

Fit to fight: \$1 million grant to focus on firefighters health

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BLOOMINGTON Indiana University researchers will use cutting-edge technology and a \$1 million federal grant to examine the toll firefighting takes on firefighters cardiovascular and respiratory health. The results eventually could improve firefighter health and safety, and reduce the number of firefighter deaths that occur in the line of duty.

The U.S. Department of Homeland Security's Federal Emergency Management Agency awarded the Assistance to Firefighters Grant recently to visiting scientist Jim Brown, who has been conducting research involving firefighters for four years, and Joel Stager, professor in the Department of Kinesiology and director of the Councilman Center for the Science of Swimming in the School of Health, Physical Education and Recreation.

Brown, who is leading the research project, said a study like this is long overdue. Each year around 100 firefighters die in the line of duty with around half of these deaths resulting from heart attacks caused by overexertion and stress. No studies, however, have documented how demanding the job actually is.

To know if they're over-exerting themselves, we need to know what they're doing, Brown said. There are too many of them dying of heart attack, and they're too young. We've known that for some time. But no one has known the cause.

To begin putting numbers to the physiological aspects of the job, as many as 60 firefighters will wear high-tech LifeShirts made by VivoMetrics Inc. The lightweight vests are embedded with sensors that continually monitor cardiovascular and respiratory systems.

During fire calls, two firefighters will wear thermal imaging cameras mounted on their helmets to collect video, recorded onto a device inside the helmet. Researchers also will travel to fire scenes to record a variety of information, such as weather conditions and types of buildings encountered.

The data, collected over six months, will be combined to produce a mathematical model for how firefighters respond physiologically to fire scenes and the physiological load those tasks represent.

The researchers also will develop a training DVD to make sure firefighters' fitness training supports their work at the fire scene. Now, fitness training typically focuses on aerobic exercise to improve cardiovascular health, Brown said, even though work at the fire scenes usually involves short but intense exertions of power and strength, not aerobic activity.

The mismatch is comparable to training an athlete for the wrong sport, Brown said.

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