

Study shows beneficial effect of electric fans in extreme heat and humidity

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Although some public health organizations advise against the use of electric fans in severe heat, a new study published in the February 17 issue of *JAMA* demonstrated that electric fans prevent heat-related elevations in heart rate and core body temperature.

One review of previous research concluded "no evidence currently exists supporting or refuting the use of electric fans during heat waves" for mortality and illness. However, [public health](#) guidance typically warns against fan use in hot weather, with some research suggesting that fan use could potentially accelerate body heating, according to background information in the article.

Ollie Jay, Ph.D., of the University of Sydney, New South Wales, Australia, and colleagues examined the effect of fan use at temperatures and humidities that can no longer be physiologically tolerated without rapid increases in [heart rate](#) and [core body temperature](#). Sweat evaporation declines with increasing humidity, so in more humid environments fans may not prevent heatinduced elevations in cardiovascular and thermal (core temperature) strain.

Wearing shorts and t-shirts, eight healthy males (average age, 23 years) sat in a chamber maintained at temperatures equal to (36°C; 97°F) or exceeding (42°C; 108°F), the limits currently recommended for fan use. Each temperature was tested with and without an 18-inch fan facing the participant (from about 3 feet). After a 20-minute baseline period, [relative humidity](#) was increased in 15 equal steps from 25 percent to 95

percent at 97°F and from 20 percent to 70 percent at 108°F. Heart rate and core temperature of the study participants were measured throughout.

The researchers found that the electric fans prevented heat-related elevations in heart and core temperature up to approximately 80 percent relative humidity at 97°F and 50 percent relative humidity at 108°F. "Thus, contrary to existing guidance, fans may be effective cooling devices for those without air conditioning during hot and humid periods," the authors write. "Advice to the public to stop using fans during [heat waves](#) may need to be reevaluated."

The authors note that only young participants were assessed, so similar results would need to be derived for other populations (e.g., elderly with illnesses) and those with diminished sweat production.

More information: *JAMA*, [DOI: 10.1001/jama.2015.153](https://doi.org/10.1001/jama.2015.153)

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