

# PERTINACITY





THE MISSION OF THE KOREY STRINGER INSTITUTE IS TO PROVIDE RESEARCH, EDUCATION, ADVOCACY, AND CONSULTATION TO MAXIMIZE PERFORMANCE, OPTIMIZE SAFETY, AND PREVENT SUDDEN DEATH FOR THE ATHLETE, WARFIGHTER, AND LABORER.



## KEEPING EVERY ATHLETE, LABORER, AND WARFIGHTER SAFE.

In January 2023, national attention turned to the world of sport safety when Damar Hamlin, a football player on the Buffalo Bills, suffered a cardiac arrest on the field. While some have said Hamlin's survival is a miracle, at UConn's Korey Stringer Institute (KSI), we know it was more than that. When Hamlin collapsed, athletic trainers sprang into action, administered CPR and used an AED that was on hand for just such an emergency. These basic safety measures saved Hamlin's life. So, it wasn't divine intervention or a lucky break. When sports programs have and enact emergency action plans like this, there is a 90% survival rate for cardiac arrest.

I had the chance to explain this and demonstrate the simple, lifesaving tools needed to keep every athlete safe in a segment with Soledad O'Brien on HBO Real Sports.

I have mixed feelings about publicity like this. While we're happy to have this sort of national attention from mainstream media, I dream of the day there are no journalists, tv hosts, or podcasters who want to interview me. Their interest is an indication of the work we still have to do, the lives we still need to save. In the end, our goal is to ensure these types of exertional illnesses are eradicated entirely.



The KSI team kept moving forward in 2022 to make this dream a reality. This year, with institutional support from UConn's College of Agriculture, Health and Natural Resources and our many partners, we continued to make strides with KSI's impactful outreach and research programs.

Our Team Up For Sports Safety (TUFSS) initiative continued to collaborate with key individuals at the state level to improve health and safety policies for high school athletes, visiting nine new states this year. The innovATe project has helped many schools hire athletic trainers and integrate their vital services into their sports program. Our ATLAS project continues to provide researchers and the public with real-time data on the location of athletic training services in each state. The National Heat Safety Coalition was rebranded as the Heat Safety and Performance Coalition (HSPC) and continues to protect workers from heat-related injuries and illnesses. The National Center for Catastrophic Sport Injury Research's (NCCSIR) has helped to improve the

From left, KSI's Sean Langan and Michael Szymanski, journalist Soledad O'Brien, Dr. Douglas Casa, and producer Nick Dolan at Gampel Pavilion during filming of HBO's "Real Sports With Bryant Gumbel."

prevention, evaluation, management, and rehabilitation of catastrophic sport-related injuries. The KSI team continues to develop new knowledge in the realm of heat safety in our state-of-the-art heat lab. Funding by numerous DOD grants and other sponsors continue to make this possible.

With these achievements behind us, KSI looks forward to expanding the progress we've made to other areas of the country and the world through our enduring commitment to heat safety. We know we have to keep working so no player needs a miracle to be safe and perform their best in sport.

**Douglas J. Casa**  
CEO, Korey Stringer Institute  
Professor, University of Connecticut





## A GLOBAL FORCE FOR CHANGE

This year the Korey Stringer Institute (KSI) celebrated its 10th year. Even though our celebration was delayed due to the pandemic, we are very proud of reaching this milestone. To have sustained our work for this long, when most nonprofits flounder in early years, is an incredible achievement. The anniversary marked an occasion not only to celebrate the important work we do at KSI, but also to show our partners and sponsors that they made the right choice investing in our mission.

Reaching this milestone also reminds us that there is still important work to be done. With the recently elevated attention to our cause, now is the

time to continue to push for better policies to protect the warfighter, athlete, and laborer. While doing this work we are fueled by the stories of those we are working to protect. Some of those people are student-athletes whose futures are still ahead of them. We have already made great strides introducing health and safety measures in high school sports programs across the country. An area for continued expansion is coaching education.

Coaching education is a central part of our mission. Parents entrust their children to coaches and programs that not only teach them, but shape their lives — lives KSI wants to protect. With that trust comes responsibility and an understanding of the impact that a coach and a sports experience can have on a student-athlete. At KSI, we also

take on that responsibility, through education, research, and advocacy.

As the founder of KSI, I want to see this Institute become a global force for change. I want to see us reach a point where, when someone thinks about safety in the physically active, they think of KSI. On behalf of the KSI team, I look forward to continuing to spread our life-changing work. Because in changing lives, we are also saving lives.

**Kelci Stringer**  
Founder and Spokesperson,  
Korey Stringer Institute



Jeff Miller, Dr. Douglas Casa, Ian Rapoport, Kelci Stringer, Jeff Pash, Jimmy Gould, Roger Goodell, Dr. Indrajeet Chaubey

## KOREY STRINGER INSTITUTE CELEBRATES FOUNDERS AT 10 YEAR ANNIVERSARY EVENT IN NEW YORK CITY



Jeff Pash, Roger Goodell, Kelci Stringer



Dr. Robert Huggins, Dr. Indrajeet Chaubey, Dr. Lindsay DiStefano, Roger Goodell, Dr. Rebecca Stearns, Dr. Douglas Casa



Troy Vincent, Orlando Pace, Carla Pace

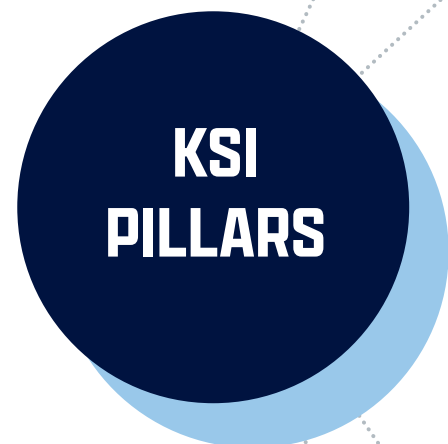


Dr. Indrajeet Chaubey, Dr. Lindsay DiStefano, Jessica Correia, Dr. Rebecca Stearns, Dr. Christianne Eason, Sean Langan, Dr. John Jardine, Gabrielle Brewer, Dr. Margaret Morrissey, Dr. Robert Huggins, Dr. Douglas Casa



Dr. Douglas Casa, Jimmy Gould





► RESEARCH

Our studies inform the future of heat safety, from developing rescue techniques to testing the efficacy of new products.

► EDUCATION

KSI programs and guides teach key people how to prevent sudden death in sport, recognize and treat heat illnesses, maximize elite performance in the heat, and build emergency action plans and heat stress management plans.

► ADVOCACY

We advocate for policies that are proven to reduce catastrophic injury in sport, protect all workers from heat stress, and require athletic trainers in all high schools.

► CONSULTATION

Our experts advise personnel at all levels of athletic competition and employers to ensure safety. We help manufacturers and companies validate wearable sensors and physiological monitoring devices.

► OUTREACH

KSI brings the knowledge gleaned from our research right to the people who need it most through programs including ATLAS, HSPC, innovATe, NCCSIR, and TUFSS.

CORPORATE PARTNERS

We would like to thank our corporate partners for their ongoing efforts to ensure the mission of the Korey Stringer Institute continues to thrive. Some of their efforts in 2022 are listed below.





# 2022

## BY THE NUMBERS

ACTIVE GRANTS  
CY 2022

16

PERSONNEL

24

PAID STAFF

85

VOLUNTEERS

MEDIA APPEARANCES  
(KSI SPEAKERS)

14

INTERVIEWS/  
PODCASTS

18+

CONFERENCES\*

PUBLICATIONS

21

BOOK CHAPTERS/  
MANUSCRIPTS  
(published/in press)

NUMBER OF ADDITIONAL  
STATES THAT MADE POLICY  
CHANGES IN 2022

11

2022 FUNDING

\$1,871,645

TOTAL

\$1,548,442

RESEARCH & ADVOCACY

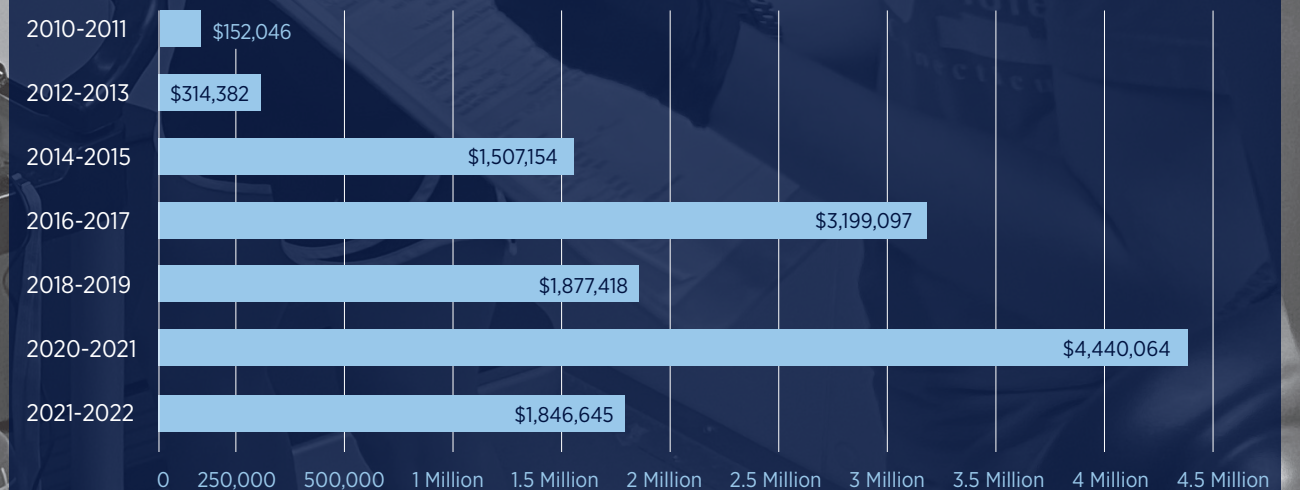
\$309,735

DONATIONS

\$13,467

SERVICES/ELITE ATHLETE  
TESTING/CONSULTATIONS

TOTAL FUNDING BI-ANNUALLY\*



TOTAL FUNDING 2010-2022 = \$13,336,806

\* KSI staff presented at 18+ conferences in 2022, including NATA, CATA, AIHce EXPO, U.S. Soccer Health and Safety Summit, and National Safety Council Safety Congress & Expo Conference

\* Funds reported in year received. 2020-2021 numbers include five-year InnovAtE Grant.



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## KSI CHARITY TEAM RUNS NYC MARATHON

A charity team represented KSI at the 2022 TCS New York City Marathon, raising \$12,865.40 to support the Institute.

Ciara Manning, KSI director of research operations; Jeff Ticehurst, General Electric senior technical controllership manager; Yumi Kasahara, Nojon Kohden America product marketing specialist; and Billy Ryan, Connecticut State Police Sergeant from Troop F in Westbrook completed the Nov. 5 race on behalf of KSI.

The TCS NYC Marathon is one of the largest, oldest, and most prestigious marathons in the world. KSI has been a charity partner since 2019.

To become a part of the 2023 charity running team contact Dr. Rebecca Stearns at [rebecca.stearns@uconn.edu](mailto:rebecca.stearns@uconn.edu)



## NATA SCHOLARSHIPS AWARDED

To commemorate the memory of Korey Stringer, the Minnesota Vikings, the NFL Foundation, and the Korey Stringer Institute joined to create the Korey and Kelci Stringer Athletic Training Scholarship with an initial \$50,000 endowment. The annual scholarship will benefit athletic training students in partnership with the National Athletic Training Association (NATA) Research and Education Foundation.

Madison Kump is the recipient of the inaugural Korey and Kelci Stringer Athletic Training Scholarship. Madison is a graduate student at Indiana University, Bloomington where she is earning her Master of Science in Athletic Training. She is a nationally registered EMT and works as a first responder on Indiana University's campus. She was selected for this scholarship for her dedication to advancing player safety.

The NATA Foundation Scholarship Program is one of the organization's most highly regarded programs. Through 2022, this scholarship program has awarded more than \$3.87 million to 1,905 students.

Through this program, which is managed by the Scholarship Committee, the NATA Foundation awards Undergraduate, Master's and Doctoral scholarships. The program provides 50 to 75 scholarships annually in the amount of \$2,300 each. Scholarship funding is secured through a variety of sources, including the organization's endowment program, as well as through corporate and individual support.



## YOUTH CARDIAC SCREENING EVENT HELD AT UCONN



### In A Heartbeat

On April 24th, In A Heartbeat hosted an ECG cardiac screening event on the floor of Gampel Pavilion for children, teens, and young adults. In A Heartbeat is a non-profit organization whose mission is to prevent death from sudden cardiac arrest and hypertrophic cardiomyopathy. Their founder and president, Mike Papale, is a friend of KSI and the manager of community relations for our corporate partner, Defibtech. More than 200 people were screened that day and several heart arrhythmias were detected (all of which were referred to cardiac follow-up care). KSI staff and UConn athletic training students attended the event as volunteers and learned how to conduct the ECG screening. The event was also staffed by volunteers from In A Heartbeat, Frank H. Netter School of Medicine at Quinnipiac University, Quinnipiac University athletic training students, a pediatric electrophysiologist from Yale New Haven Hospital, and a pediatric cardiologist from Connecticut Children's Medical Center. If you want to learn more about this program, please visit In A Heartbeat's website: [inaheartbeat.org](http://inaheartbeat.org)



## KSI TESTS FIRSTLINE COOLING DEVICE

In early August 2022, the KSI research team hit the road to test out a novel forearm cooling modality known as the "ICE System" in high school football players during preseason football. The modality was developed by Firstline Technologies, Inc.

KSI wanted to test this product in the hottest and most humid conditions possible, so the team packed up their research supplies and traveled to northern Florida. For three consecutive days, the KSI field research team collected data to determine the effectiveness of the ICE System for players.

Throughout practices, KSI tracked internal body temperature using ingestible temperature pills among other variables like training load and heart rate.

The team was led by President of Research and Athlete Performance and Safety Dr. Robert Huggins and accompanied by project lead John Navarro, as well as Erin Dierickx, Ayami Yoshihara, Marcus Olson, and Dr. Christy Eason. KSI collaborated with faculty from the University of North Florida — Michelle Boling, Bernadette Buckley, and Chris Joyce — and several of their AT students.



## KEEPING COOL WITH THE FDNY

In October 2022, Dr. Margaret Morrissey, Gabby Brewer, and Fredy Celedon from KSI visited the New York City Fire Department (FDNY). The KSI team reviewed FDNY's heat safety policies and assisted FDNY's Probationary Firefighter School in protecting their incoming probies. During the two-day visit, the KSI team had the opportunity to perform the Proby School Fitness test to see what it feels like to be an incoming firefighter! The team returned in November with Dr. Douglas Casa for an educational session on heat stress and its impact on firefighter health.





From left, Dr. Rebecca Stearns, Marty McNair, and Dr. Christianne Eason

AS OF 2022

2000+

RUNNERS TREATED

5

MEDICAL TENTS ON-SITE

OVER

400

CASES OF EXERTIONAL  
HEAT STROKE TREATED

90%

OF PATIENTS WERE  
RELEASED TO THEIR  
FAMILIES THE SAME DAY  
AND DID NOT HAVE TO  
GO TO THE ED

## SAVING LIVES AT THE FALMOUTH ROAD RACE

As we waited for the runners to come across the finish line into the medical tent, volunteer medical staff and KSI researchers were ready at each treatment station. They had the life-saving tools they knew would be needed — rectal thermometers, a cold-water tub filled with water and ice, a military cot, plenty of towels, extra bags of ice, bottles of water, and an abundance of medical supplies were all within reach.

I had no idea what I'd learn about the topic that has become my life's advocacy mission, but I was eager to assist wherever I could. I was more than ready to gain practical experience, but nothing could have prepared me for that day's lesson in that finish-line medical tent.

Every runner who entered the finish line tent displayed signs and symptoms of a heat-related injury. Hysteria, fatigue, confusion, lightheadedness, dizziness, cramping, and nausea. Runners who said they were OK, because the heat was altering their ability to think clearly.

I began to well up with tears as I saw the signs of central nervous system dysfunction. I began to think of Jordan and every other student-athlete who succumbed to complications of this type of preventable injury and must have experienced the same physical and mental effects.

Runners' core body temperatures ranged from 104.8 to 112 degrees. I quickly lost count of how many runners required cooling.

Some temperatures came down quickly, some took longer. The size,

age, race, or gender of the runners didn't matter. **Heatstroke doesn't discriminate.**

Each person's treatment process was totally different. The connection you make with the person as you help their bodies return to a safe temperature is also personal. You ask their name if they're coherent enough to tell you. You root for their progress as their core temperature decreases to safety. The medical team's constant words of comfort to each runner as they lay in ice water for

the ice tub cooling procedure, and whatever else they experienced as we worked to save their lives.

My experience with KSI volunteers at the Falmouth Road Race only fuels my advocacy and education efforts of this 100% preventable injury. Out of 10,000 runners, only a small percentage went to the hospital. The 80-plus runners and survivors of heat-related injury we were preventatively prepared to help made it home safely. There is no way that day's experience could've been

**“RUNNERS’ CORE BODY TEMPERATURES  
RANGED FROM 104.8 TO 112 DEGREES.  
I QUICKLY LOST COUNT OF HOW MANY  
RUNNERS REQUIRED COOLING.”**

this long period of time — it's all part of working together to save each and every person.

As I walked to the parking lot, a man thanked me for helping him in the tent and told me his name. It was a name I had called several times while his friend and I rubbed bags of ice on the soles of his feet and poured ice on him to get his core temp below 104 degrees.

I couldn't remember if he was the 5th runner I helped cool down or the 20th I helped that day. But he is one of many who was able to go home to their families safe, with little memory of their altered mental state, rants of hysteria, confusion, panic attacks, seizures, the rectal thermometers,

taught in a classroom. After cleanup, goodbyes, handshakes, and hugs, we all left with the best of intentions to see everyone at the next Falmouth Road Race in 2023.

### **Marty McNair**

Father of Jordan McNair and Founder of The Jordan McNair Foundation

*Tonya Wilson and Martin “Marty” McNair established the Jordan McNair Foundation following the death of their son Jordan Martin McNair, an offensive lineman for the University of Maryland. Jordan’s untimely death was the result of a heatstroke he suffered during an organized off-season team workout.*





## GOING THE DISTANCE: BEN TUFF

On July 22, 2022, Ben Tuff swam 25 miles from Providence, RI to Jamestown, RI. As a recovering alcoholic, Tuff sought to bring attention to addiction while also raising money for the non-profit environmental group Clean Ocean Access. He completed this historic swim in just under 15 hours. Tuff became the first person in history to complete this achievement and most recently became the first swimmer to swim to the length of Narragansett Bay.

But this wasn't the first time Tuff used his skills in the water to raise awareness and funds for a good cause.

In August 2020, Tuff swam around Conanicut Island, a 21-mile distance, raising \$54,000. In 2021, he swam from Block Island to Jamestown, completing the 19-mile event in nine hours and 19 minutes while facing the threats of cold water and sharks. He was able to raise over \$106,000. Thanks to the generosity of friends, family, and lovers of the ocean, Tuff has raised more than \$250,000 to date for Clean Ocean Access.

These feats gained the attention of award-winning documentary maker, Matt Corliss. Together, Corliss and Tuff produced the movie "Swim Tuff: How I Swam My Way Out of the Bottle" to share Tuff's story of addiction recovery and elite endurance.

"It's crazy to think that I barely knew how to swim before I went through treatment for alcohol addiction," says Tuff. "My sponsor suggested I try

the sport. I may not be the greatest swimmer but I thrive on taking on these big challenges to get attention for things that matter, like our environment and treatment for those who are struggling."

Coached by the Korey Stringer Institute, Tuff teamed up with the organization to help gain valuable research on the physiological effects that ultra-marathon swims have on the human body.

Associate Director of Athlete Performance and Safety David Martin organized many aspects of Tuff's record-breaking swim in 2022.

During his pre-swim training, Tuff averaged almost 20,000 yards per week from January to July. In the weeks leading up to the event, Tuff reached over 50,000 yards of swimming and swam for nine hours



straight. His training included a mix of speed sets in the pool, muscular endurance sets using pull buoys and paddles, and open water swimming working at longer intervals near his critical swim speed pace.

Ahead of the swim, Martin and Dr. Christianne Eason from KSI developed the critical Emergency Action Plan (EAP) to prepare for anything that Tuff might need. The EAP included a map of Tuff's route with docks designated for use in the event of an emergency. Along the 24-mile stretch of coast, local fire departments, police departments, and EMS services were contacted and routinely updated about Tuff's swim. KSI was in constant contact with the Coast Guard to ensure that major shipping channels were avoided and other logistics were addressed. Two trained medical staff were present on the boat following Tuff for the entirety of his swim.

The KSI team also assessed the physiology of an ultra-marathon swim by collecting data during Tuff's swim. Martin worked with Dr. Robert Huggins to measure fluid consumption, caloric intake, core temperature, stroke rate, pace, and many other variables. They found that Tuff consumed over seven liters of fluid and stayed at an average of 50 strokes per minute during the entirety of the almost 15-hour swim. His core temperature also remained moderately cool during the swim; however, after the swim he had a fever through the night.

"This experience perfectly exemplifies KSI's mission to not only conduct cutting-edge research, but also to provide potentially lifesaving services to athletes pushing themselves to the limit," says Martin. "Ben took on something extraordinary, and we were honored to have the chance to help him succeed."



Supporters including KSI's Dr. Robert Huggins, Dr. Christianne Eason, and David Martin with Ben Tuff, center.



# UNDERSTANDING SEX DIFFERENCES IN HEAT EXERTION FOR U.S. DEFENSE

Recent studies found that female soldiers were experiencing exertional heat illness at a higher rate than their male counterparts. Yet to date, there has been limited research on how female warfighters respond to the physical demands of combat in climatically severe regions.

KSI's Dr. Douglas Casa and Dr. Elaine Choung-Hee Lee secured multi-million-dollar funding from the U.S. Department of Defense to study

about the physiological underpinnings that help determine how soldiers respond to heat exertion and the effects of this kind of activity to improve soldier safety and performance.

"This project is so unique for people, not just men versus women," says Dr. Lee, associate professor. "It will create a foundational database for researchers to tap into for other applications."

adverse conditions. The system may not settle back down into a complete resting state after this event, leading to accumulated and lasting effects.

With data collected in the study, Drs. Casa and Lee seek to improve existing thermoregulation models which currently do not account for sex differences. Their machine learning approach can eventually be leveraged to allow the Army to identify individuals who may be more susceptible to heat-related illness and provide them with additional protocols and monitoring. Their work will provide recommendations for the protocols to help protect those fighting in extremely hot conditions.

In addition to our country's soldiers, Drs. Casa and Lee hope their findings can be applied to other populations, such as the nearly one billion laborers who work under hot, strenuous conditions around the world during the course of a calendar year.

"We really care about the entire process," says Dr. Casa. "It's not just about the physiology. It's also about how this information can help the end user."

## RECENT STUDIES FOUND THAT FEMALE SOLDIERS WERE EXPERIENCING EXERTIONAL HEAT ILLNESS AT AT A HIGHER RATE THAN THEIR MALE COUNTERPARTS.

how female warfighters respond to repeated physical exertion in high-heat conditions like those encountered in combat. The research team from the Department of Kinesiology and KSI are working with the United States Army Research Institute of Environmental Medicine (USARIEM) on this project.

Drs. Casa and Lee work to understand the differences female and male warfighters experience on multiple levels in severe conditions. This foundational work provides an unprecedented level of information

The team looks at both underlying diverse biological differences between men and women and how the conditions of this study alter gene expression, multiple aspects of physiology, and ultimately, physical, and cognitive performance. This will impact not only performance under such demanding conditions, but also recovery from training and missions, as well as long-term health.

When the body undergoes strenuous physical activity in severe heat conditions, the immune response jumps into action to respond to these







## innovATe SUPPORTS INCREASING ACCESS TO ATHLETIC TRAINING SERVICES

Despite the proven benefits of having a qualified health care provider on staff, KSI research has determined that more than 30% of high schools with athletic programs in the U.S. do not have access to an athletic trainer, creating a clear need for advocacy and support in this area.

One way that KSI is working to increase access to athletic trainers is through the innovATe project. In 2022, KSI selected three more school communities to receive funding

through the project: Mingo County, West Virginia; Abbeville County School District, South Carolina and Baltimore City Schools, Maryland. These communities join Boston Public Schools, Massachusetts; Cincinnati Public Schools, Ohio; Oakland Athletic League, California; and Early and Stewart Counties; Georgia.

We continue to work with the NFL Alumni Association to identify retired players that are interested in engaging in the community. Merrill

Hoge and Connor Barwin created videos highlighting the importance of athletic trainers that were shared on our KSI social media accounts. We are also working closely with the Professional Football Athletic Trainers Society (PFATS) and Mueller Sports Medicine, who have donated medical supplies to each of the school communities. This year, each of the schools from cohort two received an AED from the nonprofit, In A Heartbeat.

## TUFSS PROPELS STATE POLICIES

Team Up For Sports Safety (TUFSS) aims to propel adoption of policies proven to reduce catastrophic injuries. The program is sponsored by the NFL and National Athletic Trainers' Association (NATA). Of the 300-plus, sport-related high school catastrophic injuries in the last five years, most were preventable. The majority of these were caused by cardiac arrest, exertional heat stroke, head injury, or exertional sickling. Currently, states only mandate an average of 53% of policies proven to reduce these deaths. TUFSS works to prove that by mandating best medical practices, sport-related deaths can be reduced. To date, TUFSS has visited 30 states —



10 in 2022 alone — and will continue visiting states to move policy adaptation forward.

### Examples of policies include:

- Having venue-specific athletics Emergency Action Plans (EAP)
- Heat acclimatization

- AEDs within 1-3 minutes of athletic venues
- Cold water immersion tubs to treat heatstroke victims
- Pre-participation exams for athletes
- Extreme weather practice modification policy

### Eleven states made positive policy changes in 2022. Four of the most significant changes put into effect were:

- New Hampshire enacted one of the most comprehensive sport safety laws to date, September 2022
- Connecticut EAP and Coaching Education Law, July 2022
- Maryland EAP Law, Spring/Summer 2022
- Arizona Cold Water Immersion and Cool First, Transport Second, Spring 2022

## HSPC VISITS COMPANIES TO PROTECT WORKERS FROM HEAT

The National Heat Safety Coalition, now called the Heat Safety and Performance Coalition, was officially launched on July 13, 2021. HSPC was created with two key industry leaders, Magid and MISSION, to provide heat-safety research, solutions, education, and awareness with the sole purpose of eliminating heat-related injuries and illnesses in the workplace. Margaret Morrissey serves as the president and Gabrielle Brewer as the vice president. HSPC initiatives, resources, and services can be found at [heatsafetycoalition.com](https://heatsafetycoalition.com).



20  
PRESENTATIONS

5  
ON-SITE HEAT  
SAFETY ASSESSMENTS  
FOR COMPANIES

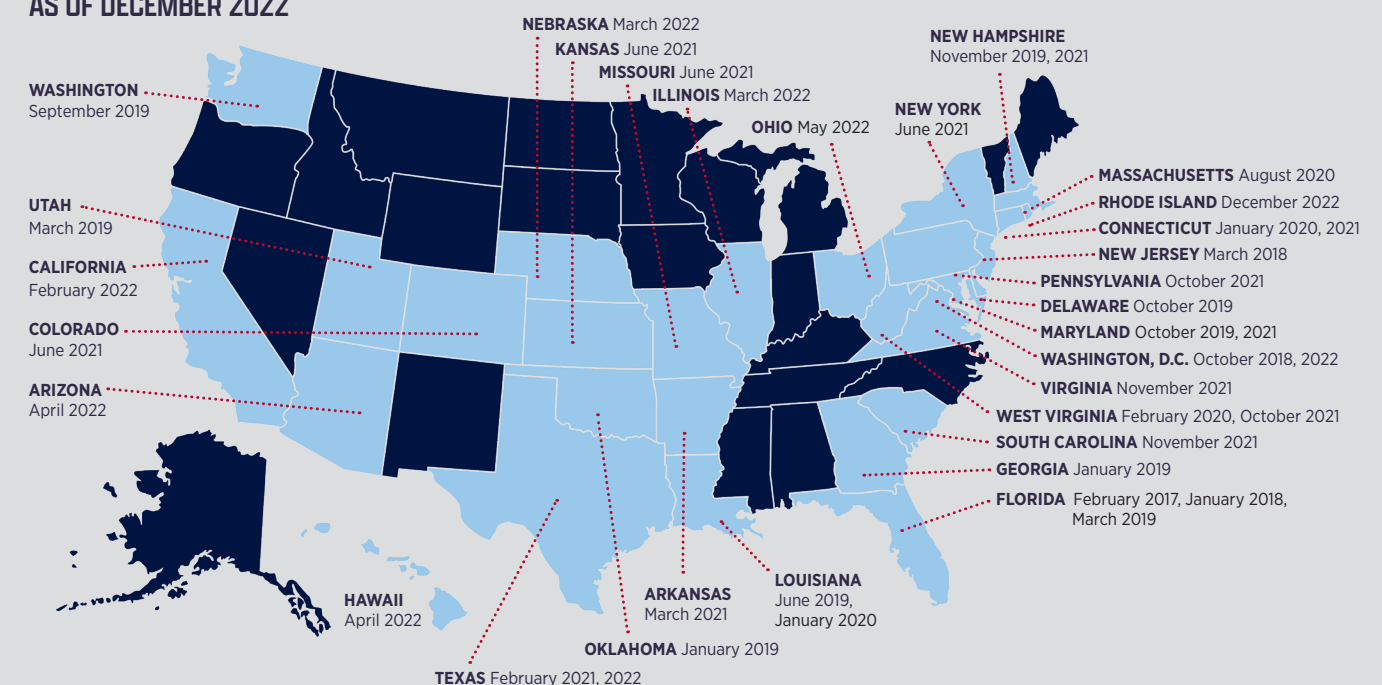
2  
HEAT SAFETY  
LEGISLATIVE EFFORTS

12  
LOCATIONS VISITED  
IN 2022

9  
MEDIA APPEARANCES

2  
GRANTS

## STATES THAT HAVE HOSTED MEETINGS AS OF DECEMBER 2022





NCCSIR PREVENTS CATASTROPHIC INJURIES

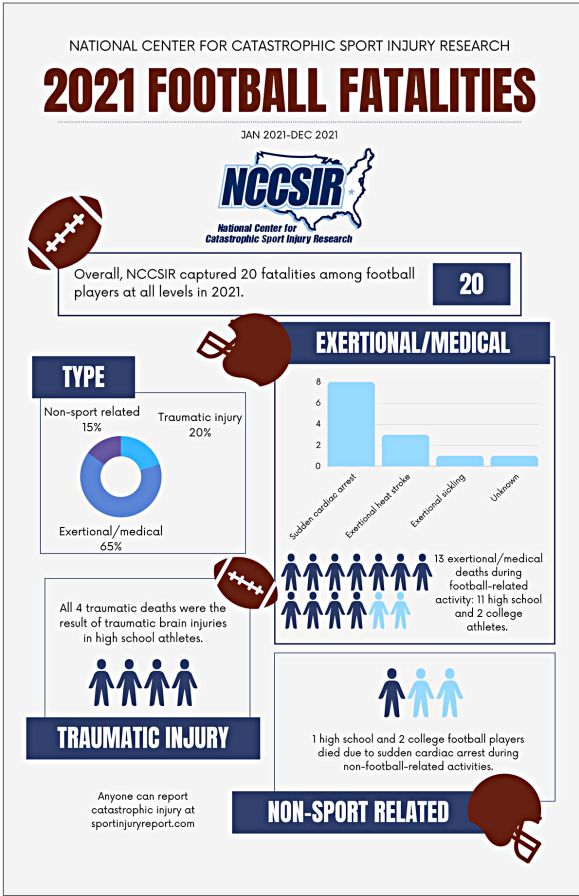
The mission of the National Center for Catastrophic Sport Injury Research (NCCSIR) is to conduct surveillance of catastrophic injuries and illnesses related to participation in organized sports in the United States at the collegiate, high school, and youth levels of play. The goal of the Center is to improve the prevention, evaluation, management, and rehabilitation of catastrophic sport-related injuries.

KSI manages one of the three branches of the NCCSIR consortium. These branches have evolved to reflect and address injury-specific expertise that is held within that branch. Dr. Kristen Kucera leads the University of North Carolina NCCSIR base branch, which manages all traumatic injuries. The University of Washington branch, led by Dr. Jonathan Drezner, manages all cardiac injuries. KSI manages all non-traumatic injuries such as (exertional heatstroke, exertional sickling, lightning, and asthma).

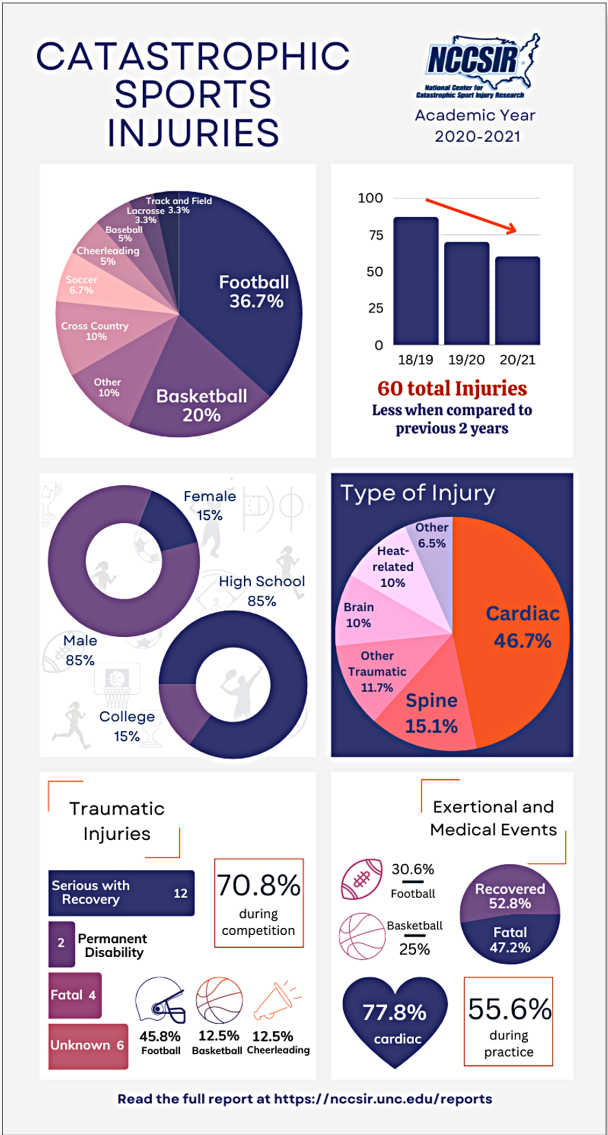
This report\* describes all catastrophic injuries in athletes during participation in a school-sponsored sport (e.g.,

high school and college). The injuries are classified as traumatic (direct) or exertional/medical (indirect). Frequencies and incidence rates of catastrophic injury are calculated and stratified by sport and level.

The Center relies on active surveillance and media reporting to gather cases. Anyone can report a case and to help further our knowledge on how we can better protect athletes. Report a case at [SportInjuryReport.org](https://SportInjuryReport.org)



\*Reflects data from 2021 and earlier

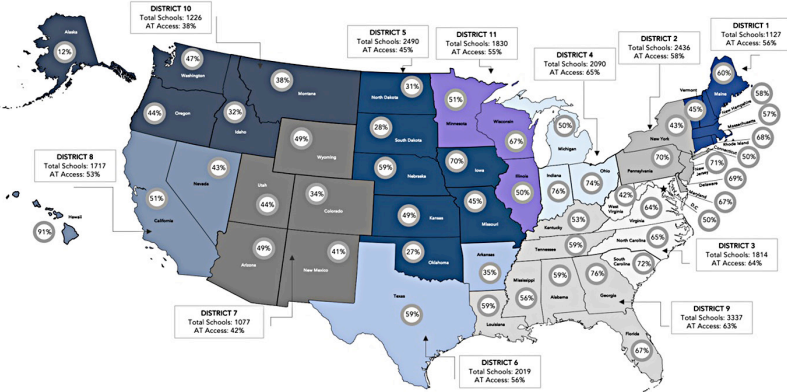


ATLAS TRACKS ACCESS TO AT SERVICES

The Athletic Training Locations and Services (ATLAS) Project is a joint initiative of the Korey Stringer Institute and the National Athletic Trainers' Association (NATA) designed to track access to AT services, improve communication between athletic trainers, and produce research for the advancement of the profession of athletic training in the secondary school setting.

As of December 2022, only 33% of schools in the U.S. with athletics programs have no access to AT services and 32% have full-time AT services. And according to ATLAS data, the problem continues to get worse. Over the past five years, ATLAS has tracked a 10% reduction in AT services at the high school level nationwide.

ATLAS has created a real-time database with visualizations that map the level and type of AT services in secondary schools. ATLAS maps help identify the geographic areas or locations of "AT Services Medical Deserts" in the U.S., assisting the innovATe project in placing AT services in underserved areas. ATLAS has also been used by the NATA ATs Care Program, which is designed to offer crisis management training opportunities for athletic trainers dealing with the aftermath of a critical incident.



CURRENT ACCESS TO AT SERVICES, 2021-2022 ACADEMIC YEAR





Left to Right: Dr. Rebecca Stearns, Dr. Christianne Eason, Dr. Faton Tishukaj, Dr. Robert Huggins, Dr. Douglas Casa

## FULBRIGHT SCHOLAR SPOTLIGHT

*In March of 2022, KSI welcomed Dr. Faton Tishukaj from the Faculty of Physical Education and Sport at the University of Prishtina, Kosovo. Dr. Tishukaj was a recipient of a Fulbright Visiting Scholarship through the Fulbright international exchange program, the flagship international educational exchange program sponsored by the U.S. government. Since its inception in 1947, the Fulbright Program has worked to increase mutual understanding between the people of the United States and people of other countries. Each year about 1,000 scholars are awarded entry into this prestigious program. This excerpt is a reflection of his time with us:*

As I sit down to reflect on my time as a Fulbright Visiting Scholar at UConn's Korey Stringer Institute, I can say that this has been one of my best life experiences from a personal and professional perspective.

Our research focused primarily on guidelines for Emergency Medical

Service (EMS) standards of care related to heat illnesses. We analyzed states with and without statewide EMS protocols and the corresponding OSHA death and survival data for U.S. laborers with heat illness. We looked specifically to see if statewide EMS policies that recommended best-practice care for exertional heat stroke impacted laborer exertional heat stroke death and survival outcomes. While the paper only looked at U.S. data, these are also life-saving guidelines and standards that can be adopted and implemented in developing countries.

It was of great interest for me to see the leadership of the MISSION Heat Lab at UConn's KSI deal with exertion-related injuries and fatalities in U.S. laborers, athletes, warfighters, and school settings. My last experience was being a part of the research team for the Falmouth Road Race Research study in 2022 by assisting in data collection on race day, which allowed me to experience firsthand long-

standing research that has helped to develop heat safety policies, as well as the application of these practices through the treatment of exertional heatstroke patients at the race.

This was definitely a life-changing experience that I will cherish and remember for the rest of my life! Working closely with world-renowned researchers at the Korey Stringer Institute to prevent injury and sudden death in sports, leisure, and labor has been a highlight of my career.

It has been an eye-opener for me, and together with the KSI team we are planning a Fulbright Specialist visit of KSI academics to Kosovo to establish the fundamentals of thermo-physiology concepts, injury prevention, and sudden death for the benefit of the Kosovo population.

Thank you, Dr. Casa and Dr. Stearns! Thank you, KSI Team!

## KSI Ph.D. ALUMNI SPORTS MEDICINE SYMPOSIUM MAY 18, 2022

Dr. Casa invited all former KSI Ph.D. graduates back to campus to highlight the work they have done since their time at KSI. Many of the alums were able to return for the event and share their accomplishments.



## KSI VISITS NAVAL SUBMARINE MEDICAL RESEARCH LABORATORY

The KSI team visited KSI alum Dr. Luke Belval at the Naval Submarine Medical Research Laboratory in Groton, Connecticut. Dr. Belval is a research physiologist in the Undersea Physiology and Performance Enhancement Research Division within the Warfighter Performance Department.

## KSI COO REBECCA STEARNS JOINS USA FOOTBALL'S MEDICAL ADVISORY PANEL

In 2022, USA Football announced its Medical Advisory Panel composed of experts to assist the sport's national governing body in delivering leading athlete health and safety standards to America's grassroots football family. USA Football's Medical Advisory Panel provides direction on the applicability and understanding of relevant research from the medical and sports science space pertaining to athlete health and wellness. Dr. Rebecca Stearns, COO of the Korey Stringer Institute and assistant professor in residence

in the College of Agriculture, Health and Natural Resources' Department of Kinesiology, joined the volunteer, expert panel, which also provides insight on new products and equipment and assesses USA Football recommendations and guidelines to benefit young athletes regardless of race, gender, or ability. "I am honored to participate in this interdisciplinary panel of experts and support USA Football's efforts to support the health and safety of athletes across the nation," says Dr. Stearns.







Ryan Curtis working with San Antonio Spurs forward-center Zach Collins.

## CATCHING UP WITH A KSI ALUM

**Ryan Curtis, Ph.D., ATC, LAT, CSCS\*D**  
Sports Science Coordinator and Performance Coach  
San Antonio Spurs

### Q: WHAT DO YOU DO?

A: I'm currently the sports science coordinator and performance coach for the San Antonio Spurs. I manage the collection, analysis, and reporting of all data. I also develop data visualization and working tools, ensure athletic performance data consistency among multiple data management platforms, gather intel, and perform advanced research and athletic performance projects (research and innovation) in the areas of technology, tracking systems, wearables, biometrics, strength profiling, human performance, recovery, injuries, nutrition, and psychology. I also manage the physical development of

select players and assist with all aspects of athletic performance and rehabilitation programs (e.g., strength and conditioning, return-to-play, reconditioning, warm-ups, supplements, nutrition, etc.).

### Q: WHAT IS IT LIKE WORKING FOR A PRO SPORTS TEAM?

A: Since joining the Spurs in 2019, I've learned a great deal about the importance of developing systems to support decision making in high performance sport and the power of using data to drive insights. Making critical decisions involving player management and development requires building effective and efficient processes to collect data and keep the entire organization informed on the metrics that matter for their success.

### Q: WHAT IS YOUR FAVORITE THING ABOUT YOUR JOB?

A: I love the challenge of helping players stay healthy and develop over a long and relentless season.

In the NBA, we play games almost every other day, with considerable congestion over an eight-month-long season. This means interventions need to be targeted and tactful. As a sports scientist, I get to provide critical data and insights that are the cornerstone of our systems to support decision making. Additionally, as a sports scientist I get to collaborate daily with a wide range of professionals such as our strength coaches, athletics trainers, physical therapists, nutritionist, psychologist, analysts, and front office staff. As a coach, I enjoy helping players develop positive habits and routines that will help curate their talent and maximize their potential.

### Q: HOW DID KSI PREPARE YOU FOR THIS POSITION?

A: KSI and UConn provided an excellent foundation for my current career. I received critical exposure to data collection both in the field and lab. My experiences taught me a great deal about how to capture, manage, analyze, and report data appropriately. I also learned several important sports science skills such as how to critically appraise research, design studies, perform analyses, write publications, and communicate findings effectively. I was additionally provided exposure to a number of sports science technologies that I use in my current work such as player tracking devices, motion capture systems, biomarkers, and athlete management systems. While at UConn and KSI I was encouraged to tailor my educational experience to develop the skills needed as a sports scientist, which included advanced coursework and skill development in data analysis/statistical programs, predictive modeling, data management and visualization, and advanced statistical techniques.



**Yuri Hosokawa, Ph.D., ATC**  
Rebecca L. Stearns KSI Alumni Award



**John Jardine, MD**  
Rachael Oats Service to KSI Award



**Katie Walsh-Flanagan, EdD, LAT, ATC**  
KSI Lifesaving Research Award

## KSI ANNUAL AWARDS CEREMONY 2022

On May 19, 2022, the Korey Stringer Institute held its annual Awards Ceremony at Branford House at UConn Avery Point.



**Susan Yeargin, Ph.D., ATC**  
UCAHNRA Distinguished Alumni Award



**Jennifer Rheeling, MS, ATC and Tina Carrillo, MS, ATC**  
KSI Lifesaving Service Award



**Chris Troyanos, ATC**  
KSI Lifesaving Education Award





From left, Dr. Christianne Eason and Toke Awofala

## KSI CAPSTONES

After taking the related coursework taught by KSI’s own Dr. Robert Huggins and Dr. Maggie Morrissey, senior undergraduate students in the UConn Department of Kinesiology exercise science program have the opportunity to present projects at the “Exercise Science Capstone Presentation Day.” This transformational learning experience gives UConn students the opportunity to work with real data from current research projects under the supervision of a research mentor. KSI researchers involved the students every step of the way, from data analysis, to writing, to the presentation process, ensuring the students had unparalleled learning experiences in science.

### List of Students, Mentors, and Project Titles:

**Jennica Adame;** Mentor Dr. Huggins. A Comparison of Lipid Biomarker Profiles Between Collegiate Soccer Starters and Non-Starters During a Competitive Season

**Hasif Amid;** Mentor Dr. Huggins and John Navarro. The Effect of Topical Sodium Bicarbonate Lotion on Markers of Hydration Status During Passive Heat Exposure



From left, Michael Szymanski, Gabrielle Brewer, Lauren Cummins, and Dr. Douglas Casa

**Toke Awofala;** Mentor Dr. Christy Eason. The Implementation of Concussion Protocol in the United States for Secondary Schools

**Jacqueline Coley;** Mentor Erin Dierickx. Evaluating Intermittent and Post-Exercise Cooling Modalities on Sleep in High Heat Conditions

**Lauren Cummins;** Mentor Gabby Brewer. A New Rehydration Assessment Technique: The Compensatory Reserve Index

**Finbar Doyle;** Mentor Dr. Huggins. Training Load and Blood Biomarker Associations with Aerobic Performance and Starter Status in Division I Men’s Soccer Players

**Trevor Duffy;** Mentor Jeb Struder and Dr. Huggins. Effects of Passive Heat Stress and Hyper-Hydration on Cardiovascular Function

**Keira Kopchyak;** Mentor Dr. Christy Eason. Implementation of Conditioning Policies in High School Athletics to Prevent Sudden Death from Sickel Cell Trait

**Grissy Sime Mora;** Mentor Dr. Morrissey. Effects of Menstrual Cycle Phase on Blood Flow at the Femoral and Brachial Arteries in Extreme Heat and Cold Environments

## ► 2023 EVENT DATES

**JANUARY 14**  
Get TUFSS on SCA Prevention in Sports  
Houston, Texas

**JANUARY 31**  
NFL Webinar: Emergency Procedures in Sport

**FEBRUARY 8**  
NATA District 10 ATLAS Virtual Presentation

**FEBRUARY 17-19**  
Emergency Care in Sports Conference  
Atlanta, GA

**MARCH 27**  
NATA District 10 ATLAS Virtual Presentation

**MARCH 27**  
New York State Athletic Trainer’s Association

**MARCH 30**  
Future of Sports: Protecting High School Athletes After Damar Hamlin  
Aspen Institute  
Washington, DC

**APRIL 5**  
Pediatric Physiologic Considerations for Responding to Heat In Session, “Heat Impacts on Children and Pregnancy”  
Office of Environmental Health Hazard Assessment (OEHHA), California EPA  
Virtual Symposium

**APRIL 15**  
National Strength and Conditioning Association  
Rhode Island State Clinic  
Providence, RI

**APRIL 19-23**  
American Physiology Summit  
Long Beach, CA

**MAY 11**  
American Industrial Hygiene Association University  
Webinar: Beat the Heat! Considerations for Your Heat Stress Management Plan

**MAY 18**  
Korey Stringer Institute Annual Awards Ceremony  
Branford House, UConn Avery Point  
Groton, CT

**MAY 22-24**  
American Industrial Hygiene Conference & Expo 2023 - Conference for Occupational and Environmental Health & Safety Scientists  
Phoenix, AZ

**MAY 23**  
RIATA Conference  
Emergency Preparedness for Athletic Trainer: EAP for Exertional Heat Stroke and Sudden Cardiac Death  
Providence, RI

**MAY 30-JUNE 2**  
American College of Sports Medicine Annual Meeting & World Congresses  
Denver, CO

**JUNE 14-16**  
The Female Athlete Conference,  
Boston, MA

**JUNE 21-24**  
National Athletic Trainers’ Association Clinical Symposia & Athletic Trainers Expo  
Indianapolis, IN

**JULY 28**  
Texas Emergency Athletic Management Seminar (TEAMS)  
McAllen, TX

**JULY 27**  
Emergency Preparedness for Exertional Heatstroke  
University of North Florida/  
Jacksonville Sports Medicine Program Symposium  
Jacksonville, FL

**AUGUST 20**  
Falmouth Road Race  
Falmouth, MA

**SEPTEMBER 18-22**  
Emergency Medical Services World Expo 2023  
New Orleans, LA

**NOVEMBER 5**  
TCS New York City Marathon  
New York, NY

## 2023 TUFSS MEETINGS (as of February 2023)

**MARCH 9**  
Los Angeles, CA

**MARCH 22**  
Denver, CO

**MARCH 24**  
Nashville, TN

**APRIL 21**  
Indianapolis, IN

**MAY 12**  
Springfield, MA

**JUNE 12**  
Laramie, WY

## PREVENTING SUDDEN DEATH IN SPORT AND PHYSICAL ACTIVITY – A FOCUS ON EXERTIONAL HEAT STROKE

**APRIL 19**  
Indiana University

**SEPTEMBER 1**  
Plymouth State University

**SEPTEMBER 27**  
UCLA

**SEPTEMBER 29**  
Cal State Fullerton

**NOVEMBER 17**  
University of Virginia

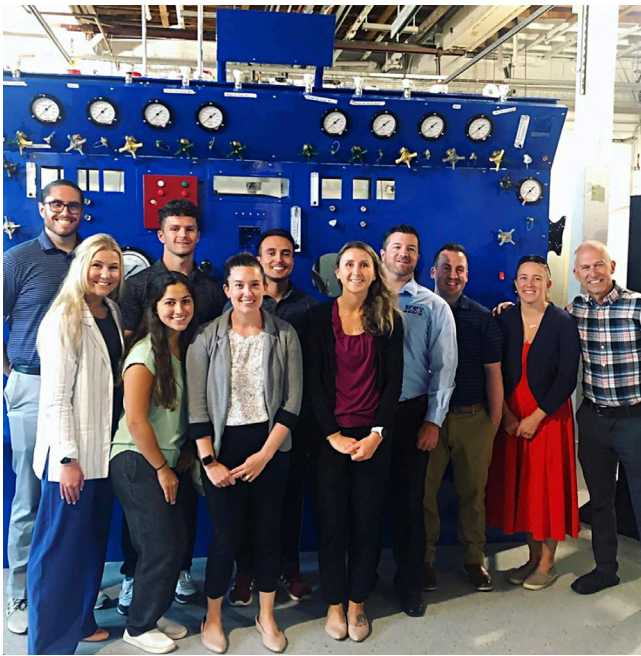


# KSI VISITS OUR ALUMNI



## United States Army Research Institute of Environmental Medicine

From left, Dr. Douglas Casa, Alexis Grace, John Navarro, David Martin, Erin Dierickx, Gabrielle Brewer, Monique Marcelino, Dr. Margaret Morrissey, Jeb Struder, Sean Langan, Ciara Manning, alumna Dr. Gabrielle Giersch



## Naval Submarine Base New London

From left, Jeb Struder, Gabrielle Brewer, Monique Marcelino, Sean Langan, Dr. Margaret Morrissey, John Navarro, Ciara Manning, Dr. Robert Huggins, alumnus Dr. Luke Belvel, Dr. Rebecca Stearns, Dr. Douglas Casa



## New Balance

From left, alumnus Dr. Barry Spiering, Dr. Douglas Casa, Ciara Manning, Alexis Grace, Erin Dierickx, John Navarro, Sean Langan, Dr. Margaret Morrissey, David Martin, Monique Marcelino, Gabrielle Brewer

# KSI UNDERGRADUATES AND VOLUNTEERS

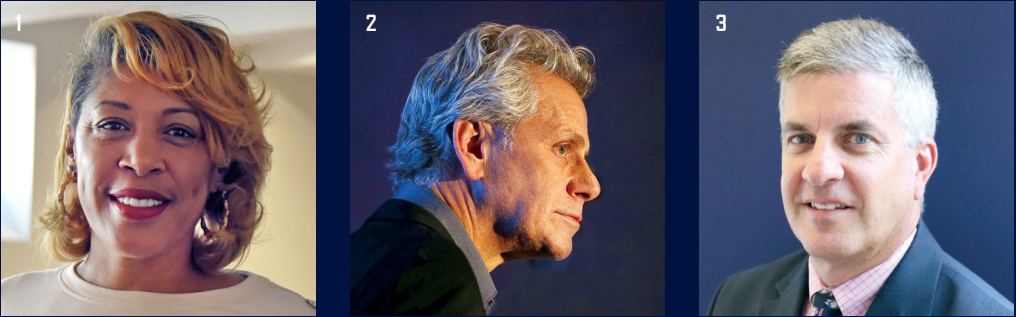








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LEADERSHIP



STAFF



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Heat Safety &  
Performance Coalition

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& Safety

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Associate Director of  
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Monique Marcellino  
Associate Director  
of Education

**22**  
David Martin  
Co-Director of  
Athlete Performance  
& Safety

**23**  
John Navarro  
Co-Director of  
Warfighter Performance  
& Safety

**24**  
Marcus Olson  
Assistant Director  
of Education

**25**  
Jeb Struder  
Director of Research  
Operations, Research &  
Laboratory Operations

**26**  
Mike Szymanski  
Director of Education  
  
Director of MISSION  
Heat Lab

**27**  
Ayami Yoshihara  
Director of  
Sport Safety



► ACTIVE GRANTS CY 2022

GRANTS - RESEARCH			
SPONSOR	TITLE	PROJECT PERIOD	TOTAL AWARD
NFL Concussion Settlement-Education Fund	InnovATe	6/1/20 – 7/31/26	\$3,000,000
NATA	TUFSS	4/1/20 – 3/31/26	\$600,000
Magid Glove & Safety Company	The National Heat Safety Coalition	1/6/21 – 1/5/24	\$173,648
Flashback Technologies	The Compensatory Reserve Index (CRI): Establishment of Normative Values Surrounding Performance in the Heat	4/1/21 – 8/31/22	\$186,261
Neuro Rescue	Impact of NeuroRescue Neck Cooling Collar on Exercise Performance in the Heat	7/1/20 – 6/30/22	\$49,879
MPUSA, LLC (Mission)	The National Heat Safety Coalition	1/6/21 – 1/5/24	\$173,648
MPUSA, LLC (Mission)	Productivity Worker Study	8/1/22-4/1/2023	\$107,617
CamelBak	The Effect of Running Vest Garment Material and Design During Exercise in the Heat	1/6/21 – 1/5/22	\$49,964
DOD	Enhancing lethality of female warfighters by increasing resiliency to repetitive days of intense exercise in the heat	9/1/21 – 8/31/24	\$1,800,000
Momentous/Amp Human	Effect of AmpHuman PR Lotion, Phase II Extended	3/1/22-8/01/22	\$20,000
Greenteg AG	Validation of CORE Device	5/1/22-9/31/22	\$7,500
Firstline Technologies	Firstline High School Football Cooling Study	6/1/22 – 12/31/22	\$48,812
DOD AFWERX	The Effect of AMP Human PR Lotion on Hydration Study, Phase I	8/23/20 – 8/01/22	\$220,124
NATA	NATA Projects: ATLAS and Consumer Awareness	4/1/20 – 4/1/22	\$272,727
DOD2	Optimizing Customized, Precision Heat Acclimation Protocols to Enhance Performance and Readiness of Female Warfighters	9/30/22 – 9/29/25	\$1,959,872
NFL	TUFSS	4/01/22 – 3/31/25	\$1,200,000

► 2022 PUBLICATIONS

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