On a bright July morning in a quiet two-story house in Allison Park, Pa., a pile of dry wood catches a spark. Within minutes, the room’s contents ignite, and flames spread to the adjacent room. Pulses racing, three firefighters reach the scene, pull a hose from their engine, and rush into the smoke-filled building.

Outside, three more firefighters are doing their part to ensure the safety of their brethren in peril: chilling out in lawn chairs?

Simmer down, now. It’s all in the name of science.

The blaze is one of several staged this day at Allegheny County Fire Academy. It’s part of a FEMA-sponsored study on the most common killer of firefighters, on duty or off: cardiac arrest.

David Hostler, a University of Pittsburgh PhD assistant professor of emergency medicine as well as founder and director of Pitt’s Emergency Responder Human Performance Lab (ERHPL), designed the study.

The heat, dehydration, and exertion that come with firefighting have long been thought to cause a cascade of inflammation that strains the cardiovascular system. But until now, there’s been very little research on how the process works—or how it might be prevented.

Hoping to find answers, Hostler has teamed up with Joe Suyama, assistant professor of emergency medicine at Pitt and medical director of ERHPL, and Steven Reis, Pitt professor of medicine and emergency medicine and associate vice chancellor for clinical research. All three have some experience in volunteer firefighting. Hostler has spent more than 20 years in turnout gear; he’s now an active firefighter/paramedic in O’Hara Township.

Today, after each simulation burn, the firefighters try out cool-down methods borrowed from NASCAR racers—submerging their forearms in ice water; wearing vests lined with cool liquid; and sitting in an air-conditioned room. Pitt undergrads carefully document heart rates and core temperatures.

“Feels pretty good,” says Francis Deleonibus, assistant fire chief of operations, as he sits in a specially designed lawn chair with ice-water pools in place of armrests. “I can see myself on the beach in one of these.”

“The fire service has always been a calling to a certain extent,” says Hostler, “but we also have to remember: It’s a job we need to go home from at the end of the day.”

—Elaine Vitone
—Photo by Martha Rial