

'Ramp-up' alert tones can help reduce stress on firefighters

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An article published in the *Journal of Occupational and Environmental Hygiene (JOEH)* that examines long-term health effects suffered by emergency responders indicates that "ramp-up" alert tones can help reduce stress on firefighters.

New research published in *JOEH* suggests that fire departments can reduce stress on firefighters by signaling emergencies with alarms that gradually increase in intensity instead of sudden, full-volume alerts. The article, "Effect of Station-specific Alerting and Ramp-up Tones on Firefighters' Alarm Time Heart Rates," comes on the eve of the 35th Annual National Fallen Firefighters Memorial Weekend, Oct. 8–9, which honors firefighters who died in the line of duty during the previous year.

Authors James J. MacNeal, David C. Cone, and Christopher L. Wistrom note that of the 97 firefighters killed in the line of duty in 2013, 32 died from overexertion, stress, and related medical issues. In the last five years, heart attacks accounted for two-fifths of on-duty deaths. Previous studies have established that firefighters are more susceptible to heart attacks when responding to emergencies versus non-emergencies.

This study was conducted over three months and involved 42 firefighters at an urban three-station fire department. Firefighters participating in the study wore devices on their wrists that measured their [heart rates](#). Researchers analyzed participants' heart-rate increases in response to standard alerting—the sudden, high-volume alarms—and to alerts that

gradually "ramp up" the audio volume. Study results showed that standard alerting caused a median increase in heart rate of 7 beats per minute (bpm), while the ramp-up tones caused a median increase of 5 bpm. In a post-study survey, participating firefighters indicated a strong preference for the ramp-up tones.

"Ramp-up tones were also perceived as the best alerting method to reduce stress during both the day and overnight," the authors write. "This study suggests that the manner in which [firefighters](#) are alerted does have an influence on their physiologic response to the alarm."

More information: James J. MacNeal et al. Effect of station-specific alerting and ramp-up tones on firefighters' alarm time heart rates, *Journal of Occupational and Environmental Hygiene* (2016). [DOI: 10.1080/15459624.2016.1183018](#)

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