May 2018

NSSC This Month

U.S. Army Garrison Natick Public Affairs Office



Best Served Cold

Also inside:

* Honoring Greatness
* Reducing Stress
* WarGames
* Picking Up Steam

Natick's Pocket Ration Guides Arm the Warfighter with Knowledge

Installation Management Command
Maj. Gen. Keith L. Ware Awards
First Place, 2017, PDF Publication

Publisher's Note

John Harlow
USAG Natick Public Affairs

A Month of Recognition



It's hard to believe that May has come and gone and I am crossing my fingers that it will be our first month in 2018 with no snow.

NSSC had the honor of hosting ten Veterans from the Natick community to eat lunch with our Soldiers to celebrate Armed Forces Day. Our Soldiers learned from the Veterans who came before them and the Veterans learned about the training our Soldiers go through now.

The USARIEM Color Guard did a great job representing NSSC and the Army as they presented the Colors with units from the Marines, Air Force, Navy and Coast Guard at Fenway Park. Every time I see the Soldiers, Sailors, Airmen, Marines and Coast Guardsmen on the field and the giant American flag on the Green Monster, it brings a chill of pride up my back.

Last weekend, we honored those who paid the ultimate sacrifice in service to our Nation. On May 24, Brig. Gen. Malone, Lt. Col. Martin and Command Sgt. Maj. Pintagro were at Boston Common, where more than 37,000 flags were planted to represent every brave Massachusetts Servicemember who gave their life defending our Nation since the Revolutionary War. It was an amazing sight.

On Memorial Day, our leaders went out and represented NSSC and the Army in ceremonies in Natick, Wayland and Watertown. Please take a moment and remember those who paid the ultimate sacrifice and the families who lost a loved one.

Even though Memorial Day is past us, keep our young men and women serving in harm's way in your thoughts and prayers.

Thanks for reading,

John Harlow

Chief of Public Affairs/Legislative Liaison

USAG Natick

NSSC This Month

NSSC
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Garrison Commander
Lt. Col. Bryan M. Martin

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About this newsletter
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U.S. Army photo by K. Houston Waters

Never Forget | Memorial Day

A week of special events

By Vannessa L. Josey, USAG Natick Public Affairs/Natick, Mass. (May 30, 2018)



Decoration Day started 150 years ago to honor the Civil War dead by decorating the graves with flowers. The holiday transformed to Memorial Day to remember those who paid the ultimate sacrifice while wearing our Nation's uniform.

Leadership from the Natick Soldiers Systems Center represented those serving today at Memorial Day ceremonies in Watertown, Natick and Wayland, Massachusetts.

Brig. Gen. Vincent F. Malone, senior commander of the Natick Soldier Systems Center, spoke during the community Memorial Day ceremony in Watertown.

He talked about the history of the old Watertown Arsenal and the role it had in supporting Soldiers before turning to the solumn tribute of those who were lost.

"Young men and women from Watertown have raised their right hand and swore to protect and defend the Constitution of the United States since the birth of our Nation," said Malone. "Memorial Day gives us the opportunity to stop and think about those brave Americans who made the ultimate sacrifice in defense of our Great Nation, and pay a well-deserved tribute to those who ensured for us the freedoms we now enjoy.

"As we mark a century since the end of the war to end all wars, we are reminded of the true cost," the general continued. "That's why this day is so important to all Americans. Memorial Day gives us the opportunity to stop and think about those brave Americans who made the ultimate sacrifice in defense of our great nation, and pay a well-deserved tribute to those who ensured for us the freedoms that we now enjoy."

"Memorial Day gives us the opportunity to stop and think about those brave Americans who made the ultimate sacrifice in defense of our great nation, and pay a well-deserved tribute to those who ensured for us the freedoms that we now enjoy."

Brig. Gen. Vincent F. Malone



U.S. Army photo by K. Houston Waters

Malone also participated in the Honoring and Remembering our Massachusetts Military Heroes ceremony on the Boston Common.

At the Natick Memorial Day Ceremony, USAG Natick Garrison Commander, Lt. Col. Bryan Martin spoke of how the Town of Natick is woven into the history of our Nation.

He spoke of Crispus Attucs who lived in servitude on the Natick-Framingham line before becoming a Sailor and was the first to die in the Boston Massacre on March 5, 1770.

"Natick is a town where the cost of our liberty is not forgotten," Martin said. "Since that initial watering of blood, Natick men and women offered their lives in service to our country in all our nation's conflicts."

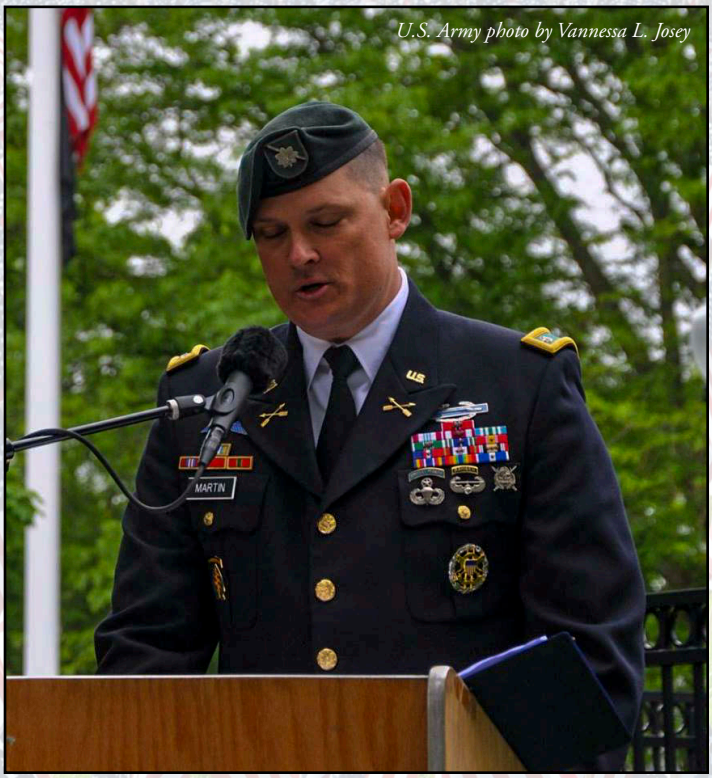
In our Nation's history, 170 from the Town of Natick gave the ultimate sacrifice in service to our Nation.

Command Sgt. Major Michael Pintagro, the garrison senior enlisted leader, spoke at the Wayland Memorial Day ceremony, Monday.

"Men and women from Wayland, Massachusetts, New England and throughout the United States continue to serve their nation diligently, sometimes courageously and occasionally heroically in ongoing anti-terror missions," Pintagro said.

Waterloo, New York may have been the birthplace of a time honored tradition. However, the local area shows that honoring and remembering those who came before, served and gave the ultimate sacrifice will never be forgotten. And will always continue to strengthen those within the borders.

The general and command Sgt. Maj. also participated in the Honoring and Remembering our Massachusetts Military Heroes ceremony on the Boston Common by reading names of the fallen from the



U.S. Army photo by Vannessa L. Josey

Commonwealth during operations in Iraq and Afghanistan.

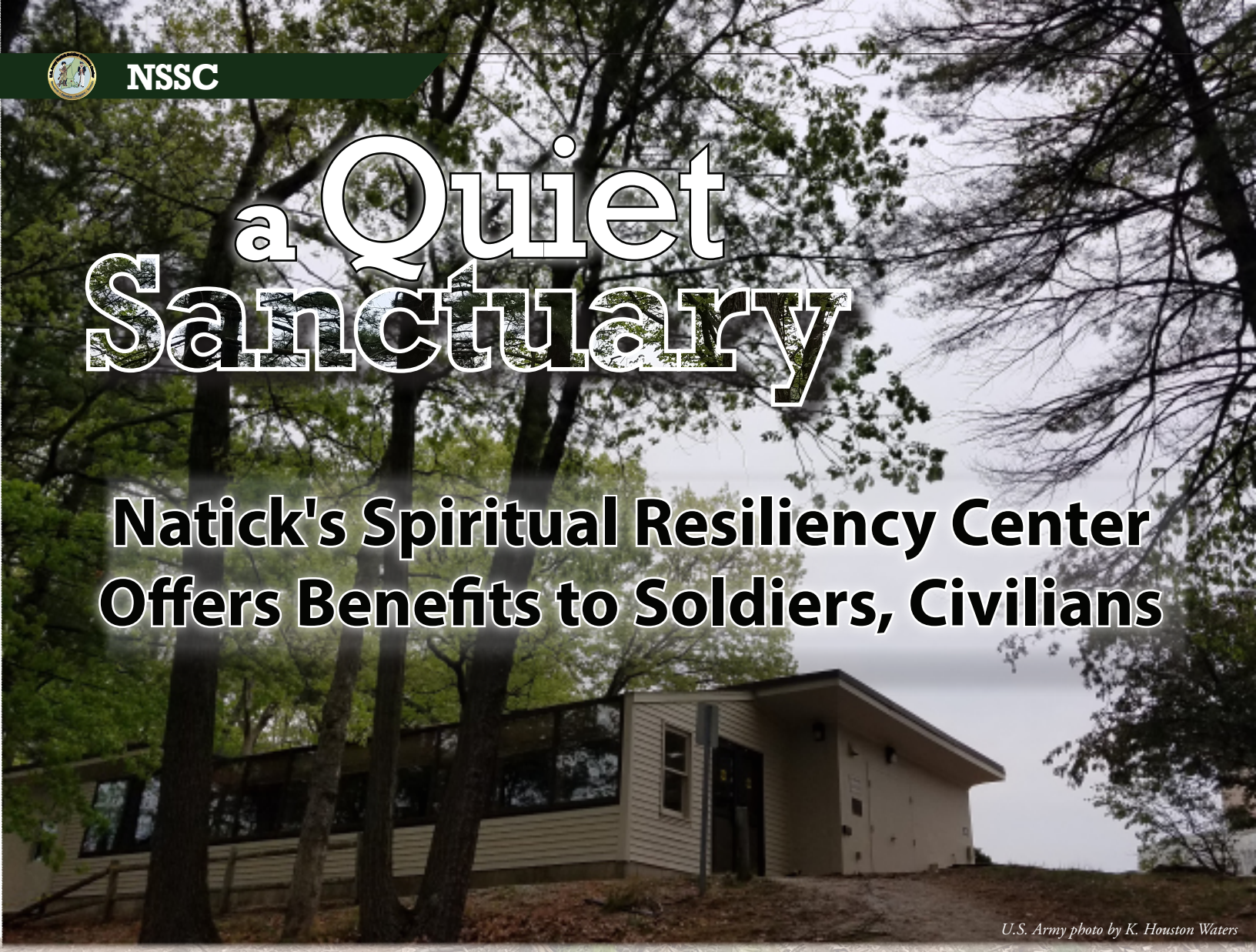
President Calvin Coolidge in a speech not long after World War I said, "The Nation which forgets its defenders will itself be forgotten."

The ceremonies in Watertown, Natick and Wayland showed the understanding of the importance of Memorial Day, the true meaning of the observance and honored those we lost.


U.S. Army photo by Vannessa L. Josey

a Quiet Sanctuary

Natick's Spiritual Resiliency Center Offers Benefits to Soldiers, Civilians



U.S. Army photo by K. Houston Waters

By K. Houston Waters, USAG Natick Public Affairs/Natick, Mass. (May 22, 2018)

Nestled in a quiet grove on the shore of Lake Cochituate's middle pond, Natick Solider Systems Center's (NSSC) building 38 doesn't stand out. At least from the outside. But once you walk through the double doors, take a step inside, it's immediately apparent – this building, and the work going on inside it, is special.

Building 38, better known as the Spiritual Resiliency Center (SRC), was created as a sacred space, a quiet sanctuary, for Soldiers and Department of the Army civilian employees to practice their faith, meditate, reflect, or just take a break from the stress of daily life.

"We give people the opportunity to come in here, practice their faith, whatever it is. We're not here to convert anybody," said Sgt. Ronald Coney, religious affairs NCO and member of the NSSC Unit Ministry Team (UMT).

For those seeking spiritual guidance, someone to talk with, or assistance locating religious services, the UMT staff is there to help. "We're here as a place to vent. Our job is to give people some comfort," said Coney.

The Army recognizes spiritual fitness as an essential aspect of resilience, the ability to recover quickly from hardship and stress. Coney believes the SRC is a great way for Soldiers to improve their spiritual fitness. "I think it's important to have us here because it's always ground-and pound, always work, but sometimes you need to just take a knee. We can offer that to you. So you can take that knee, relax, and even vent sometimes. Talk it over. We give that to you. To civilians. To families. Soldiers. That's what we offer the Army, that spiritual fitness."

> **"I think it's important to have us here because it's always ground-and pound, always work, but sometimes you need to just take a knee. We can offer that to you. So you can take that knee, relax, and even vent sometimes. Talk it over. We give that to you."**
>
> **Sgt. Ronald Coney**
> **Religious Affairs NCO**

The UMT is comprised of installation chaplain Maj. Gerald Woodford and religious affairs NCO Sgt. Ronald Coney.

The SRC plays host to Brown Bag Bible Studies every Tuesday at 11:30am. The weekly event is coordinated by NSSC Soldiers and Civilians.

Honoring Local Veterans



U.S. Army photo by Vannessa Josey

NSSC Soldiers and Vets Dine Together on Armed Forces Day

By Vannessa L. Josey, USAG Natick Public Affairs/Natick, Mass. (May 24, 2018)

Natick Soldiers were happy to spend time listening and learning from eight local area veterans who have served proudly. The hard work and dedication of the all those who fought and laid the ground work for what we now know as the modern military at the Natick Dining Facility, Friday, May 18.

Lt. Col. Bryan Martin, USAG-Natick garrison commander hosted the luncheon as a way to thank the veterans for all they have done and to show appreciation for the strong and steadfast dedication and loyalty they continue to show our Soldiers every day.

"It's important to spend time with the men and women who served before us," said Martin.

"These Soldiers are the future veterans and now have a standard to show, share and teach all who come after them," said Paul Carew, a Marine veteran and Natick's Veterans Service Officer of over eight years.

Both Soldiers and veterans are honored to have this time share experiences with one another.

"Recognizing these dedicated individuals is an honor," Carew said. "Day in and day out, veterans provide immeasurable honor and loyal to our great nation. I'm proud we can recognize them for their outstanding support to the soldiers and their families."

The luncheon is the kickoff event for Armed Forces Day Weekend. It is a busy week for the Carew as he prepares for the upcoming Memorial Day event.

This marks the eighth year for the Armed Forces Luncheon. The Soldiers and veterans look forward to the experience again next year.

"No matter what, I'll never be too busy to care for Soldiers and their families. They're the reason I do what I do," said Carew. "This is what I needed when I returned from Vietnam. At least, now I know that the current and future Soldiers will have the support and care as long as I am able. They are the backbone of what this country stands for."

"The veterans are a walking history that current soldiers need to tap in to," said Martin. "This luncheon is a small token of appreciation and honor to show these veterans. We owe them for what we have now."



U.S. Army photo by Vannessa Josey

Focal Point

Armed Forces Day
May 19, 2018



Soldiers from the US Army Research Institute of Environmental Medicine (USARIEM) represented NSSC by presenting the Colors as the Red Sox celebrated Armed Forces Day May 19 (U.S. Army photos by John Harlow).



Honoring Greatness

Natick Observes Asian-American Pacific-Islander Heritage Month

By Jane Benson, NSRDEC Public Affairs/Natick, Mass. (May 16, 2018)



Col. Raymond L. Phua (pictured here, right), commander of the U.S. Army Research Institute of Environmental Medicine, was the esteemed guest speaker at an Asian American Pacific Islander Heritage Month celebration held at the Natick Soldier Research, Development and Engineering Center on May 14. Craig Rettie (pictured here, left), deputy director of NSRDEC, presents Phua with a certificate of appreciation. (Photo Credit: David Kamm, NSRDEC)

To commemorate Asian American Pacific Islander Heritage Month, the Natick Soldier Research, Development and Engineering Center hosted a special event in Hunter Auditorium on May 14.

The event, which was open to all Natick Soldier Systems Center employees, included an esteemed guest speaker, a short-film about a former NSRDEC employee who made the journey from refugee to highly regarded Army scientist, a presentation of traditional clothing from a few Asian cultures and a sampling of Asian foods.

People of Asian American Pacific Islander heritage are a culturally and linguistically diverse group who have made invaluable contributions to Natick and to the nation as a whole.

The hour-long program provided just a small glimpse into the achievements, contributions and rich cultures of this diverse heritage.

Craig Rettie, deputy director of NSRDEC, introduced the event's esteemed guest speaker, Col. Raymond L. Phua, commander of the U.S. Army Research Institute of Environmental Medicine. Rettie praised Phua's "amazing accomplishments" and "commitment to service."

Phua told the audience he was born in Canada and moved with his family to the United States as an infant. At age nine, his family moved to Singapore, when they lived for four years. It was there that Phua said he learned his first important lessons about life.



Robert Dilalla, team lead of the Infantry Combat Equipment Team at the Natick Soldier Research, Development and Engineering Center, served as the master of ceremonies for an Asian American Pacific Islander Heritage Month celebration held at NSRDEC on May 14. (Photo Credit: David Kamm, NSRDEC)

Phua told a story about a man who would ride his bicycle through Phua's neighborhood. On the back of his bike, the man had a charcoal grill, and he would make and sell delicious satay on even the hottest or rainiest of days.

"I think this was the first time I was exposed to what we in this room would refer to as 'perseverance,'" said Phua.

During his time in Singapore, his family home was flooded twice. Phua, at a young age, needed to help account for the family's possessions and for the whereabouts of his siblings to ensure that they were safe.

Phua said that from the floods, he learned about compassion and responsibility.

The NSRDEC-hosted event also featured a short film, chronicling the life journey of Quoc Truong, a recently retired and highly regarded NSRDEC physical scientist.

Truong came to the United States from Vietnam as part of the first wave of Vietnamese refugees to come to America. He worked and studied hard to make a contribution to his new homeland.

"My heritage represents the refined, positive cultural upbringing, family values, beliefs, traditions, practices and customs my parents instilled in me and that their parents instilled in them -- and that I am hopefully passing down to my children throughout their lifetime," said Truong.

> **"What comes along with American citizenship and serving in the uniform is that I know that when I die I will die free on my feet, not on my knees, with my head up. And that's a gift that only the free can bequeath onto others."**
>
> **Col. Raymond L. Phua , USARIEM**

Truong dedicated his career to making life better and safer for the American Soldier. For more than 33 years, Truong worked on leading-edge technologies and the development of advanced, innovative materials and textiles that have greatly benefited the warfighter.

Truong expressed gratitude toward the United States and its people.

"When I came here from Vietnam, I was only 15," said Truong. "The American government and people were so helpful and so welcoming to our family. As a result, my eight brothers and sisters are now productive citizens."

Phua also expressed a love of country. After his family returned to the United States, Phua eventually joined the U.S. Army and became an American citizen.

"What comes along with American citizenship and serving in the uniform is that I know that when I die I will die free on my feet, not on my knees, with my head up," said Phua. "And that's a gift that only the free can bequeath onto others. A lot of us in this room have the opportunity to bequeath that gift onto others because of what we have volunteered to do and the profession that we have chosen. Because we have chosen to do that, our children and our grandchildren will be able to do that as well."

Best Served Cold



Natick's Pocket Ration Guides Arm the Warfighter with Knowledge

Extreme weather conditions, like the conditions pictured here, can increase the energy needs of warfighters. Knowing what to eat based on the mission is critical to optimizing warfighter performance and lethality. To provide warfighters and their leaders with crucial information about nutrition, ration choice, and warfighter performance, the Combat Feeding Directorate at the Natick Soldier Research, Development and Engineering Center has developed two new pocket-sized ration guides, entitled the "Warfighter's Guide to Performance Nutrition" and "Leader's Guide to Operational Rations." The guides provide crucial information about nutrition, ration choice, and warfighter performance. (Photo Credit: David Kamm, NSRDEC)



Photo Credit by DVIDS

By Jane Benson, NSRDEC Public Affairs/Natick, Mass. (April 11, 2018)

Knowing what to eat based on the mission is critical to optimizing warfighter performance and lethality. This is the central idea behind two new ration guides developed by the Combat Feeding Directorate, or CFD, at the Natick Soldier Research, Development and Engineering Center.

CFD has developed and published two pocket-sized reference guides, providing crucial information about nutrition, ration choice, and warfighter performance.

One guide is entitled "Warfighter's Guide to Performance Nutrition" and the other is entitled "Leader's Guide to Operational Rations."

The development of the guides was based on warfighter feedback and the expertise of NSRDEC CFD and the U.S. Army Research Institute of Environmental Medicine, or USARIEM. NSRDEC CFD and USARIEM are known for their extensive knowledge of warfighter performance optimization and nutrition.

"These are nonmaterial solutions designed to educate and inform decisions around nutritional behavior and ration choice," said Jeremy Whitsitt, CFD deputy director.

The leader's guide talks about individual rations and mission specific information, enabling a leader to choose the most effective ration for the mission and to meet warfighter needs. The guide also helps with logistical concerns since it helps leaders better determine what rations they should order.

"The guide provides nutritional data, ration weight and water requirements," said Jeannette Kennedy, CFD technical advisor. "It gives them a logistical point of view so they can better plan for warfighter needs and find out what options are available to them."

An example Kennedy used was a leader conducting a short duration, highly mobile, dismounted mission could use the booklet to examine the data and determine that the First-Strike Ration may be best for his or her particular mission.

"It allows them to compare calories, menu variety, and gives them a National Stock Number for ordering," said Kennedy. "The guide contains a table that serves as a great visual tool. This is for leaders who will be making the decisions and doing the ordering, and it enables them to ensure they are getting the proper rations."

> **Food affects the warfighter every day and we want to give them knowledge to empower them to make good decisions**
>
> Jeannette Kennedy, CFD technical advisor

The second guide, made for the warfighter, gives individuals an increased awareness about their food choices.

"The book for the warfighter provides them an overview of performance nutrition and tells them how to get the maximum benefit, explaining the roles of proteins, carbohydrates and fat," said Kennedy.

"It's organized to check their knowledge, and then to take that knowledge, analyze what they have available, and make an action plan."

The guide is an important tool for warfighters.

"Food affects the warfighter every day and we want to give them knowledge to empower them to make good decisions," said Kennedy.

The transfer of knowledge from NSRDEC to the warfighter is part of a larger effort. NSRDEC and USARIEM have been working with Curriculum Development and Education at the U.S. Army Sergeants Major Academy, or USASMA, to get more information directly into the hands of the Soldier.

The information in the guides will be eventually incorporated into the academy's Point of Instructions, or POIs.

"As NSRDEC learns something that's going to make Soldiers more capable during its studies, it is now becoming common behavior to try and transition that relevant knowledge directly to leaders and Soldiers as soon possible," said Rick Haddad, assistant deputy chief of staff, G3/5, Operations and Plans, NSRDEC. "With so many ways to deliver or implement knowledge products directly to the unit, whether electronically or maybe through virtual or augmented reality, the days of waiting for a final report to be composed and disseminated is now a less optimal approach. Building this type of behavior into NSRDEC's processes is in line with the Chief of Staff of the Army's guidance and modernization objectives."

Warfighters, like the Navy SEAL team pictured here, perform extremely demanding jobs. By understanding their nutritional needs, warfighters and their leaders can plan ahead to optimize performance. To provide warfighters and their leaders with crucial information about nutrition, ration choice, and warfighter performance, the Combat Feeding Directorate at the Natick Soldier Research, Development and Engineering Center has developed two new pocket-sized ration guides, entitled the "Warfighter's Guide to Performance Nutrition" and "Leader's Guide to Operational Rations." The guides provide crucial information about nutrition, ration choice, and warfighter performance. (Photo Credit: DVIDS)



Reducing the STRESS

Army Research Lab Studies Four Thousand Army Recruits to Investigate Injury Risk

By Mallory Roussel, USARIEM Public Affairs/Natick, Mass. (April 27, 2018)



During a data collection at Fort Jackson, South Carolina, the principal investigators of the ARIEM Reduction in Musculoskeletal Injury, or ARMI, study, Dr. Julie Hughes, bottom left, and Dr. Stephen Foulis, middle, both research physiologists from the U.S. Army Research Institute of Environmental Medicine, or USARIEM, use a high-resolution scanner to image a female recruit's bone and muscle microstructure in an effort to understand how recruits' bones and muscles change during Basic Combat Training and what factors can affect injury risk. (Photo Credit: Mr. Matt Bartlett, USARIEM)

With the U.S. Army's dedicated focus on improving readiness and lethality of the present and future force, one of the biggest questions military leaders, training schools, medics and researchers face is this: How can the U.S. Army build more resilient warfighters who are resistant to musculoskeletal injury?

Imagine having the insight to determine which Soldiers are at the highest risk of injury, as well as having the medical guidance and tools to intervene before those Soldiers experience a career-ending injury. Researchers from the U.S. Army Research Institute of Environmental Medicine, or USARIEM, are striving to make this a reality as they embark on one of the largest research efforts they have conducted since the Physical Demands Study, a collaborative research effort between the Training and Doctrine Command Center of Initial Military Training, or TRADOC-CIMT, and USARIEM that led to the development of the Occupational Physical Assessment Test, or OPAT.

Musculoskeletal injuries are a real problem for the Army, especially for recruits. We realized that if we wanted to understand what factors contribute to musculoskeletal injuries and the physiology behind injury risk, we needed a comprehensive effort with a large sample size.

Dr. Julie Hughes
Military Performance Division, USARIEM

USARIEM researchers are collecting bone and muscle data from four thousand recruits as they go through BCT, and they are following the recruits during the first few years of their military careers. The data collection is part of a four-year longitudinal study, the ARIEM Reduction in Musculoskeletal Injury, or ARMI, study, an effort to better understand who is more likely to get injured and what can affect injury risk.

According to the principal investigators of the ARMI study, Dr. Julie Hughes and Dr. Stephen Foulis, two research physiologists from USARIEM's Military Performance Division, the primary goal of the ARMI study is to develop evidence-based, actionable recommendations to Army leadership to reduce musculoskeletal injuries in recruits without reducing training standards.

Stress fractures and other musculoskeletal injuries impact Army readiness by costing the Army lost duty time and millions of dollars per year. USARIEM has served as the center of excellence for warfighter performance science by generating evidence-based guidance on injury prevention through laboratory and field studies that resulted in developing the OPAT and the Performance Readiness Bar, or PRB, a calcium and vitamin D-fortified



Drill Sgt. Primus Brown instructs Soldiers from B Company, 3rd Battalion, 30th Infantry as they learn to high-crawl through a sand pit as part of an obsticle course on Fort Benning's Sand Hill. The Soldiers are in their fifth day of Basic Training. Photo by David Dismukes.

snack bar that helps strengthen bones.

"These prior studies have provided the foundation for us to undertake such a large field study," said Hughes, who specializes in studying bone injuries in Soldiers. "Musculoskeletal injuries are a real problem for the Army, especially for recruits. We realized that if we wanted to understand what factors contribute to musculoskeletal injuries and the physiology behind injury risk, we needed a comprehensive effort with a large sample size. The first step of this study is to determine the top four or five characteristics identifying those who are at greatest risk of injury so we can target them for intervention."

Dr. Foulis, a muscle physiologist who studies Soldier performance and played a large role in the data collection for the earlier OPAT studies, notes that muscles and bones work hand-in-hand during military training. Not only can muscles and bones get stronger during BCT, but they can also be vulnerable to injury.

"Stress fractures are not just a bone issue," Foulis said. "Muscles and bones interact together, so the novice Soldier is actually putting stress on the muscle and bone when they are performing exercises for which they are unaccustomed. Some evidence suggests that as the muscles start to fatigue, more stress is placed on the bone, which initiates a cycle that might lead to stress fracture."

The team of USARIEM-led researchers, from veterans in the trade to young researchers just beginning their scientific careers, are starting their study data collection at Fort Jackson, South Carolina. Foulis explained that not only is Fort Jackson large enough to accommodate such a large study, but many female recruits complete BCT at the installation. The researchers will later expand their data collection to other training installations, including Fort Benning, Georgia; Fort Sill, Oklahoma; and Fort Leonard Wood, Missouri.

During each data collection, researchers collected blood and urine samples from recruits at Fort Jackson during the first days of BCT. Later in the first week of training, the recruits came in shifts to complete various exercises, such as vertical jumps and balance testing, in order for researchers to assess muscle strength and flexibility.

The researchers also used a high-resolution bone and muscle scanner with the ability to examine muscles and bones with the resolution of 61 microns. According to Hughes, this is "less than the width of a human hair." With this state-of-the-art technology and through collaborations with top bone experts from Massachusetts General Hospital, USARIEM researchers are able to examine how bones and muscles change on a microstructural level during training.

"This is the right time to do the ARMI study because not only do we have the right people, but we also have the right technology," Hughes said. "We can use data from these high-resolution bone and muscle scans to not only study how bones break down, but also to examine how various factors, such as exercise and diet, lead to stronger bones and muscles."

Researchers from USARIEM have also teamed up with University of South Carolina researchers to collect surveys each weekend during the BCT period, asking recruits about their sleeping habits, nutrition, medications, socioeconomic status, past injuries and medical backgrounds. The surveys will also track if recruits are regularly consuming the PRB, which all Army BCT schools began distributing to recruits since the beginning of 2018, to evaluate whether the addition of the bar makes a difference in injury risk.

"We are working with USARIEM's Military Nutrition Division to track the recruits' calcium and vitamin D intakes, as well as whether or not they are consuming the PRB, to see if there is a contributing factor for their susceptibility for injury," Hughes said.

Even when recruits leave BCT, the data collection is far from over. The ARMI study team is also working with the Army Public Health Center in order to track injury information in study volunteers' medical files to see how Soldiers' careers progress after BCT.

"We are only hands-on during BCT," Foulis said. "We then follow them for two years after BCT to see who gets hurt and who does not. We want to see how those first few weeks of training in the Army affect the first few years of a Soldier's career."

Foulis and Hughes eventually plan to use these data to develop an algorithm that can target the recruits who are at highest risk of musculoskeletal injury.

> **"This is the right time to do the ARMI study because not only do we have the right people, but we also have the right technology,"**
>
> **Dr. Julie Hughes**
> **Military Performance Division, USARIEM**

"One of the objectives of the ARMI study is to detail those significant factors that could contribute to the likelihood of injury," Hughes said. "We will provide the TRADOC-CIMT evidence-based guidance to reduce injury risk without greatly modifying how recruits complete BCT."

"The goal is not to exclude anyone because of their risk of injury," Foulis said. "The goal is to figure out how to manage risk and find ways to intervene ahead of time."

The ARMI study team has already collected data from over three hundred recruits in the first eight months of the study, and as they expand their data collection to other training bases, they will continue to follow more recruits. While the end of the study is several years away, Foulis said that the ARMI study is structured to allow USARIEM researchers to answer certain questions and provide updates on a periodic basis throughout the study to allow the lab to optimize warfighter performance.

"USARIEM researchers have already made an Army-wide impact when it comes to studying how musculoskeletal injuries occur and how we can prevent them, but in order to improve the guidance and materiel-based solutions that already exist, there are many questions we have left to answer," Foulis said. "There are several interim points in the ARMI study where we can start to give answers to certain questions related to musculoskeletal injury. We have a study that allows us to answer many questions along the way.

"When we finish collecting data from all four thousand recruits, our ultimate goal is to use these data to provide guidance that will make a substantial impact on reducing injuries in our nation's warfighters."



U.S. Army photo by Patrick A. Albright

WARGAMES

Natick's Wargame Excercise Provides Insights Into Real-Life Warfighter Needs

By Jane Benson, NSRDEC Public Affairs/Natick, Mass. (April 23, 2018)

The Expeditionary Maneuver Support Directorate, or EMSD, at the Natick Soldier Research, Development and Engineering Center, or NSRDEC, recently hosted a wargame exercise focusing on camouflage, concealment and deception, or CCD.

Claudia Quigley, director of EMSD and sponsor of the wargame, explained that the event was intended to help EMSD identify operational performance characteristics of CCD technologies, identify existing CCD technologies that require investment and identify new CCD technologies needed to offset projected threats in future operating environments. EMSD also hopes to garner insights to better prioritize efforts, understand risks and ensure best use of NSRDEC science and technology efforts based on Army priorities.

The NSRDEC event included participants from the 10th Mountain Division, the 82nd Airborne Division, the Joint Readiness Training Center, or JRTC, the Armament Research Development and Engineering Center, or ARDEC, the U.S. Army Communications-Electronics Research, Development and Engineering Center, or CERDEC, the Program Executive Office Command Control Communications-Tactical, or PEO-C3T, Product Manager Force Sustainment Systems, or PM-FSS, the Army Research Laboratory, or ARL, the U.S. Army Training and Doctrine Command, Army Capabilities Integration Center, or TRADOC ARCIC, the U.S. Army Maneuver Support Center of Excellence, or MSCoE, and the U.S. Navy.

"Through the wargame, the Soldiers from the 10th Mountain Division, 82nd Airborne Division, and the JRTC provided keen insights

into CCD capabilities and technologies and their potential use that will enable overmatch against a near-peer/peer adversary, leading to successful mission execution during Phase 2/3 operations," Quigley said.

Quigley was grateful for the participation of military leaders and warfighters, as well as top scientists and engineers, noting that the exercise was a place to learn from one another and set the groundwork for future collaborations.

"Although the Expeditionary Maneuver Support Directorate sponsored this event, we had active participation from Army leaders, scientists, and engineers across RDECOM, ARDEC, CERDEC, PEO-C3T, TRADOC ARCIC, MSCoE, and PM FSS, so EMSD also benefited from the perspective of the entire Acquisition community," said Quigley. "The wargame laid the ground work for a potential collaborative science and technology effort across the Army enterprise. The Navy also sent a representative to this event, so we have the opportunity to collaborate with the Joint Service with this new CCD program."

During the games, participants were divided into two teams. Each team developed war strategies based on existing capabilities/technologies to outmaneuver the opposing team during various wargame scenarios. The teams also brainstormed new CCD concepts.

Brian D. Gemmill, an NSRDEC operational requirements analyst, served as the main facilitator for the wargames. Gemmill believes that the event is an important venue for scientists and engineers to interact with warfighters.

"The recent EMSD wargame effort is not only beneficial to the NSRDEC as an organization, but benefits the individual scientists, engineers, and Soldiers alike," said Gemmill. "By directly involving Soldiers and integrating them with scientists and engineers during wargame activities, the NSRDEC is able to create professional relationships and touchpoints from the S&T workforce directly to the warfighter, where the Army's required capabilities and S&T objectives can be openly discussed in a highly productive and efficient environment."

During the wargame, manipulating and controlling your opponent's perception of reality was a key strategy.

Jason Augustyn, ORISE Center, and president, FutureScout, LLC, explained the methodology for the game, stating that one the objectives is to confuse the enemy about the realities of the situation.

"Did I hide what I was doing and make them think I'm doing something else?" said Augustyn.

Rick Haddad, assistant deputy chief of staff, G-3/5, Operations & Plans at NSRDEC, and Scott Germain, team leader of the Soldier/Squad Interface Team, served as co-facilitators for the event.

"This is a regular process behavior that all RDECs should invest in order to achieve a level of customer intimacy that enables addressing and recommending solutions for complex problems like CCD," said Haddad.

"The wargame at NSRDEC on camouflage, concealment, and deception was a huge success and was an energizing event for all those who participated," said Quigley.



The Expeditionary Maneuver Support Directorate, or EMSD, at the Natick Soldier Research, Development and Engineering Center, or NSRDEC, recently hosted a wargame exercise focusing on camouflage, concealment and deception, or CCD. Claudia Quigley (pictured here, center), director of EMSD and sponsor of the wargame, noted that the exercise -- which included scientists, engineers and members of the military -- was a place to learn from one another and set the groundwork for future collaborations. (Photo Credit: David Kamm, NSRDEC)

Picking Up Steam

Natick's STEM Efforts Pick Up STEAM with Interactive Station "Science Behind the Soldier"

By Jane Benson, NSRDEC Public Affairs/Natick, Mass. (May 8, 2018)



Photo by Jo Ann Ratto, NSRDEC

A hands-on science demonstration called "The Science behind the Soldier" has proven to be a great tool for the Natick Soldier Research, Development and Engineering Center's Science, Technology, Engineering and Math, or STEM, outreach.

The hands-on science demonstration was developed by Peggy Auerbach, an NSRDEC textile technologist, and Jo Ann Ratto, an NSRDEC plastics engineer. The "Science behind the Soldier" provides students with a Soldier point of view and takes them through the research and development process for Soldier equipment.

The station helps make students aware of the scientific and engineering challenges inherent in equipping a Soldier to perform his or her mission, as well as how and why certain items are developed.

"This is a STEM activity that makes the students 'Soldiers for the Day,'" said Ratto. "The 'Soldiers' are given a mission and need to make some decisions about what supplies they need in the field. They need to make decisions on food, water, clothing and shelter. The 'Soldiers' (students) have an interactive experience and learn a lot about material science, how the gear works and what these materials are made from."

"They also learn what's behind the design -- what considerations need to be taken when designing an item and how it will interface with the Soldier and other components," said Auerbach. "Hopefully, students will not only learn about the science behind the Soldier but will gain a greater appreciation for our Soldiers and understand the challenges they face on a daily basis."

It was full STEAM ahead as the activity was a big hit at a Science, Technology, Engineering, Art and Math, or STEAM, event at the Josiah Haynes Elementary School in Sudbury, Mass. Auerbach, Ratto and Ellen Merrill, an NSRDEC research psychologist, gave students the opportunity to experience the unique station at the school's second annual STEAM Carnival.

More than 400 students and teachers took part in the STEAM Carnival. Many of the participants were impressed with NSRDEC's "The Science behind the Soldier." The interactive station provided students with hands-on demonstrations of NSRDEC core technologies and capabilities, giving them a greater understanding of how NSRDEC provides the military with innovative science and technology solutions to optimize the performance of warfighters.

"The students and teachers loved it," said Merrill. "It was one of the favorite stations at the event."

"This particular STEM activity allows the students to understand how much STEM is involved in developing high performing items which keep the Soldier safe," said Ratto. "In general, STEM activities for students are powerful. STEM activities educate the students about different technologies and careers. Any outreach STEM program can significantly influence and impact the younger generation."

"The station provides an interactive experience where students can learn about real-world applications of STEM," said Merrill. "Students that stopped by the station had a chance to don helmets and body armor, use a compass and examine MREs (how many calories

are in each meal and why). It offers students an interesting and fun way to learn about the military and engages them at an early age when STEM knowledge and skills are beginning to take root."

"The Science behind the Soldier" display was developed through NSRDEC's Bootstrap Initiative. The initiative encourages innovation, creativity, risk-taking, and employee participation, all while streamlining processes and minimizing bureaucracy.

Through the Bootstrap program, government civilian NSRDEC employees are allowed to submit proposals for a new technology, research project, business process, or administrative process that supports NSRDEC's science and technology mission.

The "Science behind the Soldier" project was voted by NSRDEC employees to obtain Bootstrap funding in 2017 and was chosen again in 2018. Through 2018 funding, the station will be expanded upon and bring together all aspects of NSRDEC's work in clothing, equipment, shelters, airdrop and food, highlighting such areas as artificial intelligence, load-bearing exoskeletons, improved body armor, cognitive enhancements, and improved human performance -- to name just a few areas.

The Bootstrap Initiative made creating and funding the station possible.

"Without Bootstrap and Peggy's ideas and leadership, this station would not have happened," said Ratto. "This is an activity that any subject matter expert can take to the classroom or perform here on base. Much thanks to Ellen for extending an invitation to demo the station at the STEAM Carnival. This learning event totally engaged all the students."

Auerbach, Ratto, and Merrill are all committed to STEM outreach. Merrill explained that it is important that students are aware that they themselves can be innovators.

"As we move further into the 21st century, it is vital that we share with the next generation STEM skills and abilities and the opportunities that are possible," said Merrill.

"When we get excited and show our passion, then that just gets passed onto the children and learning becomes fun for them," said Ratto.

"By engaging students in STEAM at an early age and igniting their interest in science, we have the potential to influence the future of science, which is both an exciting and rewarding experience," said Auerbach.



Photo by Ellen Merrill, NSRDEC

Pitching Solutions

Natick's Bootstrap Initiative Fuels Innovation, Benefits Warfighter

By Jane Benson, NSRDEC Public Affairs/Natick, Mass. (April 27, 2018)



For the fourth year in a row, the Natick Soldier Research, Development and Engineering Center's Bootstrap Initiative has enabled employees to propose ingenious, cost-effective solutions. Kevin Connolly (pictured here on Bootstrap Pitch Day), a mechanical engineer in NSRDEC's Aerial Delivery Directorate, submitted a proposal entitled "Development of a Personnel Parachute Canopy Release." His proposal, which was chosen for Bootstrap funding, is part of a larger effort to lighten the Soldier's load. (Photo Credit: David Kamm, NSRDEC)

For the fourth year in a row, the Natick Soldier Research, Development and Engineering Center's Bootstrap Initiative has enabled employees to come up with ingenious, cost-effective solutions for the warfighter.

Dr. Ken Desabrais, previously an NSRDEC research aerospace engineer and now NSRDEC's human protections administrator, conceived the Bootstrap Initiative. It was implemented to encourage innovation and creativity while streamlining processes and minimizing bureaucracy.

Through the program, government civilian NSRDEC employees are allowed to submit proposals for a new technology, research project, business process, or administrative process that supports NSRDEC's science and technology, or S&T, mission.

NSRDEC is dedicated to researching and developing cutting-edge food, expeditionary maneuver support, clothing and airdrop technologies and products to optimize warfighter performance and lethality.

Although Bootstrap is intended to reduce red tape and encourage innovation, there are still some submission restrictions. For instance, ideas must be able to be carried out for $50,000 or less. Funding cannot be used to fund a contractor or external contract. The effort must be executed quickly.

NSRDEC's Bootstrap Initiative not only gives employees the chance to propose ideas, they also have the chance to vote on which ideas receive funding. Pitch Day is a key part of this process. During Pitch Day, proposers are given the chance to garner employee voter support for their ideas by making posters, displaying prototypes, creating interactive displays and conducting show-and-tell sessions.

Dr. Charlene Mello, NSRDEC's chief scientist, believes that the Bootstrap Initiative fosters innovation and taps into the incredible creativity of NSRDEC's workforce. The initiative also facilitates opportunities for collaboration.

"Creating an opportunity for people to get to know one another, share ideas and strive toward solutions for Soldier-centric problems represents the essence of Bootstrap," said Mello. "The passion, creativity and technical expertise that our workforce brings to these challenges motivates me each and every day. Pitch Day provides us all with a day to recognize such contributions and celebrate our community."

NSRDEC's Deb Anderson led the execution of the entire Bootstrap program this year. Anderson, who works in the office of NSRDEC's chief scientist, likes the excitement and creativity generated by Pitch Day and views the Bootstrap program as being particularly important during times of austere S&T budgets.

Creating an opportunity for people to get to know one another, share ideas and strive toward solutions for Soldier-centric problems represents the essence of Bootstrap

Dr. Charlene Mello, NSRDEC

"This is the fourth year for Bootstrap and I think the energy level has remained high," said Anderson. "It's still a relatively small program that generates a lot of enthusiasm. People are putting in better proposals each year. This year, there is a new requirement for everyone to have a poster; this will really help the workforce come to appreciate their coworkers' efforts."

For Bootstrap 2018, employee voters chose 22 projects for funding. "Development of a Personnel Parachute Canopy Release" was one of the proposals chosen.

Kevin Connolly, a mechanical engineer in NSRDEC's Aerial Delivery Directorate, explained that as part of ongoing efforts to reduce the Soldier's load, "all hardware components of the parachute harness are being looked at as possible areas of weight reduction, with the canopy release assembly, or CRA, being one of these hardware components."

"The CRA is a critical hardware component for the airborne Soldier that secures the parachute canopy to the parachutist while coming down from the plane to the ground and allows the Soldier to release from the canopy when on the ground," said Connolly.

He explained that Bootstrap funding would enable the investigation of new CRA designs as well as the building and testing of prototypes that are lighter than the current CRA.

"Hot Hands, Toasty Toes -- Keeping the Extremities Warm" was another idea chosen by Bootstrap voters.

Kristine Isherwood, a mechanical engineer in NSRDEC's Soldier Protection and Survivability Directorate, explained that the project aims to move heat to the extremities with zero power consumption and negligible weight penalty during operations in extreme cold, e.g., dismounted operations and high altitude free fall.

"The goals are to reduce the risk of cold weather injury to the extremities, to maintain fine motor movement, and to increase the thermal performance of and extend the operating temperature of the cold weather clothing system without added weight and bulk," said Isherwood.

Isherwood noted the importance of Bootstrap funding.

"The Bootstrap Initiative is just as vital to funding an idea whose output can be applied to an on-going program, as it is to funding an idea around which a program can be formed," said Isherwood. "If successful, I think this idea will help with warfighter readiness because even before they engage the enemy, they will encounter the environment, and the environment doesn't take sides!"

In addition to helping aid the development of products and technologies that benefit the warfighter, Bootstrap also helps NSRDEC's STEM outreach efforts through projects such as "The Science Behind the Soldier." The interactive station was conceived and developed by NSRDEC's Peggy Auerbach. Auerbach was the primary author of the proposal and NSRDEC's Jo Ann Ratto was the coauthor. The project was awarded Bootstrap funding in 2017. In 2018 an expanded version called "The Science Behind the Warfighter -- Part 2" was once again chosen for funding by Bootstrap voters.

Anderson summed up the spirit and importance of the Bootstrap Initiative and Pitch Day.

"It's all about good science and enjoying the effort," said Anderson. "Strong proposals. High energy. Small dollars. Big fun."

U.S. Army Birthday
Flag Day



June 14, 2018

U.S. Army photo by Spc. Rachael Estes, 32nd Army Air and Missile Defense Command Public Affairs