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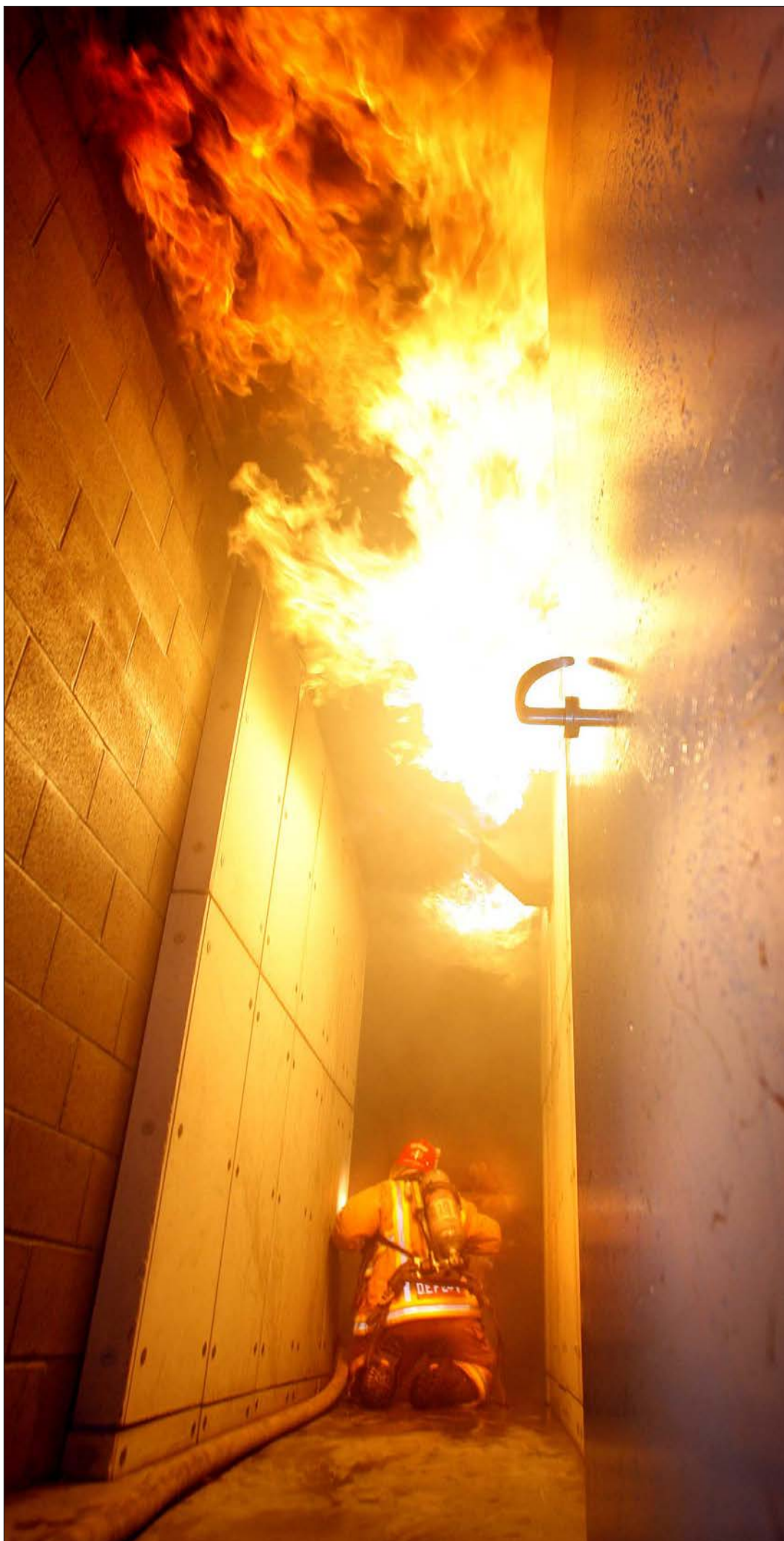
Because of incorrect information given to a Register photographer, a caption on Page 4 of today's Arts & Entertainment section, which was printed in advance, is incorrect. The person identified as Ron Berg is Chip Griffin.

We will correct factual errors promptly.
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TODAY'S CORRECTIONS APPEAR ON:
News 3

THE ORANGE COUNTY REGISTER (USPS 606-260) is published daily and Sunday by THE ORANGE COUNTY REGISTER (a division of Freedom Communications Inc.), 625 N. Grand Ave., Santa Ana, CA 92701. Periodical postage paid at Santa Ana, CA. Postmaster: Send address changes to THE ORANGE COUNTY REGISTER, P.O. Drawer 11626, Santa Ana, CA 92711-1626.



PHOTOS: DANIEL A. ANDERSON, THE ORANGE COUNTY REGISTER

FLASHOVER: Orange County Fire Authority Capt. Joe DeFort works a fire drill.



WORKOUT: Capt. Joe DeFort is drenched in sweat as he goes up and down multiple flights of stairs in full gear.

Fire proof

Research data on local crews may cut job deaths.

By **KIMBERLY EDDS**
THE ORANGE COUNTY REGISTER

IRVINE • With a swig of water, the firefighters gulped down their white horse pills, then for a few hours turned their bodies over to science.

Nearly half the firefighters who die on duty die without the fanfare of newspaper headlines and gushing of politicians who call them heroes.

They are dying not from falling through burning roofs and sweltering heat, but from heart attacks and coronary events, most within 24 hours from the time a fire alarm sounds.

Scientists have long taken aim at top athletes, pinching and prodding in the hopes of maximizing performance on the field. But little research has been done on how fighting a fire affects the crews and on what could prevent more deaths.

The culture of the nation's fire service is shifting, and the Orange County Fire Authority, in the middle of an in-depth study to look at dehydration and physical stresses on firefighters, is at the forefront.

Long-held firehouse stereotypes of feasts of thick slabs of barbecued meat and lying around the station on a Barcelona mask the new reality of workouts with personal trainers and creation of marinades to replace high-fructose syrup in dinners.

Fewer than 100 of the approximately 31,000 fire departments nationwide have more than 400 paid firefighters, making the Fire Authority a veritable army with its 846 firefighters and chiefs.

That army hopes technology, in the form of a tiny electronic transmitter in the horse pill and a wristband computer that records heart rate five times a second, will unlock how dehydration and physical strain affect firefighters' job performance.

More than 100 local firefighters and paramedics, ages 23 to 60, volunteered and marched through the structural fire portion of the study. They will go through the second half of the experiment, stretching physical limits while fighting brush fires, this week.

STRESSING SURVIVAL

Firefighters do far more than work the bucket brigade outside a burning building, said David Daniels, fire chief of the Renton (Wash.) Fire Department and board member of the International Association of Fire Chiefs.

Dealing with shift work, screaming alarms, scared victims and death wrecks havoc on firefighters' hearts and minds.

More people packed into cities means more traffic accidents, medical emergencies and fires – and more stress for firefighters, Daniels said.

A total of 440 firefighters, or 43.7 percent of those who died on the job, had sudden cardiac death, according to a National Fire Protection Association study from 1995 to 2004.

The health and safety section of the fire chiefs association is just 2½ years old and tries to help firefighters survive on and off the job.

"There is a tremendous pressure," Daniels said. "We put a lot of that on ourselves, because as firefighters we think we can do too much. That, along with high expectations by the general public, results in people working too hard and overexertion, which results in cardiac events."

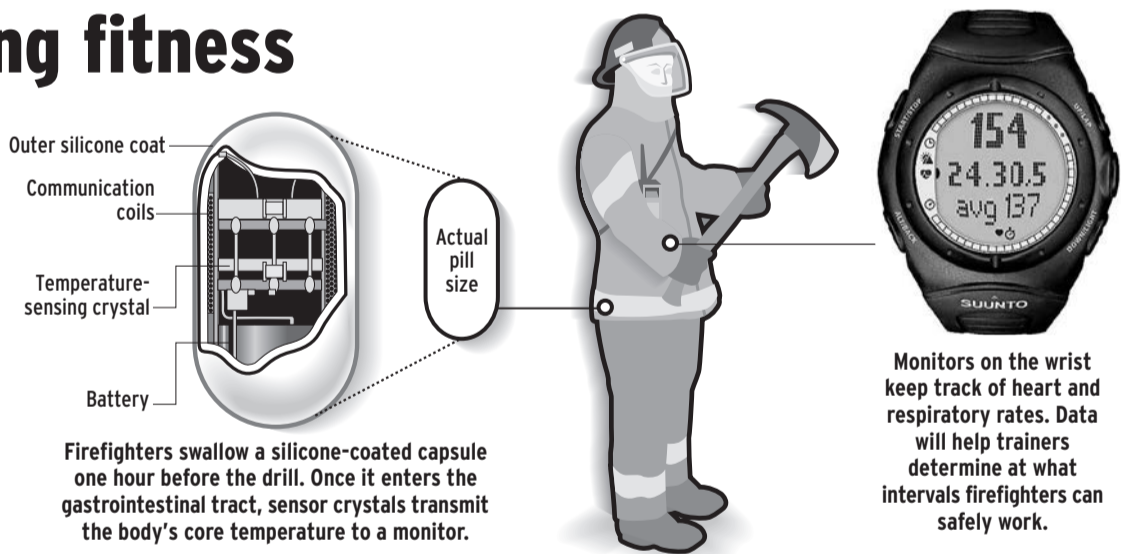
IT'S ONLY A DRILL

The siren whined, and the lights flashed. It was a drill, but the adrenaline pumped as the engine pulled up to the burning apartment building last week at the Fire Authority's Irvine training center.

Firefighters started breathing hard. Wearing 70 pounds of gear, they grabbed axes and chain saws as they raced into the fire.

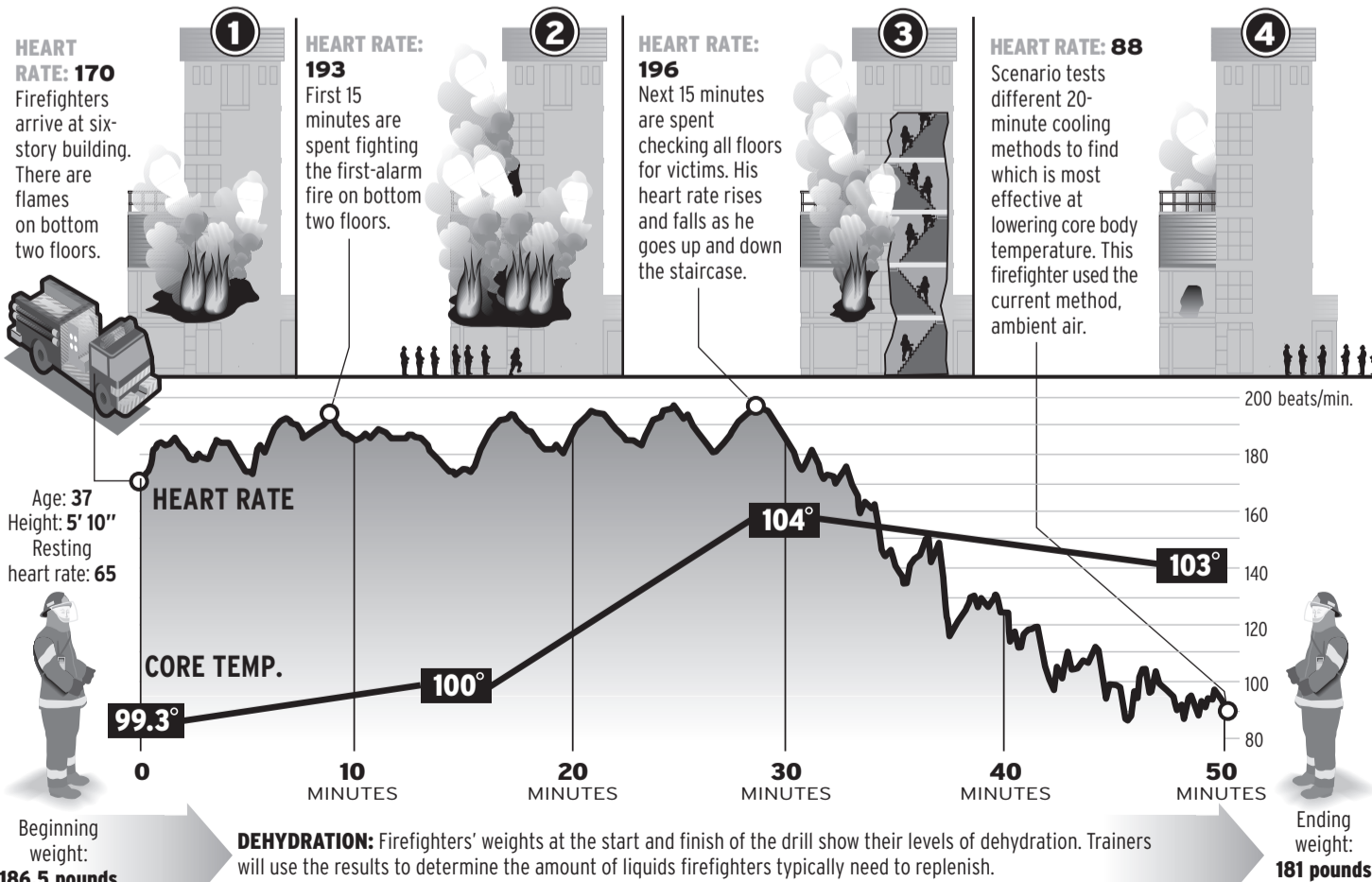
Firefighting fitness

The Orange County Fire Authority put more than 100 firefighters through a stress and hydration drill to understand the physiological effects of the job. Test results will help trainers establish protocols for the amount of time firefighters spend battling blazes and methods for cool-down and rehydration. Here's how the drill works.



Tracking physiological effects on a firefighter

Here are the stress and hydration results of one firefighter. His heart rate, core temperature and breathing are monitored as he fights a six-story building fire. In the training scenario, two people are trapped.



Sources: Orange County Fire Authority; HG Inc.; University of Victoria; Suunto T6 | Graphics reporting by Chantal Lamers; graphic by Scott Brown/The Register