

EXPOSURE



THROUGH FIRE WITH FORTITUDE

How Fresno State researchers helped a firefighter get his life back

Story by [Fresno State](#)

January 9th, 2019

In a 7-by-4 feet metal shed, Howard Pechter stands with his white T-shirt drenched in sweat. He wipes his brow and continues pedaling on an elliptical machine, breathing heavily. His head is ducked down so it doesn't hit the shed's low ceiling as he exercises.

Behind him, a portable heater quickly raises the temperature of the small space to 102 degrees. The door is closed and there are no windows to let natural air flow through the shed.

"We call it the cell from hell," Howard says. "Imagine putting a treadmill on the surface of the sun. That's what it's like."

You're viewing a version of this story optimized for slow connections. To see the full story [click here](#).

For the past year, this has been an exercise routine Howard performs up to four times a week in his own backyard. Why? According to Fresno State researchers, it helps the Southern California fire captain prevent heatstroke.



You're viewing a version of this story optimized for slow connections. To see the full story click [here](#).



You're viewing a version of this story optimized for slow connections. To see the full story click [here](#).



You're viewing a version of this story optimized for slow connections. To see the full story click [here](#).

Through fire with fortitude



FACING THE HEAT

After over 20 years working as a firefighter, Howard first suffered from heatstroke during a brush fire in 2017.

“It was an average hot day in June,” Howard says. “It was 104 degrees that day. Humidity was up.”

Howard was on the tail end of a 72-hour shift, and though he had spent the three days of his shift fighting fires and exercising diligently, he says it wasn’t any different than another normal day on the job.

The fire ended up coming at about two o'clock in the afternoon, during the hottest time of the day, on a south-facing hill. Howard and his team were in the thick of it, running uphill through six-feet of grass.

“I went down like a sack of potatoes,” Howard says. “I was to a point where I was on my back, sliding down this grass hill thinking, ‘I’m done. I’m gonna die on this stupid fire in the middle of nowhere.’”

"I thought about my kids " he adds "I was resolved to the fact I was gonna die on the side of

[You're viewing a version of this story optimized for slow connections. To see the full story click here.](#)

Howard didn't die that day. While he was unconscious amid flames and smoke, with an unforgiving sun beating down on him, a helicopter of medics flew down to transport him to a hospital.

By the time he woke up, he found himself lying in a bed, hooked up to nine liters of IV fluid.



You're viewing a version of this story optimized for slow connections. To see the full story click [here](#).



You're viewing a version of this story optimized for slow connections. To see the full story click [here](#).



You're viewing a version of this story optimized for slow connections. To see the full story click [here](#).



You're viewing a version of this story optimized for slow connections. To see the full story click [here](#).



You're viewing a version of this story optimized for slow connections. To see the full story click [here](#).

SPARK OF DETERMINATION

Howard was hospitalized a second time for a heat-related issue soon after. Medical scans told him his heart was strong, and he had been keeping hydrated since his first heatstroke. So what was causing these issues? Howard wanted to find out.

He learned of heat tolerance testing, a method of monitoring one's exposure to controlled, high-temperature, humid environments. The method is primarily used in the military and for elite athletes.

“I wanted to continue doing my job,” Howard says. “I thought, ‘I need answers. I need to figure this out. This is my livelihood.’”

That’s what led him to Drs. Riana and Luke Pryor at Fresno State.



You're viewing a version of this story optimized for slow connections. To see the full story [click here](#).



IGNITING KNOWLEDGE

Riana and Luke are assistant professors in the Kinesiology Department. The couple specializes in heat and hydration and its effects on the human body. They direct the campus's new Hydration, Exercise and Thermoregulation (H.E.A.T.) Lab – the first of its kind in the Central Valley – which allows them to conduct lead research using revolutionary new technology.

They are among the few researchers in the nation who specialize in heat acclimation and thermoregulation. They work with athletes, firefighters, fieldworkers and other individuals who are exposed to extreme heat conditions.

“When Howard contacted us, the answer was ‘yes’ right away,” Luke says. “It’s really important for researchers like us and others around the nation to focus on this issue that could literally be life or death.”

Riana, Luke and three graduate students — Sean Hatcher, Robert Leija and Savaunah Unzueta — worked with Howard for one week in 2017. They tested how his body responds to heat and developed a regimen that could keep Howard’s body safe in high-temperature and humid environments.

You're viewing a version of this story optimized for slow connections. To see the full story [click here](#).

Part of the regimen was getting Howard's body accustomed to those hot environments. While Howard and his fellow firefighters exercised often, much of the time it was indoors, in air-conditioned spaces. By safely exposing one's body to higher temperatures while maintaining hydration, researchers found that it minimizes the risk of heat-related issues.

That's why Howard exercises in his metal shed — the "cell from hell."

"In order for him to maintain his heat acclimation, we worked with him to figure out how he could do that in his house," Luke says.

Sean, a kinesiology graduate student, says working on this research project was the "best experience" of his master's program so far.

"To be able to take what we're learning and apply it in a clinical setting is a really great opportunity," he says. "Being able to work with a first responder and know that you're giving back to that community... It's a really good feeling."



You're viewing a version of this story optimized for slow connections. To see the full story [click here](#).



You're viewing a version of this story optimized for slow connections. To see the full story click [here](#).

LIGHTING THE PATH

According to the California Department of Forestry and Fire Protection and the United States Forest Service, a total of 9,133 fires burned 1,248,606 acres in 2017. In 2018, 7,571 fires burned 1,671,203 acres.

Ten out of 20 of the most destructive wildfires in California history have occurred in the last three years. Riana says that the growing number of wildfires causes more firefighters to put themselves at risk of heat illnesses.

“At any moment’s notice, we’re fighting a fire that we could be on for three or four days, and risk people’s homes and evacuations,” Howard adds.

But with help from researchers and students at Fresno State, the odds of heatstroke aren’t so bad. Howard has not had heatstroke since working with Riana and Luke, and he believes they equipped him with the knowledge and skills he needs to keep saving lives and facing the heat.

As a fire captain, Howard is sharing his knowledge with other firefighters, emphasizing the importance of hydration and heat acclimation.

“The best thing I got from the Pryors was the confidence to know that I can come back here and take something on like this,” Howard says.

“That’s through Fresno State that I was able to do that.”

To learn more about the H.E.A.T. Lab at Fresno State, including services and research opportunities, contact Dr. Scott Sailor, chair of the Department of Kinesiology, at ssailor@csufresno.edu or 559.278.2543.



You're viewing a version of this story optimized for slow connections. To see the full story click [here](#).



YOU CAN HAVE A HAND IN STUDENT SUCCESS.

Footnote: *Photos by Cary Edmondson, Story by Esra Hashem, Video by Domenick Satterberg —
University Brand Strategy and Marketing*

[Support Fresno State — Give Now](#)

Story by **[Fresno State](#)**

© Copyright 2025

Published with **[Exposure](#)**

You're viewing a version of this story optimized for slow connections. To see the full story click [here](#).