



ASU studies firefighter fatigue in Mesa

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The laboratory is a firehouse. The subjects are firefighters. The tests are computer games played twice a day.

Mesa firefighters are working with Arizona State University to determine the affects that working high call volumes under stressful conditions have on job performance.

Dr. Vaughn Becker, ASU associate professor of applied psychology, is leading the firefighter cognitive fatigue study.

There have been some sleep deprivation and fatigue studies in the past. There are a handful of similar projects going on in the nation.

Mesa is a good candidate for the study because its firefighters work in some of the busiest stations in the country.

Fire Station No. 203 at Standage and University Drive was the 21st busiest in the country in 2005 with more than 4,000 calls, according to *Firehouse* magazine.

Thirteen of Mesa's 17 fire stations run more than 2,500 calls annually, Mesa fire spokesman Deputy Chief Mike Dunn said.

Fire stations are placed around the city to handle 2,000 to 2,500 calls annually or cover a 1.5-mile radius for optimum response times.

Mesa also is faced with response times that spiked 27 seconds in the past two years and rising calls volumes. The city, which has cut services in the midst of budget cutbacks, is behind four stations and needs to replace five fire trucks.

These conditions create an environment where firefighters are increasingly stretched to do more.

Up and down cycle

It's not just being up 24 hours, firefighters say. When a drowning or incident involving a child occurs, it's like riding a roller coaster. The endorphin rush continues through the call, only to lead to a crash when it's over.

In a busy shift, the cycle repeats over and over. Some return to the station and try to sleep but can't. Others don't fight

it. They keep their turnouts on and brew coffee until the next call.

Under these conditions, they must make split-second decisions and perform strenuous physical duties and precise medical procedures.

"I see part of the problem being why we are up, not that we are up," said Mesa fire Capt. Ralph Churchman, a 30-year veteran. "A third of our life is under some type of stress."

Adding to the stressful environment, firefighters are exposed to disease, hazardous materials, traffic and trauma.

The project originated with one of Mesa's own, firefighter Greg Adams, a six-year veteran who conducted his own fatigue study last year. Adams found Mesa firefighters often work higher workloads with fewer resources. He sent the study to ASU looking for more information and help.

That's when he found his new partner, Becker at the Polytechnic Campus.

Four-month study

Adams said he hopes the study will give the city another way to show how far behind the department is and eventually help set a national standard for call volume per fire unit. When a shift ends, firefighters often need several hours to several days to recuperate, depending on call volumes, he said.

"I think guys don't realize they are functioning while constantly fatigued, and it just becomes their norm," Adams said. "I think the study will show what appropriate calls volumes are so they are not function at those level consistently."

The four-month study will look at firefighter's ability to make quick and accurate decisions, focus and effectively perform tasks that depend on memory.

The study is voluntary, and firefighters who participate will start each day by logging onto a Web site and throughout the shift answer questions about how long they have been working, their fatigue level and the time since their last shift. The results are expected in the fall.

Adams and Churchman hope the study also shows firefighters how to take better care of themselves.

"When you get overstressed with your resources and are extended you are going to lose," Churchman said. "And in this business, it is lives."