

August 2016

NSSC This Month



U.S. Army Garrison Natick Public Affairs Office

Peak Season

Studying human performance at altitude



2013 and 2015 U.S. Army
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First Place, Digital Publication



2016 National Association of
Government Communicators
First Place, External Newsletter



Commander's Corner

Lt. Col. Ryan Raymond
USAG Natick Garrison Commander



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NSSC This Month

Where has summer gone?

I hope everyone has had a fun-filled, relaxing summer. To me, it has flown by too fast; I'm not nearly prepared to send my daughter back to school.

In July, we celebrated NSSC Organizational Day with a tremendous turnout. Team NSRDEC implemented Chinese military tactics and won the inaugural Commander's Cup by overwhelming the competition with participation numbers; garrison will be ready for you next year. A special thanks to Team HRDD for cooking for the many patrons who did not bring food to cook themselves.

I appreciate your continued patience with the two major, ongoing construction projects – the front gate and the Hunter Auditorium. Both projects are on track to be completed in October, and will greatly improve conditions on our installation. This month we continued to move ahead with our long-term housing plan, as we hosted the Deputy Assistant Secretary of the Army for Installations, Housing and Partnerships to refine our future plan. Earlier in August, the Secretary of the Army approved our proposal for authority to exchange land for housing as a critical element of the Army's submission to National Defense Authorization Act 2018. Things are looking good in terms of increased investment in NSSC.

I am proud of what you do for our Soldiers, Sailors, Airmen, Marines and Coast Guardsmen every day. As your kids (and grandkids) return to school, I hope they are able to tell their classmates about the great contributions that this community makes to our national security. My sincere thanks to each and every member of our incredible team.

Lt. Col. Ryan Raymond
USAG Natick Garrison Commander



NSSC This Month

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About this newsletter
NSSC *This Month* is a monthly newsletter covering NSSC news within the Army and commercial media.

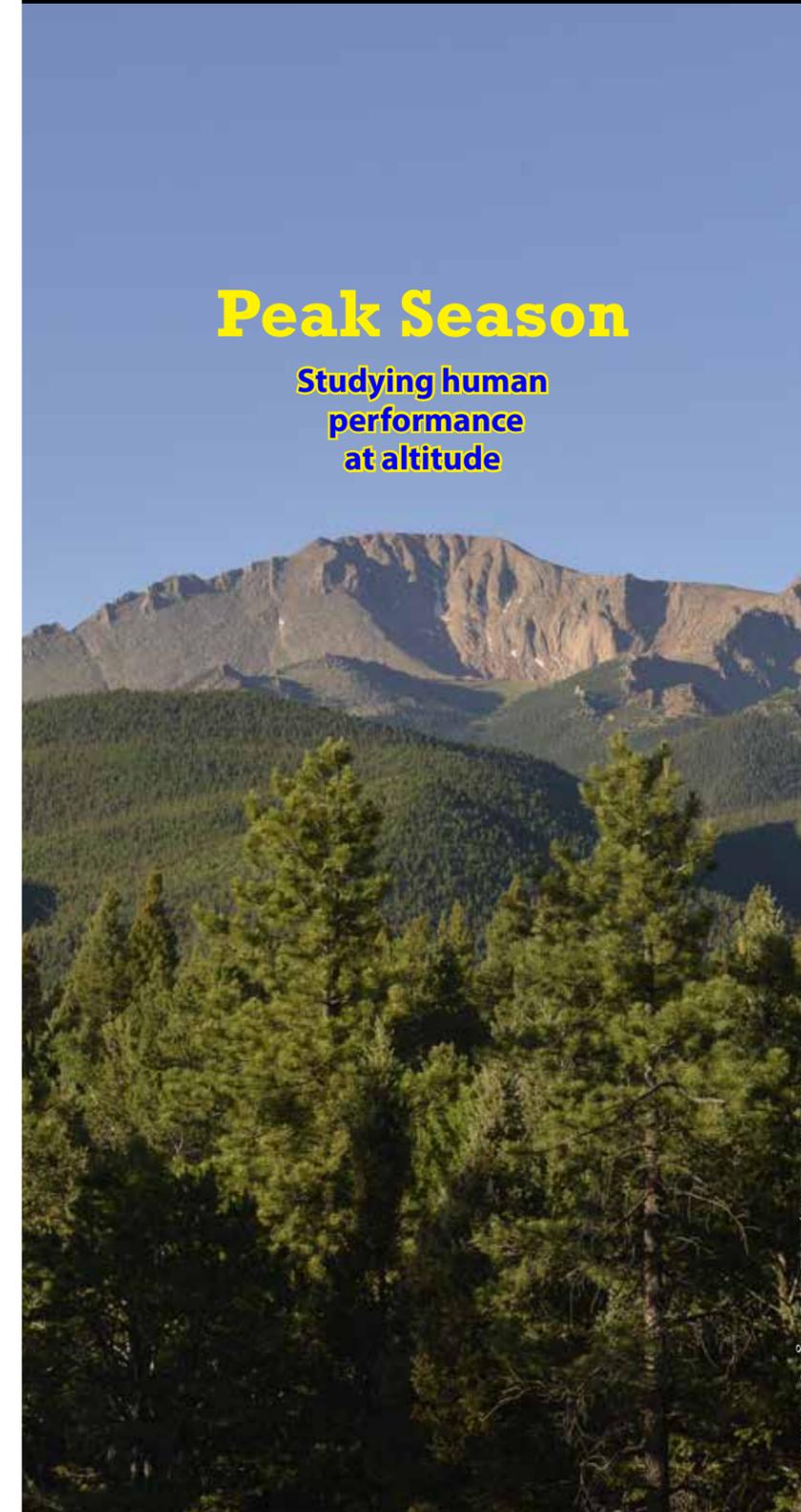
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To subscribe to *NSSC This Month*, please contact Bob Reinert at robert.j.reinert.civ@mail.mil.

On the Web: www.army.mil/natick

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Human studies could follow later this year

New ACS and SHARP location

The ACS and SHARP offices are now located on the first floor of Bldg. 1, Rooms A-122 and A-120. Stop by and check out the many books available that relate to college safety, culture change, the impacts of trauma, new parents and much more. Resources are also available in reference to local, state, or veteran-specific assistance. You can reach the central ACS office at ext. 4485, and the SHARP office at ext. 6925. You can also utilize the SHARP helpline 24 hours a day at (508) 395-9141.

MRE research study

A research study at the [U.S. Army Institute of Environmental Medicine](#) is being conducted to determine the effects of eating the [Meal, Ready-to-Eat \(MRE\)](#) military ration on gut health. To be eligible, you must:

- be 18-62 years old.
- be willing to eat and drink only MRE items for 21 consecutive days.
- not be trying to lose weight.
- be willing to give blood, urine and fecal samples.
- not have a history of gastrointestinal problems.
- meet additional screening criteria.



Study participation will last 6 weeks.

Volunteers will be compensated up to \$200 for completing the study. For more information, email usarmy.usaricm.study@mail.mil.

Women's free self-defense class

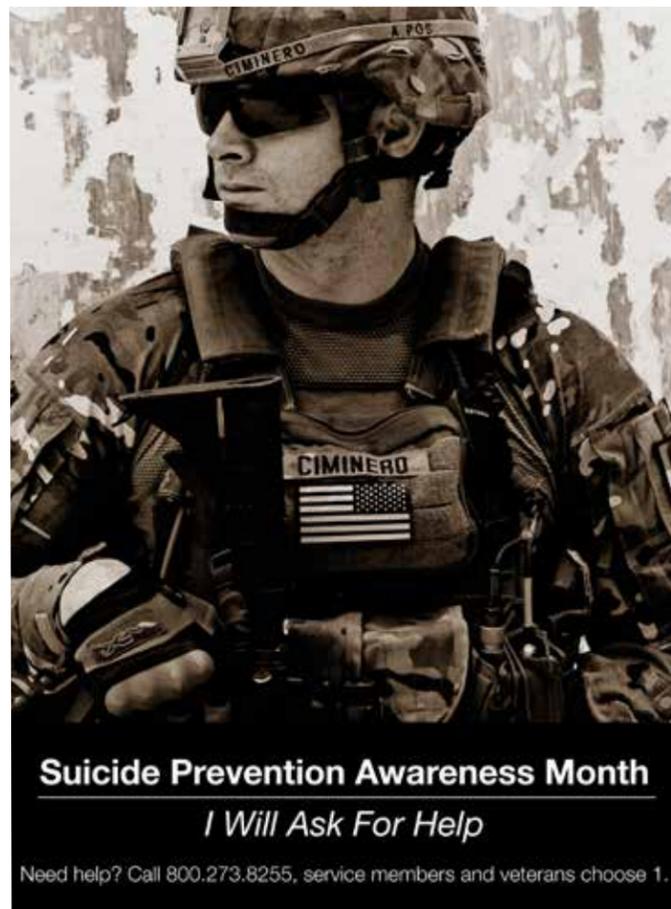
[Hanscom Air Force Base](#) is offering a free, two-day course focusing on escaping from an attacker by using instinct-based self-defense moves. It is offered in collaboration with the Lincoln and Bedford Police and Domestic Violence Services Network, Inc. The class will take place from 6:30 p.m. to 9:30 p.m. on Sept. 27 and 29 at the [HAFB Youth Center](#). To register, contact Jena Salon at jenasalon@gmail.com.

Operation Money Wise

[United Way](#) is offering a financial empowerment conference for service members, veterans and their families on Saturday, Sept. 24, from 8:30 a.m. to 2 p.m. at the [Kittredge Center of Holyoke Community College](#). Credit counselors will be available, as well as a variety of workshops on various financial topics. Breakfast and lunch will be provided. Contact Jennifer Kinsman at jkinsman@uwpv.org for more information.



September is National Suicide Prevention & Awareness Month



Nutrition for Better Health

Get motivated to eat better, be more fit, and/or lose weight in this exciting nutrition and exercise class hosted by Tricia Silverman, registered dietitian, fitness instructor, and wellness coach. The first half of class will feature inspirational expert nutrition, weight-loss advice and group discussion. The second half of class will consist of easy-to-follow warm-ups, followed by exercises with resistance bands, balls and body weight. The series will be held on the following dates: Thursdays, Sept. 22, 29; Oct. 6, 20; Nov. 3, 10, 17; and Dec. 1, from 11:30 a.m. to 12:30 p.m. If you are interested in participating, contact Amber Black at ext. 4584, or email amber.m.black.civ@mail.mil to register. Class is limited to 25 participants, so act fast.

Understanding selection boards

New online training tool for Soldiers should help with process

By Daniela Vestal, Army Human Resources Command/FORT KNOX, Ky. (July 12, 2016)

An online training tool for Soldiers interested in understanding how the enlisted selection board process works is now available.

Information has always been available, but they do, said Capt. Michael Hebert, a board recorder for DA Secretariat Selection Boards.

"Some Soldiers still believe that board members confer with one another and can have influence on the way other members rate a specific Soldier," said DeVeaux-Wallace.

The tool, which is meant to provide Soldiers with an interactive learning experience of the selection board process, consists of an online video with printable training aids. The video is 49 minutes long and covers what a Department of the Army selection board is; how board members are chosen; how boards work; and how to prepare for your next board.



Photo: Daniela Vestal, Army Human Resources Command

Wallace. "That just isn't the case. Board members cannot speak to one another while reviewing files."

In 2012 several policies were changed that tightened the rules and regulations governing selection boards, said Hebert. Nevertheless, many Soldiers still have misconceptions about the process despite the years that have passed since the changes were made.

"Soldiers still believe those myths," Hebert said. "This is a tool to dispel those myths.

The video also details the different types of selection boards, including the [Qualitative Management Program](#) and the [Qualitative Service Program](#). The last eight minutes of the video is a mock board that is designed to place Soldiers themselves in the position of board members and simulate the experience of grading and rating four different candidates.

culling it from the different sources could be a daunting task for an NCO, especially for one outside human resources and unfamiliar with the relevant regulations.

Any NCO can go to the YouTube video, let their Soldiers see it. Then they are all taught by the very people who run the boards, and the information comes from all the regulations we have to follow. It addresses all the trends we see and can now stimulate a conversation for them at their level."

The video also works to dispel misconceptions Soldiers may have about what actually happens during a board.

The tool was developed over the course of seven months by the Department of the Army Secretariat at [Army Human Resources Command](#).

"We waited to start the video until the release of the new ([Noncommissioned Officer Evaluation Report](#)) so we could incorporate it and the Select Train Educate Promote program into the presentation," said Master Sgt. Tamika DeVeaux-Wallace, noncommissioned officer in charge, DA Secretariat.

"Additionally, this tool goes into great detail. We reference several different regulations and explain concepts that can help Soldiers grow more successfully in their careers. For example, how something like a broadening assignment can assist a Soldier's career and change how a board member views their file."

Soldiers have always had training on how to prepare for a selection board, but they were not always told why they had to prepare the way



Garrison Spotlight

Karen Kinsman

What Karen Does: "I work the DPW help desk. I receive the trouble calls, create the Demand Maintenance Orders or Work Orders, process them, and send to the appropriate shop or engineer."

DPW Director Russ Stokes on Karen: Karen Kinsman, in her primary position as the DPW work receptionist, has been the heart of the DPW for the past 28 years. The work reception position is often referred to as the nerve center of the DPW. All work requests, big or small, come through Karen. Many of them require significant coordination with Karen's assistance before completion. It's often a stressful and challenging position, but Karen



loves being on the front line of customer service. She loves the constant action, and derives a lot of satisfaction from seeing the work being accomplished.



Photo: Tazanyia Mouton, USAG Natick Public Affairs

Jon Mayes, an environmental specialist with the U.S. Army Environmental Command, right, asks Josh Bulotsky, an electrical engineer with the U.S. Army Natick Soldier Research, Development and Engineering Center, a question regarding the labeling of a waste accumulation area in the mechanical space of the Doriot Climatic Chambers, July 27.

Going Green ... and saving some, too

Army Environmental Command performs audit at Natick

By Tazanyia Mouton, USAG Natick Public Affairs / NATICK, Mass. (August 3, 2016)

Personnel from the [U.S. Army Environmental Command](#) visited Natick July 25-29 to perform an environmental audit. The Environmental Performance Assessment and Assistance System, better known as an EPAAS, provides an additional set of eyes to an installation's environmental program.

"The premise of an EPAAS is to provide the garrison commander with a comprehensive look at their environmental program," said Jacob Holloway, an environmental support manager with AEC.

Holloway said the EPAAS allows the garrison commander "to see how well their environmental program is functioning as a whole, what areas need improvement, and what areas they're either taking unnecessary risks or are exposed to risks that they didn't know."

Holloway said at the end of the audit, the garrison commander is provided with an out brief that outlines everything that was found and the areas that need attention.

"Because everyone's under financial (and) time constraints, they need to know the most important (areas) where they might be taking on fines from the [\(United States Environmental Protection Agency\)](#) or the [Commonwealth \(of Massachusetts\)](#), and areas that might be detrimental to the mission," said Holloway.

Holloway said the most important part of performing the EPAAS is to support the mission and the Soldier.

"The view here is the hands-on close view, and we provide that bigger picture," said Holloway. "We're not familiar with the programs, so it's good for us to come in (with) fresh eyes."

Every three years, all active-duty Army installations are required to go through an EPAAS. During the years that the EPAAS is not performed, the installation's environmental office still conducts other environmental audits.

"This is not a new program," said Rich Valcourt, an environmental engineer with [U.S. Army Garrison Natick](#). "This has been going on since 1991, and prior to that, we had other audits."



Valcourt said it was only when the EPAAS was implemented that teams of subject matter experts were brought in.

"They looked at every, single media area (air, water, waste) under the environmental purview, to include, sometimes, program management," said Valcourt. "So it's not just looking at how your paperwork and records are; it's also, how are you managing your paperwork and records?"

Holloway said that's where the assistance piece really comes in.

"We all work for the Army," said Holloway. "It's one thing for us to come in and highlight the areas that need improvement, but it's more important for us to highlight those areas and then work with the installation to solve those issues and challenges."

Holloway said part of assisting the organizations is to look at everything holistically.

"Maybe you need more resources here, or maybe here are some resources you can

use to make your program more efficient, where you're maybe spending too much time in one place or you're not allowed to spend more time," said Holloway. "We can provide avenues to increase the efficiency of your time."

Holloway said after the environmental division and the garrison commander are briefed on any findings, any issues are put under a three-month review period.

"The environmental staff will have an opportunity to review everything and provide more information, if necessary, to get clarification on any of the findings," said Holloway.

Holloway said within six months, any issues that may arise from the audit need to be addressed so that the organization is within compliance.

"We are here to save the Army money by identifying things that might be putting the installation at risk," said Holloway. "It's really designed to be a tool for the garrison to use to augment their program."

Showcasing excellence

NSRDEC holds 10th annual poster presentation

By Jane Benson, NSRDEC Public Affairs/NATICK, Mass. (Aug. 10, 2016)

The [U.S. Army Natick Soldier Research, Development and Engineering Center](#) held its 10th Annual Future Workforce Poster Presentation, showcasing science and technology excellence and giving students the chance to garner invaluable presentation skills.

NSRDEC's Workforce Development Team hosted the event, which featured poster presentations by students from the Pathways program, the [Oak Ridge Institute for Science Education](#) program, or ORISE, and the [University of Massachusetts Lowell's Harnessing Emerging Research Opportunities to Empower Soldiers](#), or HEROES, program.

"This is an event that I look forward to every year," said Sharon Menard, workforce development manager at NSRDEC. "It's like the capstone project for our student employees. It provides an opportunity for them to show us what they've learned, to refine their presentation skills in a supportive environment, and to network with the entire workforce."

"It gives us an opportunity to evaluate the students for future employment opportunities. We've made an investment in their future already, so our hope is that they want to come back and work for us once they graduate."

The Poster Presentation Day, in addition to giving students the chance to enhance their professional public speaking skills, is an important part of NSRDEC's [Science, Technology, Engineering and Math](#), or STEM, outreach and NSRDEC's future workforce initiative.

Melissa Tobin, now a financial analyst at NSRDEC and previously a student intern for NSRDEC's Workforce Development Team, coordinated the event.

"The Future Workforce Poster Presentation is a great way for people to see what students learn and accomplish in their time here at Natick," said Tobin. "In addition to being a great way for students to show off the hard work they have carried out over the summer, this Poster Presentation is an excellent networking opportunity for the installation as a whole."

"Every year this event allows students to connect with the entire workforce in order to create learning opportunities as well as employment opportunities for both students and current employees. This professional social environment has continued to be an important piece in the effort to further develop a diverse and talented workforce to support the mission of this organization."

"Every year this event allows students to connect with the entire workforce in order to create learning opportunities as well as employment opportunities for both students and current employees."

Melissa Tobin, NSRDEC

Many members of NSRDEC's workforce serve as mentors and supervisors to the student participants and recognize the importance of the event.

"Participating in the student poster presentation is a great way for students to showcase the work they accomplished over the summer," said Mary Scerra, a student mentor and food technologist in the Combat Feeding Directorate at NSRDEC. "It gives the students an opportunity to learn how to make a poster and then brief a summary of their work – building confidence and increased knowledge in an area of interest."

"Our NSRDEC Poster Presentation Day represents a very important day where the mentored students come together to share their findings and results on their research progress for projects that they are working on in support of NSRDEC scientists and engineers," said Quoc Truong, a physical scientist at NSRDEC who has served as a men-

tor to numerous students. "Often times, students receive great suggestions from the S&E attendees as to the direction of their research, test methods, and different ways to assess material performances. Also, it's a chance for presenters to show off their hard work and to network with similar minded researchers."

During their time at NSRDEC, students learn about careers developing products, solutions and technologies for the warfighter and benefit from interaction with NSRDEC's renowned scientists and engineers.

GuoQuan Liang, a student at the UMass Lowell, worked for Gary Thibault of [Product Manager Force Sustainment Systems](#), or PM FSS, and was mentored by Benjamin Rooney. His poster presentation was entitled "Ballistic Airdrop Patterns and Performance."

"This summer I worked with PM FSS on the Cargo Aerial Delivery Team," said Liang. "I worked on data analysis of performance to make sure the parachutes meet the Army requirements. I worked on the Low Velocity Aerial Delivery System. It is a very versatile parachute. The analysis process drives the design of the parachute, which is in the developmental phase. Before I started working here, I didn't know very much about parachutes. I've really enjoyed it. I got to work hands on with the parachutes and see some of the testing."

Alessandra Molinaro, another student at UMass Lowell, presented a poster entitled "Production and Characterization of Activated Carbon-Poly (Vinyl Alcohol) Microcapsules."

Molinaro, a chemical engineering major, worked with NSRDEC scientists Andra Kirsteins, Quoc Truong and Chris Zoto. She found the experience invaluable and was glad to know the work benefits the Soldier.

"It's great to know that the research has the long-term goal of helping people in the real world," said Molinaro.



Michelle Richardson, left, a senior food technologist in the Combat Feeding Directorate at the Natick Soldier Research, Development and Engineering Center, and Sydney Walker, a student from Framingham State University, discuss Walker's poster presentation.

What goes up must come down. There has never been a more perfect expression to describe what altitude missions are like for Soldiers.

Soldiers deployed in mountainous terrains like Afghanistan often must make multiple trips from low altitude (less than 4,000 feet) to high altitude (greater than 11,500 feet) and back again with days to weeks separating the ascents. As Soldiers continue to make rapid ascents to altitude without acclimatizing, it is undeniable they are going to get sick. Over the years, Dr. Stephen Muza and Dr. Beth Beidleman of the **U.S. Army Research Institute of Environmental Medicine** have received numerous inquiries from operational forces requesting improved guidance for sustaining altitude acclimatization after descent.

Rapid ascent to altitude causes illness, properly known as **Acute Mountain Sickness**, during the first 48 hours at altitude because of the environment's lower oxygen pressure levels, which then causes less oxygen to get to critical organs, like the brain, and working muscles. Altitude acclimatization attained over days of exposure to high altitude is the most effective way to prevent AMS. However, how quickly acclimatization is lost upon descent and if acclimatization can be sustained at low altitude is not well known.

USARIEM researchers recently concluded a 12-day study at the Institute's **Mahe Memorial Altitude Laboratory**, located on the summit of **Pikes Peak** in Colorado, to test a method to sustain altitude acclimatization. Researchers studied how AMS symptoms decreased and exercise performance improved as test volunteers acclimatized to the hypoxic environment.

"When the test volunteers first get to the top of Pikes Peak at 14,115 feet, they could potentially suffer from AMS, which would degrade their physical and cognitive performance," said Beidleman, a research physiologist and the principal investigator of the altitude study. "By the end of those 12 days, their bodies are well adjusted to the hypoxic environment. Although we did a 1992 altitude study to see how long it takes to lose acclimatization, we do not know whether or not we can sustain (acclimatization) as Soldiers return to sea level by intermittently exposing them to hypoxia (low oxygen) in 'hypoxia rooms.'"

Next, Dr. Mark Buller, a computational physiologist and Beidleman used physiological status monitors to develop individualized models that could help predict which Soldiers are likely to get AMS and which Soldiers will remain symptom-free. When test volunteers stepped foot on Pikes Peak, they immediately donned chest harnesses that tracked minute-by-minute heart rates and arterial oxygen saturations for the first 24 hours of their exposure to 14,115 feet to help detect

Volunteers run on treadmills as part of a 12-day study at USARIEM's Mahe Memorial Altitude Laboratory atop the 14,115-foot Pikes Peak in Colorado.



development of AMS during the altitude exposure.

Then three times throughout the 12-day study, volunteers participated in time trials, where researchers assessed volunteers' physical performance. The volunteers ran for 3.1 miles at a 1-percent grade on a treadmill while researchers monitored their breathing, oxygen consumption and heart rates. This physical performance test can be especially grueling during the first 48 hours, when AMS is at its worst.

"We know when Soldiers go to altitude, their performance is impacted," Beidleman said. "Whatever task you do at sea level, it takes you longer to do at altitude. We are looking at how physical performance improves over time at altitude as your body adjusts to the hypoxia."

Volunteers also settled at computers to take daily cognitive tests, using the Automated Neuropsychological Assessment Metrics battery, a computer-based tool designed to detect reaction time, speed and accuracy of attention, short-term and

Peak Season

Studying human performance at altitude

By Mallory Roussel, USARIEM Public Affairs/COLORADO SPRINGS, Colo. (Aug. 5, 2016)

long-term memory and thinking abilities, and the Synthetic Work Program test, which evaluates multitasking ability.

"Cognitive performance is very important for the military because Soldiers have to be able to identify a friend or foe," Beidleman said. "That involves quick reaction times and short- and long-term memory."

Next, blood and ventilation teams tested the volunteers' blood and resting breathing. According to Beidleman, during acclimatization, a person begins to breathe more, which helps transport more oxygen to the working cells, and also loses plasma volume, which concentrates the red blood cells and also improves transport of oxygen to the working muscles. Once arterial oxygen saturation levels start to creep up and they start producing more red blood cells, overall health and performance improves at altitude.

Research continued even while volunteers were asleep. The low oxygen and AMS can also affect Soldiers' sleep quality and quantity by causing periodic or irregular breathing and even instances of sleep apnea.

"The volunteers have a lot of awakenings before acclimatizing," Beidleman said. "You do not breathe for about 15 to 25 seconds, and, all of a sudden, you gasp for air. We use sleep watches to measure sleep quality and quantity before, during and after acclimatization."

On Day 13, the researchers and volunteers flew back to USARIEM for a 12-day treatment phase. During the treatment phase, volunteers spent either three hours a day in USARIEM's normobaric hypoxia room, a simulated altitude room that lowers the amount of oxygen but maintains the same pressure at sea level, or a sham normobaric hypoxia room that keeps oxygen levels the same as at sea level. Volunteers were blinded to what treatment they were receiving. Finally the volunteers

spent 24 hours in USARIEM's hypobaric chamber, which can simulate Pikes Peak's oxygen and pressure levels at 14,115 feet, to see if the normobaric treatment sustained their acclimatization.

Surprisingly, not everyone is susceptible to AMS. Some Soldiers might display severe symptoms while at altitude, such as headache, vomiting, fatigue, lassitude or trouble sleeping that is so severe they need to be put on supplemental oxygen. Others are seemingly immune. Beidleman wants to learn why.

Dr. Nisha Charkoudian, a research physiologist, is looking at muscle sympathetic nervous activity as a potential predictor of who will and will not get AMS or have greater than normal decrements in physical or cognitive performance.

"What makes this individual different from that individual?" Beidleman asked. "We are looking at blood and genetic biomarkers that may be able to predict who is more likely to get or not get sick."

According to Beidleman, USARIEM is moving toward individualized medicine and eventually wants to create "something like a urine pregnancy test to see whether or not Soldiers are more likely to get AMS." This would not prevent Soldiers from going to altitude, but it would make the leaders aware of what to expect and know who is susceptible and who may need intervention early in altitude exposure.

"It is a scientific advancement to move toward these individualized models and develop a method to help our troops when they have to go on repeated missions to altitude," Beidleman said. "If we could prevent AMS upon return trips to altitude by sustaining acclimatization, Soldiers might have to experience AMS during the first exposure to altitude, but we could sustain that acclimatization so they would not have to go through those miserable 48 hours again. That is a huge benefit for the Soldier and the Army."



Altitude study volunteers shoot a few hoops in the parking lot of USARIEM's Maher Memorial Altitude Laboratory, which sits at the summit of Pikes Peak in Colorado. The decades-old lab will be demolished in 2018 and replaced by a new facility.

Photo: David Kamm, NSRD/EC Strategic Communications

'Time Warp'

USARIEM's Pikes Peak lab 50 years old

By Mallory Roussel, USARIEM Public Affairs/PIKES PEAK, Colo. (Aug. 12, 2016)

The winding 14,115-foot ascent to the [U.S. Army Research Institute of Environmental Medicine's Maher Memorial Altitude Laboratory](#) at the summit of [Pikes Peak](#) in Colorado is something USARIEM researchers have described as a "time warp."

As people swing past the newer souvenir shops and tourist areas down below, the buildings get progressively older the higher you go. At 50 years old, USARIEM's Pikes Peak lab is one of the oldest buildings on the summit.

With both USARIEM's [Thermal and Mountain Medicine](#) and [Military Nutrition Divisions](#) conducting studies from June to August 2016, it is one of the busiest years for the lab – and for good reason. This is the last year for researchers to use this Pikes Peak lab before its scheduled demolition in 2018.

According to TMMD division chief Dr. Stephen Muza, there is a plan to design a new, ecologically sensitive Visitors Center and Pikes Peak lab and to restore the summit to a more pristine condition. The new lab will be constructed on the opposite side and slightly below the summit, giving tourists an unobstructed, 360-degree view of the sweeping landscape surrounding the Peak.

This summer, while TMMD researchers conducted a study on sustaining acclimatization and preventing [Acute Mountain Sickness](#), some could not help but reminisce over the

many scientific accomplishments, challenges and people they have worked with in the historic lab.

According to Dr. Allen Cymerman, one of the first USARIEM researchers to conduct a study with the Army on the summit in 1970, the Fitzsimons Army Medical Center previously owned the lab and conducted studies in the 1960s. The 1962 Sino-Indian War between China and India led the U.S. Army to focus on altitude research.

"It was one of the first large-scale confrontations between military forces at such a high altitude," Cymerman said. "The war sparked the U.S. Army's interest in altitude research, which eventually led to USARIEM obtaining the Pikes Peak lab."

The technology and the lab itself started from humble beginnings. In USARIEM's first study conducted at the Peak in 1970, "Strive the Divide," during which Cymerman studied Fort Carson Soldiers' ventilation, only girders and exterior walls protected and supported the lab, which also had no bathroom or kitchen.

"USARIEM did not have the sophistication of analyzing ventilation breath by breath like we can today," Cymerman said. "We collected gas in big plastic bags. The test volunteers would inhale the outside air and then exhale into the bag. We would analyze the bags and look at how well the Soldiers acclimatized."

USARIEM's lab facilities, technology and research evolved in later years into what Cymerman called the "center of altitude research." Renovations to construct a bathroom and kitchen in the lab in the 1980s allowed USARIEM the unique advantage of being able to conduct decades of altitude studies where volunteers lived on the summit. In the study this year, the lab housed 18 volunteers for 12 days at the summit, allowing researchers to study how well they acclimatized to the altitude.

"The Pikes Peak lab is one of the few in the world where researchers can house people with sanitation and food to study them for long periods of time," Cymerman said.

Today, the lab stands as a relic of USARIEM's proud past of medical and altitude research, and USARIEM will continue to lead Army health and performance medical research in the future. Researchers this year have just finished their field study at Pikes Peak to find methods to sustain acclimatization in order to prevent Soldiers from experiencing debilitating decrements in physical and cognitive performance, as well as AMS symptoms on the battlefield.

"This study may help us better understand how to sustain altitude acclimatization upon return to sea level. Our goal is to optimize warfighter performance if the mission involves multiple deployments to mountainous terrain," said Janet Staab, a research associate from the ventilation team who has helped conduct Pikes Peak studies since 1990.

Unlike past Pikes Peak studies, this study also included a post-acclimatization treatment phase, in which the volunteers returned to USARIEM at sea level and spent three hours

per day for 12 days in a low-oxygen hypoxia tent. Upon completion of the treatment, the volunteers were re-exposed for 24 hours in a hypobaric chamber, which simulated the conditions on Pikes Peak, to see if this treatment was effective in sustaining the acclimatization acquired while living on the summit. It takes a lot of dedication for volunteers to commit nearly 30 days to a study, knowing they will likely experience symptoms of AMS, which include headache, nausea, vomiting, difficulty sleeping, fatigue and lassitude.

"The Pikes Peak lab is one of the few in the world where researchers can house people with sanitation and food to study them for long periods of time."

Dr. Allen Cymerman, USARIEM

It is because of the ability to house researchers and volunteers under the same roof, which allows researchers to boost volunteers' morale during challenging points in the study, that generations of people have been able to form happy memories within the lab's walls. Although studying AMS can be difficult for both researchers and volunteers, Staab said there is a lot of "camaraderie."

"Besides the privilege of working with some of the most world-renowned experts in altitude physiology, it is impressive to observe the volunteers who have 'gutted it out' and dedicated their time while experiencing AMS, as well as difficulties in exercising and concentrating, for the sake of

the study," Staab said. "We expect to see altitude illness and decrements in performance when lowlanders rapidly ascend to 14,115 feet, and that is what the volunteers are prepared for before ascent. Some volunteers struggle for the first few days, but as symptoms improve, they feel proud they stuck it out for a good cause: helping the warfighter and advancing [Army Medicine](#)."



Seeing is Believing

Williamson visits BCIL at Devens

By John Harlow, USAG Natick Public Affairs/NATICK, Mass. (Aug. 8, 2016)

They say seeing is believing, and Lt. Gen. Michael Williamson, the principal military deputy to the [Assistant Secretary of the Army for Acquisition, Logistics and Technology](#), walked away from his Aug. 4 tour of the Base Camp Integration Laboratory at Fort Devens, Massachusetts, a believer in the facility.

“I am watching innovative ideas on how to support and sustain and help our Soldiers go from good ideas into equipment that we test and can very quickly get out into the field,” said Williamson. “That connection is really important. There are lots of good ideas out there, but how often do they really manifest (themselves) into something that a Soldier uses and saves his or

her life and makes their life easier? That is what I saw here. This integration lab really makes a big difference of taking all of those great technologies and putting them all together and seeing how they work and having the ability to tweak left or right to make them better.”

Williamson saw firsthand a Force Provider kit that is deployable, a Force Provider kit with experimental energy-saving enhancements, and an example of Rigid Wall technology on display at the camp.

[Product Manager Force Sustainment Systems](#) operates the BCIL and works in partnership with the [Natick Soldier Research, Development and Engineering Center](#) to find new technologies that improve the quality of life for the deployed Soldier and reduce the energy footprint from the camp.

NSRDEC has been in the lead [Science and Technology Objective-Demonstration for Base Camps](#), and having the Base Camp Integration Lab close by at Fort Devens has enhanced the research.

“I wanted Lt. Gen. Williamson’s support for sustaining the Army science and technology system engineering and technology integration capabilities that have been developed by the STO-D over the past five years,” said Douglas Tamilio, NSRDEC director. “The continuation of this capability will provide resources to facilitate technology transition to our (Program Executive Officer) partners and knowledge transition to our (U.S. Army Training and Doctrine Command) partners in support of requirements development.”

Force Provider kits have deployed to Liberia and Senegal in support of Operation United Assistance, Iraq in support of Operation Inherent Resolve, and Afghanistan in support of Operation Resolute Support.

“I saw facilities that are deployable, cost-effective and provide a level of comfort,” said Williamson. “As a Soldier, nobody ever said anything is going to be easy. We aren’t looking at putting people up at the Ritz, but we are looking at providing basic comfort to our Soldiers. That is what I am seeing delivered from the people at Natick, the PM shops and at this integration lab.”

The Force Provider team provides a strategic capability for the nation and could be a critical asset for combatant commanders.

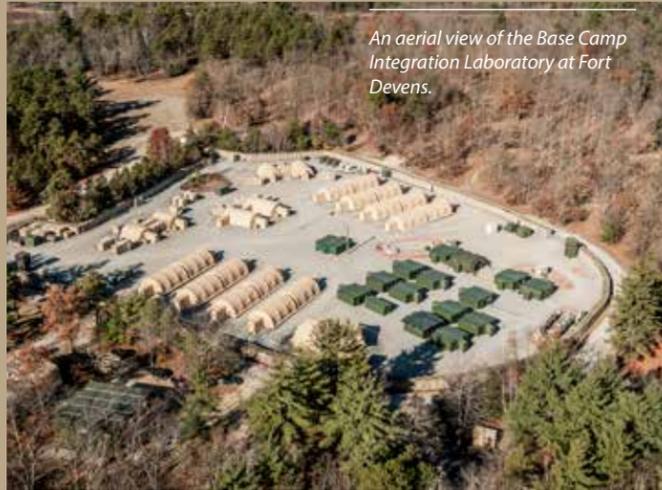
“The Force Provider team is second to none in terms of competence and passion for what they do,” said Lt. Col. Frank Moore, Product Manager Force Sustainment Systems. “They always put the Soldier first and take pride in their proven track record of providing quality-of-life support to the Army at a moment’s notice, any place in the world.”

The BCIL collects evaluation data to quantify components of performance when compared to current configurations. The BCIL provides the ability to evaluate the overall impact on fuel requirements, water requirements and waste system of a deployable base camp. Studies also focus on the effects on the transformation footprint and sustainment tail and can estimate the return on investment and suitability for deployment.

“Seeing everything, all (the base camp) put together, is really important,” said Williamson. “You hear about the various technologies, and you don’t see them put together. I am not sure that people are capturing what I learned here – engineers, scientists and smart folks at Natick providing capability to program managers that have the opportunity to do integration and testing.”

“I also was really impressed that Soldiers from the Guard are using the equipment and providing immediate feedback,” Williamson added. “We are one Army and have Guard Soldiers here for training, and the real-time feedback they provide helps us get the equipment to the field much sooner and not to block out separate times and organizations to train on it, use it and apply it.”

One of the goals of the presentation to the general was to show the teamwork between PM-FSS and NSRDEC.



An aerial view of the Base Camp Integration Laboratory at Fort Devens.



Photos: David Kamm, NSRDEC Strategic Communications

“I saw facilities that are deployable, cost-effective and provide a level of comfort. As a Soldier, nobody ever said anything is going to be easy. We aren’t looking at putting people up at the Ritz, but we are looking at providing basic comfort to our Soldiers.”

Lt. Gen. Michael Williamson

“I think it is critical having these organizations together,” said Williamson. “What I saw today was a partnership that is really working. We always want to talk about having a synergy, but I see it here today manifested in the teams. I couldn’t tell you who was from what organization. This was one team working toward solution sets, and that is beyond critical when you are seeing it work effectively.”

Williamson said there needs to be a culture change going forward.

“If you are a commander and you have a unit and are worried about an operation puts a lot on your plate, and when someone says, ‘We have something to give you,’ the commanders

usually react with ‘Great ... something else,’” said Williamson. “What I want is to change the dynamic. I want there to be situational awareness about the capabilities that Force Provider provides and have commanders asking for this capability when they know that they are going to be setting up a base camp or forward operating base. Not everyone knows of this capability, and that needs to change.”

The Base Camp Integration Laboratory has been operational for more than four years and has evaluated 30 technologies, and six new technologies have been inserted into the Force Provider kit that is deployed today.



Think Like a Soldier

Improving memory in stressful situations

By Jane Benson, NSRDEC Public Affairs/NATICK, Mass. (Aug. 19, 2016)

Photo: David Kamm, NSRDEC Strategic Communications

What do a premier research, development and engineering facility, a top university, and an elite airborne infantry division have in common?

All three entities – which include the [Natick Soldier Research, Development, and Engineering Center](#), or NSRDEC, [Tufts University](#), and the [82nd Airborne Division](#) – are working together to improve learning, teaching and memory techniques for the paratrooper. Their work is facilitated by the [Center for Applied Brain and Cognitive Sciences](#), or the Center for ABCS.

The Center for ABCS is a cooperative research center co-directed by Dr. Caroline Mahoney, team leader of NSRDEC's Cognitive Science Team, and Dr. Holly Taylor, professor, Tufts University Department of Psychology. The center's work will ultimately provide insight into how Soldiers think in response to ever-more-complicated, stressful and challenging environments.

"The Center for Applied Brain and Cognitive Sciences and the relationship among Natick, Tufts and the 82nd facilitates studies and learning opportunities for Soldiers," said Dr. Marianna Eddy, a research psychologist on the NSRDEC Cognitive Science Team.

"The Center for ABCS has been instrumental in facilitating collaboration between NSRDEC and Tufts," said Tufts University's Dr. Ayanna Thomas, who is working with NSRDEC and the 82nd to help paratroopers improve memory and develop new approaches to learning. "Collaborative center funding has resulted in the development of research programs with NSRDEC personnel. Further, through interaction with NSRDEC personnel, Caroline Davis and Marianna Eddy, I learned that the 82nd had an interest in restructuring training programs based on cutting-edge research in my field. This only became apparent because of my work funded through the center and ongoing collaboration with Dr. Davis."

Eddy is pleased to have the chance to collaborate with Thomas, an expert on learning and memory.

"In collaboration with Dr. Thomas, we will be working to improve learning and memory in [Jumpmaster School](#) by providing insight about techniques that may be implemented to improve performance in the school," said Eddy.

Thomas is interested in what gets people to the point where information is learned well and remembered well and where they are able to retrieve that information in all sorts of different situations, including situations that are high stress.

"Presently, my graduate student, Gregory Hughes, has been observing jump master training to determine how trainees are instructed and evaluated," said Thomas. "Greg, Caroline Davis, Marianna Eddy, and I will soon be discussing the strengths and weaknesses of the training program, and, hopefully, implementing changes based on scientific research in my lab and related labs to improve the success of the program. Not only do we expect to improve the outcome for students, but we expect to produce important scientific publications demonstrating the value of specific cognitive training protocols in the context of complex learning."

"The relationship with the Soldiers is so important. We get to see firsthand the conditions and stress that Soldiers operate under."

Dr. Marianna Eddy, NSRDEC Cognitive Science Team

The Tufts/NSRDEC effort is part of a larger partnering effort by NSRDEC and the 82nd Airborne to help NSRDEC researchers garner greater insight into Soldier needs. Several organizations at NSRDEC, including the Cognitive Science Team, are working with the 82nd to develop products, techniques and solutions.

NSRDEC's work with the 82nd is part of an all-encompassing science and technology effort called the S&T Project Integration Pilot, which is part of the Soldier and Squad Performance Optimization, or S2PO, initiative.

"The relationship with the Soldiers is so important," said Eddy. "We get to see firsthand the conditions and stress that Soldiers operate under. It is very helpful as a scientist to see firsthand what Soldiers do on a day-to-day basis, and the level of access the 82nd has given is great. It is making knowledge transition more immediate. It's also helping us to link up with other folks in the Army who are interested in our work."

"Too often we researchers are divorced from the practical impact of our research," said Thomas. "Having this opportunity to directly help individuals whose lives may depend on quick access to learned information puts my research into perspective."

"It is important for Soldiers to know that scientists are working to improve their experience as a Soldier, from the products they are fielded with to the way they learn," said Eddy. "Exposing leaders within the battalion, whether it be a squad leader or a team leader, to different ways

of learning and approaching tasks can provide them with insight on improving the way they teach and train their Soldiers."

Soldier input is key to the process. Both Eddy and Thomas believe that some of the best suggestions on how to improve learning come from Soldiers themselves.

The Center for ABCS facilitates easier and more frequent interaction between researchers and Soldiers. For instance, Thomas gave a class on the science of learning to paratroopers visiting NSRDEC. The class provided Soldiers with information that they can integrate into their training practices and daily lives.

Thomas was impressed by her students from the 82nd.

"One of the most notable difference between the attendees and my usual audience is the frankness with which the attendees commented on the research presented," said Thomas. "It was clear to me that they were truly engaged but also examined the research with a critical eye. I found this particularly refreshing. Their honest and frank assessment resulted in my re-evaluation of how I present the research. The attendees wanted direct discussion of how this research could impact their learning."

"This class gave Soldiers a chance to learn about techniques that improve learning," said Eddy. "Some of these Soldiers are team leaders who train other Soldiers, so this class gives them the tools to do it better and understand how learning works."

"I think I gave the attendees tangible ways to restructure training, so as they move forward and become trainers themselves, they will be able to incorporate such useful learning techniques as retrieval



Photo: David Kamm, NSRDEC Strategic Communications

Dr. Marianna Eddy of NSRDEC explains the cognitive tasks Soldiers from the 82nd Airborne Division performed during a study to Lt. Col. Phillip Kiniery, commander of the 2nd Battalion, 504th Parachute Infantry Regiment, 1st Brigade of the 82nd, fourth from right.

practice and elaborate encoding into their own lesson plans," said Thomas. "The goal is to give them the skills to become good trainers, laying the foundation for better training practices moving forward."

NSRDEC and Tufts are working to overcome the myths, of which there are many, that surround how people actually learn.

Thomas explained that one prevailing myth is that people are stuck with poor memories.

"Anyone can improve their ability to remember and recall information," said Thomas. "It simply comes down to whether you practice effective memory skills. Your memory can be exercised just like anything else. The fact still remains that practice makes perfect."

Another prevalent myth is that you can clutter your mind with too much information.

"How you organize the information you are trying to remember is more important than the quantity," said Thomas. "In fact, our long-term memory capacity is limitless."

There is also a prevalent misconception that memory improves with long hours of practice.

"The way you practice is more important than how much you practice," said Thomas. "In other words, you should use creative, relevant strategies unique to your own learning style rather than an ineffective strategy for hours on end."

Although people may dread testing, it turns out that repeated testing is actually one of the best ways to learn.

"There is a robust finding in the cognitive psychology literature known as the 'testing effect,'" said Thomas. "Across approximately 200 empirical studies, research has consistently demonstrated that repeated testing leads to better long-term retention of information as compared to repeated study."

"Through the process of taking a quiz, the student is actually encoding and retaining more and has more in-depth knowledge than the rote learner," said Eddy.

The work being done by NSRDEC, Tufts and the 82nd Airborne has broad, long-term implications.

"There has been an immediate impact from all this work," said Eddy. "I envision that, eventually, the learning tools we end up giving Jumpmaster School instructors could be generalized and applied to other settings. What we learn could potentially be helpful to a larger audience within the Army and help revise how material is taught to Soldiers."

"ADRP 7-0, our Army's Training Doctrine, states that mastering a task is having the ability to execute it instinctively," said Lt. Col. Phillip Kiniery, battalion commander, 2nd Battalion, 504th Parachute Infantry Regiment, 1st Brigade Combat Team, 82nd Airborne Division. "The transfer of knowledge happening with the Cognitive Science Team at NSRDEC has improved our approach to training that has already been defined in our doctrine. The collaboration with our NCOs and the scientists is developing agile and adaptive leaders that can understand and adjust their training environment in order to truly achieve mastery of a skill."

Silver Streak

Army specialist claims Olympic medal

By Tim Hipps, IMCOM/RIO DE JANEIRO (Aug. 23, 2016)

Sp. Paul Chelimo relied on the strength he developed as a Soldier to get through the men's 5,000-meter run at the [Rio Olympic Games](#), where he eventually claimed the silver medal.



On the way to the medal race, Chelimo ran his personal best time of 13 minutes 19.54 seconds to win his qualifying heat on Wednesday, Aug. 17. At the finals, Saturday, Aug. 20, he pushed past that personal best by more than 15 seconds to finish runner-up to Great Britain's [Mo Farah](#) in 13:03.94.

But his greatest challenge came moments after the race, when a NBC journalist informed him that he had been disqualified for lane infringement.

"Getting the news from the television reporter that I was disqualified, that was the most heartbreaking thing in my life," said Chelimo, 25, a native of Iten, Kenya, who trains in Beaverton, Oregon, as a Soldier in the [U.S. Army World Class Athlete Program](#).

The race featured a lot of pushing, shoving and stumbling by numerous runners throughout, and came down to a frenetic sprint to the finish in the final 200 meters.

"It was really tactical two or three laps into the race with two Ethiopians trying to lead," Chelimo said. "I was trying to stay in between them, but they wouldn't let me. They kept pushing me and kept blocking me the whole time because they were working as a team."

Once Farah had worked his way to the front, Chelimo knew he had to work his way out of the box or other runners could pass on the outside to collect the silver and bronze medals.

"I was the guy inside in lane one, the guy inside behind Mo Farah," Chelimo said. "I couldn't stay there the whole time. I wanted to medal, too, so I had to look for position to get out and go into contention."

During that process, track officials briefly disqualified Chelimo for stepping on the inside lane line, but the disqualification was overturned upon appeal, and Chelimo won his silver medal.

"They said it was infringement, but going back to what happened is people were pushing back and forth," Chelimo explained.

The appeal process was the longest wait of his life, Chelimo said. [Secretary of the Army Eric Fanning](#), who attended the games as a member of President Barack Obama's U.S. Delegation to Brazil, said the entire delegation was pulling for Chelimo.

"I'm only here because of these Army Soldiers," Fanning said. "That's the reason I'm part of this delegation. But it was fun for the entire delegation to have an extra reason to cheer, not just for the United States but for the Army, so they were screaming loudly for him: 'Who's your Soldier? Who's your Soldier?'"

One of the delegation members, four-time Olympian and six-time Olympic medalist [Jackie Joyner-Kersey](#), believed all along that Chelimo would be reinstated.

"Pushing and shoving is a part of the sport," Joyner-Kersey said. "That's what you do, so I was glad to see our track and field federation was on it and got the protest in there. We prevailed, and I was glad to see him up on that podium."

For Chelimo, now that the Olympics are over, his real work begins. As an Army Soldier and member of the World Class Athlete Program, he will take his silver medal with him on tour throughout the U.S. as a trainer and an inspiration to America's youth.

The WCAP Soldier-Olympians, when not actively training or competing in international competitions, participate in recruiting and training missions. WCAP members recently visited Fort Gordon, Georgia, where they assisted with the events at the local Best Warrior Competitions.

"We're taking the skills and training that we learn in WCAP and teaching them to Soldiers," said Sgt. 1st Class Keith Sanderson, who competed in the rapid fire pistol event at Rio. "We show them how they can apply the lessons we've learned in competition to their daily jobs and to the war-fighting effort."

From nutrition to weight training to proper sleep patterns, the Soldier-Olympians remain ambassadors even after they return to their regular units and normal duties.

[Liliana Ayalde](#), U.S. Ambassador to Brazil, said even she was impressed with Chelimo and urged him to "be a role model to let others know that that it can be done with hard work, with training, with discipline."

"Despite the obstacles, you just keep going," Ayalde told Chelimo the morning after the race. "That takes a lot of mental preparation, and it says a lot about you."

Chelimo said he was eager to fill that role.

"Especially with all the young high school kids, that's my main focus right now," Chelimo told Ayalde. "I want to encourage and motivate all of the high school kids. I really want to motivate them and give them confidence."

[Maj. Dan Browne](#), coach of the U.S. Army World Class Athlete Program distance runners, who sweated through the disqualification and reinstatement process along with everyone else, was not surprised by the outcome.

"I believed in my heart special things were going to happen," Brown said, "and I'm so appreciative and thankful that it did come through. All the training paid off."

"Hard work and perseverance works," Chelimo agreed.



"WindHawk" team member Zachary Anderson of Beverly, Mass., holds a model of the student group's wind turbine at the U.S. Department of Energy Collegiate Wind Competition 2016.

Photo: University of Massachusetts Lowell

Like the Wind

NSRDEC helps UMass Lowell students thrive at national competition

By University of Massachusetts Lowell/LOWELL, Mass. (July 12, 2016)

A team of UMass Lowell students placed second in a national engineering competition that challenged them to design and test a concept for a wind-energy system that could be used in real-world situations.

Known as "Team WindHawk" – a play on the name of UMass Lowell's sports teams, the River Hawks – the engineering and business majors were invited to participate in the [U.S. Department of Energy Collegiate Wind Competition 2016](#) after the agency reviewed UMass Lowell's project proposal for the contest. As a result, the agency awarded the team \$19,961 through the [National Renewable Energy Laboratory](#) so the students could cultivate their concept for the competition. The [Massachusetts Clean Energy Center](#) then awarded the students an additional \$13,594 in seed money for their project.

The competition challenged students to devise a concept for a wind-energy system that could supply electricity to users living off

the grid. The students then were asked to develop a business plan and identify a prospective site for their product before building a reduced-scale model of it that demonstrated its viability. The UMass Lowell team chose to design a dual wind-turbine energy solution that could be used to meet the needs of U.S. soldiers stationed in countries such as Afghanistan where they may not have consistent access to electricity.

The competition drew teams from colleges and universities across North America. The final presentations of the students' projects were made during the [American Wind Energy Association's](#) Wind-power Conference and Exhibition in New Orleans.

"The wind competition was the best experience of my college years. It taught us the importance of teamwork, communication and meeting quality standards and deadlines, things you don't normally get to do inside a classroom," said Team WindHawk member Christian Bain of Reading, who plans to pursue a career in the renewable energy sector.

Team WindHawk designed two types of wind-energy systems that could be used by the Army. The first consists of an inflatable kite with dual wing-mounted turbines that could produce up to 6 kilowatts of electrical power. The kite, which measures 13 feet wide, would be tethered to the ground with a 1,640-foot-long cable and could be deployed or stowed in less than a half-hour. The second system is a network of ground turbines with a combined output of 4 kilowatts of electricity. Each ground turbine would be mounted on a lightweight, portable truss tower.

The students received guidance from UMass Lowell faculty and researchers from the [Natick Soldier Research, Development and Engineering Center](#), who work together through the [Harnessing Emerging Research Opportunities to Empower Soldiers \(HEROES\)](#) initiative. The partnership seeks to improve the performance and protection of U.S. troops.

The team also benefited from the expertise of UMass Lowell faculty and researchers involved in the university's Center for Wind Energy and the WindSTAR Industry/University Cooperative Research Center. These national ventures are working to advance the science behind wind-turbine systems and the wind-energy industry overall.

"Our students as a team really excelled in integrating the technical aspects of the project with the business plan and presented them

The students received guidance from UMass Lowell faculty and researchers from the Natick Soldier Research, Development and Engineering Center, who work together through the Harnessing Emerging Research Opportunities to Empower Soldiers (HEROES) initiative. The partnership seeks to improve the performance and protection of U.S. troops.

successfully to the judges," said team adviser Christopher Hansen, an assistant professor in UMass Lowell's Mechanical Engineering Department who works in WindSTAR and the Center for Wind Energy.

Other faculty advisers included Prof. Christopher Niezrecki, chairman of UMass Lowell's Mechanical Engineering Department; Mechanical Engineering Associate Prof. David Willis; Plastics Engineering Associate Prof. Stephen Johnston; Michael Darish, a faculty member in the Electrical and Computer Engineering Department; and Tom O'Donnell, director of UMass Lowell's Innovation Hub and a visiting professor of management and entrepreneurship. Offering technical advice to the team along the way were Army Capt. Christopher O'Brien and advisers from Natick Soldier Research, Development and Engineering Center and Fort Belvoir in Virginia.

Guidance and sample materials for designing the inflatable kite were provided by Federal-Fabrics-Fibers Inc. (3F) of Lowell.

The students developed their project in UMass Lowell's College of Engineering Makerspace, which offers both space and technology to promote collaboration in engineering and other sciences, 3D printers, stations for electronics and machining, whiteboards and conference areas.



Photo: Dennis Schneider, National Renewable Energy Laboratory

Students from UMass Lowell present their business plans and technical engineering designs in a closed-door meeting with a panel of judges at the U.S. Department of Energy Collegiate Wind Competition 2016.

Army testing Zika vaccine

Human studies could follow later this year

By Gary Sheftick, Army News Service/WASHINGTON (July 6, 2016)

Doctors at the [Walter Reed Army Institute of Research](#) who have developed a [Zika](#) vaccine that they've successfully tested on mice are now testing it on monkeys and hope to begin testing on humans later this year.

Their study, published June 28, in the journal *Nature*, demonstrated how mice developed immunity to the Zika virus after injection with a purified inactivated virus vaccine, called ZPIV.

The study also involved a second type of vaccine developed by research collaborators at [Harvard Medical School](#). This DNA vaccine was tested at the [Beth Israel Deaconess Medical Center](#), and the research involved scientists from all three organizations.

Findings indicated that single shots of either vaccine protected mice against Zika, but Col. Stephen Thomas said WRAIR researchers are focusing on ZPIV because it builds on a type of vaccine that has already been licensed.

"Walter Reed has been working on flavivirus vaccines for more than a century," said Thomas, an infectious disease physician who is the WRAIR lead for the Zika vaccine. The flavivirus family of diseases includes [West Nile virus](#), dengue and yellow fever – and Maj. Walter Reed's research in the 1890s eventually helped eradicate yellow fever.

"We started to conceptualize the development of the Zika vaccine actually a couple of years ago," Thomas said. He explained that WRAIR researchers had spotted outbreaks of the disease that resembled dengue in Southeast Asia and French Polynesia.

This past fall, however, they realized there could be a serious need for a Zika vaccine here in America.

"We very, very quickly started to conceive of animal studies," Thomas said.

While their published research focuses on mice, WRAIR "almost in parallel" began experimenting on primates, Thomas said. They believed rhesus monkeys could have reactions to the vaccine that might more closely correspond to human reactions.

While their non-human primate research is all but complete, Thomas said the results have not yet been finalized and cannot be released.



The one thing he could say is "we remain optimistic."

The goal is to begin clinical studies with humans by the end of the calendar year, Thomas said.

But when will the vaccine be approved for distribution? "That's the 60-million-dollar question," Thomas said, adding that it usually takes a number of years to license a vaccine.

"I don't think we're looking at the normal timeline of almost up to a decade," he said.

"Hopefully, that's not going to be the case here, because we're in the middle of an epidemic and an outbreak that's taking a significant toll on the affected countries."

Several service members were recently infected by Zika. "It's emerging as a DOD issue,"

Thomas said, adding that U.S. forces are deployed to areas in [Southern Command](#) that are "Zika-endemic."

"Our institution's number one mission is to preserve and ensure operational readiness," he said about WRAIR.

About two dozen WRAIR personnel are researching the vaccine and conducting the tests, Thomas said. Another half dozen are working in Africa and Asia on bio-surveillance activities, he said.

Col. Nelson Michael, the WRAIR Zika program co-lead, also runs the military HIV research program. "He's the one that has the primary relationships with Harvard," Thomas said.

Dr. Kenneth H. Eckels runs the WRAIR production facility and Thomas said: "This guy knows more about making flavivirus vaccine than anyone I know."

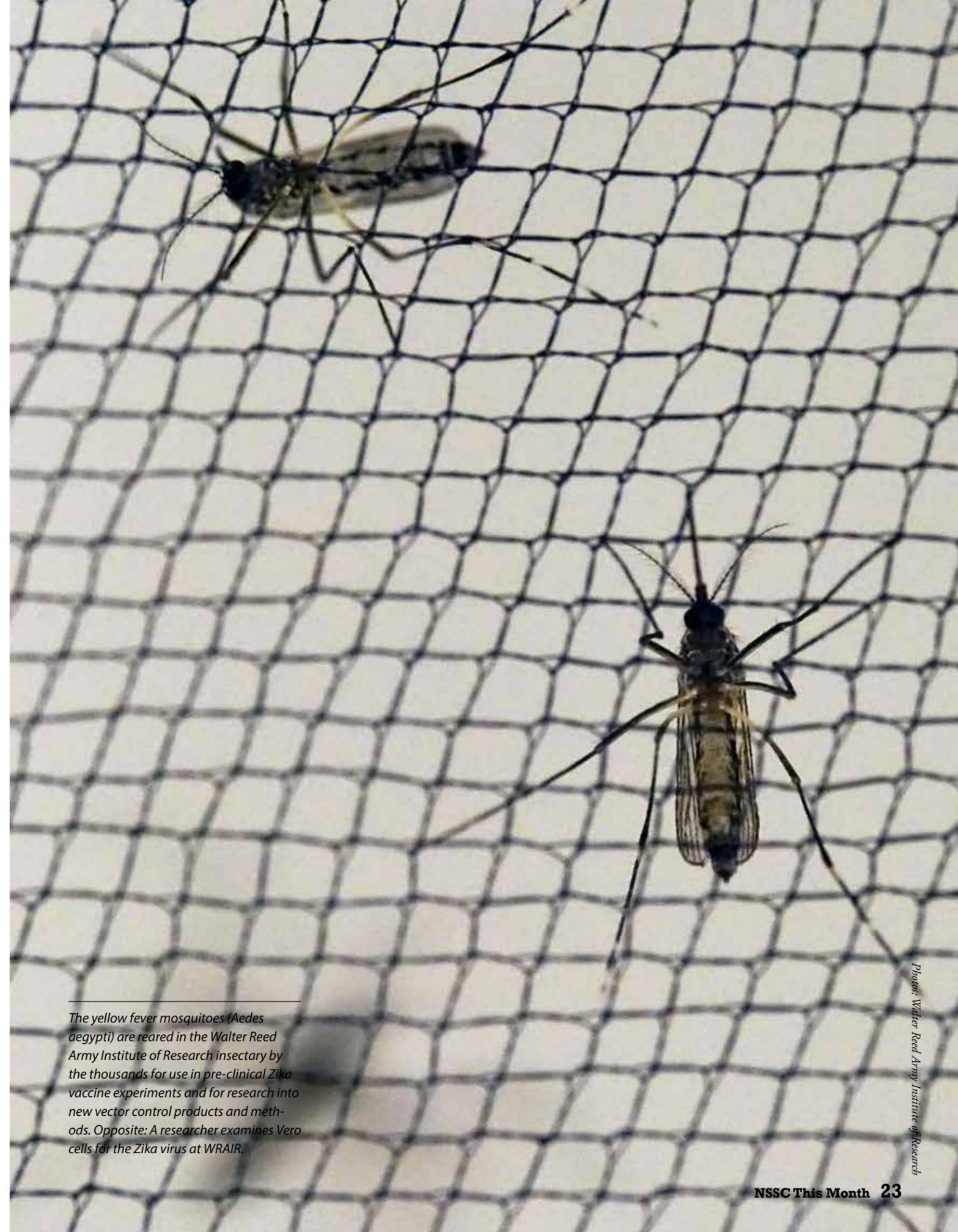
The Pilot Bioproduction Facility at WRAIR is now manufacturing small doses of the ZPIV vaccine for clinical studies.

Clinical research will be conducted at the WRAIR facilities, and studies will also take place elsewhere by the [National Institutes of Health](#) vaccine trial evaluation units, Thomas said.

The [National Institute of Allergy and Infectious Diseases](#), or NIAID, will be the regulatory sponsor of the study, "not the Army," Thomas said, "but it's an Army vaccine, funded by the Army."

Data will be shared with regulatory agencies such as the [U.S. Food and Drug Administration](#). FDA be assured of the vaccine's safety before it can be produced on a large scale, Thomas said.

Still, someone has to be able to mass produce the vaccine at a scale to make a difference in world health, and that's millions of doses, Thomas said. So WRAIR is also exploring possible collaboration with pharmaceutical companies.



The yellow fever mosquitoes (*Aedes aegypti*) are reared in the Walter Reed Army Institute of Research insectary by the thousands for use in pre-clinical Zika vaccine experiments and for research into new vector control products and methods. Opposite: A researcher examines Vero cells for the Zika virus at WRAIR.

Photos: Walter Reed Army Institute of Research

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A Nation Remembers



Photo: Amy Dreher, courtesy 9/11 Memorial

WILLIAM CHARLES JENKINS

EDWARD R. HENNESSY

DALE

BERRY BERENSON PERKINS

ROBERT

ORAZIO PUODDIO

LAURIE ANN NEIRA

B