

Device-guided breathing lowers heart rate, sympathetic activity in people with PTSD

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Device-guided breathing may improve physiological symptoms in people with severe posttraumatic stress disorder (PTSD), according to a new study. The findings will be presented today at the American Physiological Society's (APS) annual meeting at Experimental Biology 2019 in Orlando, Fla.

PTSD is a mental health condition that may develop after a person has experienced a traumatic or life-threatening event, including military combat, natural disasters and physical or sexual abuse. Flashbacks, nightmares and severe anxiety associated with PTSD can lead to episodes of rapid [breathing](#), muscle tension and short-term increases in [heart rate](#) and blood pressure. The physical manifestations of PTSD can increase the long-term risks of hypertension and [heart disease](#).

Researchers from Emory University in Atlanta explored the use of device-guided breathing to regulate sympathetic nerve activity—a nervous system response that regulates [small changes](#) to the cardiovascular system—and blood pressure control in military veterans with PTSD. The research team confirmed diagnosis and severity of PTSD in each volunteer using the Clinician-Administered PTSD Scale (CAPS). Volunteers were then divided into two groups—moderate or severe—based on their CAPS results. Within each group, the participants were randomly assigned to the breathing device (RESPeRATE™) or sham (fake) device.

RESPeRATE produces musical tones to guide the user to a slower-than-

normal rate of breathing of about five to six breaths per minute. The device measures inhalation and exhalation rates through a band of sensors worn around the abdomen. The sham device works similarly, but guides the user to breathe 14 breaths per minute, which is within a normal range.

The researchers found that heart rate and muscle [sympathetic nerve activity](#) (MSNA) decreased substantially in the severe PTSD group using the breathing device when compared to the device-using moderate group. The volunteers with moderate PTSD who used RESPeRATE also showed an improvement in these factors, but the positive changes were not as significant as the people with more severe PTSD.

"A non-pharmacological intervention [such as device-guided breathing] could be beneficial in the treatment of PTSD, especially in severe cases. Further work is needed to determine if [device-guided breathing] could reduce the risk of future hypertension in this population," wrote Monica Vemulapalli, first author of the study. If [device](#)-guided breathing can lead to sustained reductions in MSNA, then it could potentially reduce risk of hypertension.

More information: Monica Vemulapalli, an undergraduate student at Emory University, will present the poster "Sympathetic and cardiovascular response to device-guided slow breathing acutely depends on post-traumatic stress disorder (PTSD) severity" on Sunday, April 7, in the Exhibit Hall-West of the Orlando County Convention Center.

Provided by American Physiological Society

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