, and better general health and well-being.

DOES RESET FACILITATE RECOVERY?

The Warrior Combat Stress Reset Program (Reset) combines multiple treatment interventions from behavioral health, mind/body treatments, and Complementary and Alternative Medicine (CAM) modalities to treat combat stress and post-traumatic stress symptoms.

Our program evaluation at Fort Hood found that the program's focus on reducing core symptoms of combat and post-traumatic stress (hyper-arousal and reactivity) allowed other treatments to be more effective and provided tools for preventing future trauma.

Samuelli Institute has increased the program's capacity for evaluation by building a database repository, entering retrospective data, creating report capability and developing a follow-up system to allow for sustainability tracking.

DO SKILLS BUILD RESILIENCE?

In 2012 Samuelli Institute research staff began evaluating a unique stress and anger management workshop for active-duty Marines and Sailors at Marine Corps Base Camp Lejeune. The workshop combines an educational approach with skills-building and integrative components.

After completion of the first phase of the project, the program staff implemented the majority of Samuelli Institute's recommendations, including suggestions to modify content, exercises, video clips and delivery. They also shared the researchers' report of the program's favorable findings with key military leadership.

The second phase will add to the project by increasing the sample size and adding follow-up measures of anxiety and anger in order to determine if skill use continues and whether decreases in anxiety and anger persist.

Samuelli Institute's 2013 systematic review evaluated the potential impact of stress-reduction programs and assessed the feasibility of implementing those programs within a military environment.

IMPROVING HUMAN PERFORMANCE

At the heart of a strong military and the success of our nation's defense is the resilience of its individuals and groups.

The service member is the most valuable asset the military has for accomplishing its mission of defending the country. Human health and performance optimization/ enhancement (HPO/E) is the cornerstone of an effective and efficient military. Extensive resources are expended on assuring that equipment and materials are state of the art and in good repair; however, resources invested in determining how to maintain and improve human performance and health are more limited. A number of Department of Defense directives have addressed the need for a focused and coordinated HPO/E effort.

Samueli Institute's 2012 needs assessment showed that resilience competency and resilience-building efforts for soldiers and families must be the responsibility of every leader, and fully integrated into all aspects of military and family life throughout all military professional and deployment lifecycles.



Therefore, we are studying different aspects of resilience including models of improving human performance and reintegration into post-deployment life; exploring how nutrition plays a role in brain function and performance; evaluating how resiliency training programs help warfighters' performance under stress; and training the next generation of military medical professionals to cope with the stress of their jobs and the needs of their patients.

CREATING A MODEL OF EXCELLENCE

Samueli Institute has been involved in developing models and metrics for optimizing warfighter performance through the Chairman of the Joint Chiefs of Staff's Total Force Fitness initiative. This framework includes eight domains of function that must be addressed in order to ensure flourishing and well-being.

Our next challenge is spearheading an effort to build a mathematical model that describes and predicts optimal reintegration of military members back into civilian communities and family life. This research is an important component of helping military and civilian communities grow and thrive even as they adapt to stress, trauma and disruptive social change.

QUICK LINKS:

- Total Force Fitness
- Integrative Training



VIEW TIMELINE

See a selection of related research projects.

TOTAL FORCE FITNESS

In 2009 Chairman of the Joint Chiefs of Staff Admiral Michael Mullen tasked Samuelli Institute and the Department of Defense to develop a new framework to help the military respond to the continued deployment cycle.

Called Total Force Fitness, this framework maps out an integrated, holistic approach to performance, readiness, health and well-being that incorporates all domains of military life.

A special supplement to *Military Medicine* with the complete report was published in 2010.

"Keep your minds open to creative new concepts and possibilities. Critically evaluate the role of complementary and alternative medicine."

Admiral Michael Mullen
Total Force Fitness (2010)



ADVANCING THE FIELD: MODELING OPTIMAL REINTEGRATION

Today Samuelli Institute is leading a new research effort to improve performance and resilience, by working on a new mathematical model to describe and predict optimal reintegration of military members back into civilian communities and family life.

This new resilience model, informed by military and civilian experts, will complement the work of Total Force Fitness and is an important component in Samuelli Institute's research into resilience to help military and civilian communities grow and thrive even as they adapt to stress, trauma and disruptive social change.

"Health care providers need to know self-skills in lifestyle and health promotion if we want a system to provide more health and not just more medical treatment."

Wayne B. Jonas, MD
President and CEO
Samueli Institute

TRAINING THE NEXT GENERATION OF MILITARY MEDICAL PROFESSIONALS

Samueli Institute partnered with the Uniformed Services University of the Health Sciences (USU) in Bethesda, Maryland, to train military doctors and other health care providers in research-based integrative practices that can help thousands of returning warfighters.

Over the past two years hundreds of nursing and medical students have participated in the educational and experiential sessions on acupuncture, human performance optimization—sleep, physical fitness and nutrition—and mind-body-medicine including yoga, guided imagery, meditation and hypnosis.



SPOTLIGHT ON HEALING AT FORT BELVOIR COMMUNITY HOSPITAL

In 2013 Samueli Institute and Fort Belvoir Community Hospital (FBCH) collaborated to host a two-day symposium focused on community and organizational health and well-being. Utilizing a whole-systems health framework, the conference was designed to help leaders and change agents appreciate the relationship between self-care and care for others in building resilience in mind, body and spirit. More than 120 leaders and caregivers from across FBCH staff took

part in the event, which included instruction and hands-on demonstrations in healthy eating, mindfulness meditation, wellness, organizational leadership, and developing healing relationships.



Whole Systems— Whole People

Health and well-being
at Fort Belvoir

[WATCH VIDEO ▶](#)

CHARGING AHEAD

MEETING THE DEMANDS OF RETURNING WARFIGHTERS

A peer-reviewed study by Samueli Institute and Palmer Chiropractic published in January 2013 showed that active-duty military members are significantly more likely to use integrative medicine than their civilian counterparts.

Almost 45 percent of active duty military reported using 13 different modalities, including acupuncture, chiropractic, massage therapy, herbal medicine, energy healing, relaxation techniques and spiritual healing.

These numbers show that service members and their families are already embracing integrative medicine. They want and need more resources, information and access to be empowered for self-care.

Samueli Institute's work with military and veteran partners ensures that only highly researched modalities be provided in a scientifically proven manner.

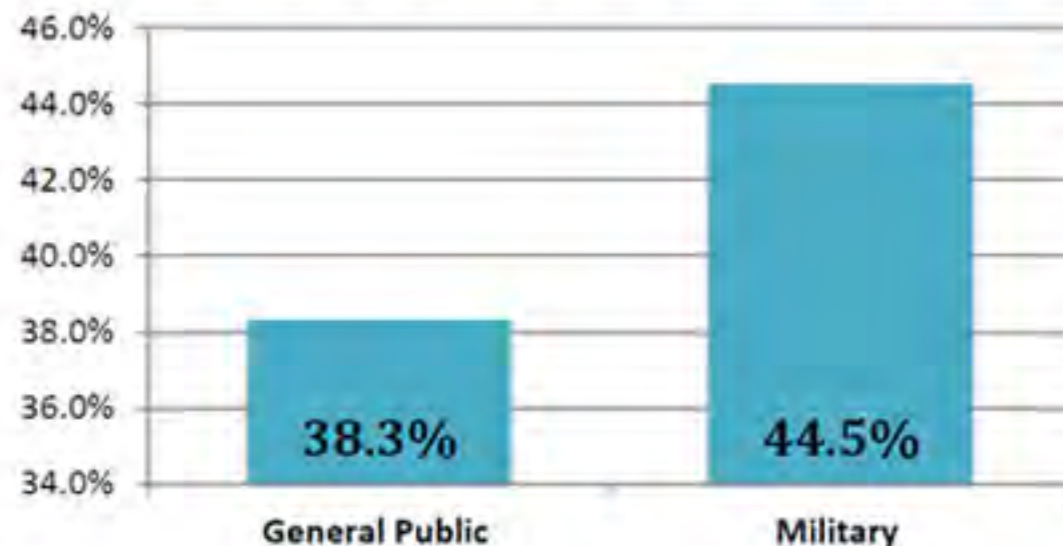
This work is supported by the US Army Medical Research and Materiel Command under Award Numbers:

W81XWH-08-2-0212; W81XWH-11-2-0173; W81XWH-08-1-0408;
W81XWH-11-1-0759; W81XWH-10-1-0820; W81XWH-07-2-0076;
W81XWH-06-1-0279; W81XWH-06-2-0009; W81XWH-10-1-1011;
W81XWH-10-2-0184; W81XWH-08-1-0615; W81XWH-10-1-0938
W81XWH-11-1-0538

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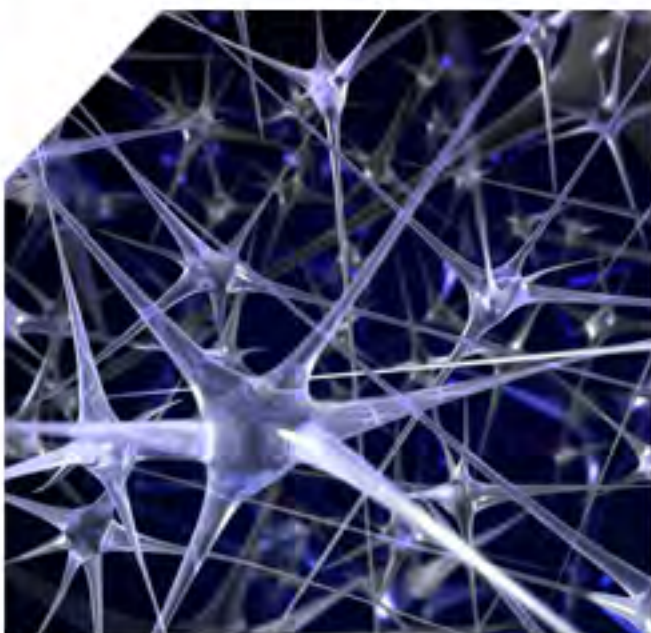
In the conduct of research where humans are the subjects, the investigator(s) adhered to the policies regarding the protection of human subjects as prescribed by Code of Federal Regulations (CFR) Title 45, Volume 1, Part 46; Title 32, Chapter 1, Part 219; and Title 21, Chapter 1, Part 50 (Protection of Human Subjects).

INTEGRATIVE MEDICINE USE IN THE UNITED STATES



SAMUELI INSTITUTE: EXPLORING THE SCIENCE OF HEALING

Founded in 2001 by Henry and Susan Samuelli, Samuelli Institute is a research and development organization focused on leveraging scientific exploration to create a flourishing society. Samuelli Institute is a world leader in whole-person, whole-system healing. Composed of a team of experts in allopathic, complementary and integrative medicine, as well thought leaders in hospital administration and health care systems management, Samuelli Institute is uniquely capable of evaluating healing claims, identifying gaps in care, and providing proactive strategies to improve outcomes.



WAYNE B. JONAS, MD SAMUELI INSTITUTE PRESIDENT & CEO

- Retired U.S. Army Lt. Colonel
- Director, WHO Traditional Medicine Center (1997-1999)
- Director, Medical Research Fellowship, Walter Reed Army Medical Center (1992-1995)
- Professor of Family Medicine, Georgetown University
- Professor of Family Medicine, Uniformed Services University of the Health Sciences



The Science of Healing

How building the evidence base for integrative medicine can create a flourishing society

[WATCH VIDEO ▶](#)

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