

New treatment may relieve chronic shortness of breath

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People experiencing chronic shortness of breath may soon have a new way to help alleviate their discomfort, according to a Penn State College of Medicine pulmonology researcher.

[Dyspnea](#), or [shortness of breath](#), has various causes but few treatment options. People with chronic respiratory and [cardiac disease](#) are the most often affected. Generally these patients experience some change in the way their lungs function. In order to compensate for these changes, the [diaphragm](#) sends information to the nervous system that causes dyspnea.

"Currently there is no specific treatment for dyspnea besides giving the patient morphine, which has many side effects and remains very controversial," said Philippe Haouzi, professor and physician of pulmonary and [critical care medicine](#). "We suggest modifying the perception of shortness of breath by stimulating a specific region of the neck, akin to an approach used for the treatment of pain."

The skin is divided into sections, known as dermatomes. [Internal organs](#) and muscles share similar nerves to and from regions of the spinal cord with specific dermatomes. Gentle [electrical stimulation](#) of a dermatome blocks the transmission of certain types of information coming from the internal organs and the muscles corresponding to the same dermatome.

As the diaphragm has evolved in mammals, "the dermatome corresponding to the diaphragmatic muscle is not located in the skin of the thorax but is in the lateral region of the neck," Haouzi explained.

Haouzi applied an innocuous and non-painful electrical stimulation to the set of dermatomes that correspond to the diaphragm in the neck of a patient suffering from dyspnea. The patient reported the treatment provided relief from the discomfort of feeling short of breath as long as the stimulation was maintained.

This method is non-invasive since the stimulation is applied to the skin itself and can be performed by the patient at home, given the proper device and instruction.

"Being short of breath doesn't necessarily mean that the respiratory muscles are involved," said Haouzi. "Dyspnea can be generated by many other mechanisms. But at least we can address this specific mechanism involved in many patients with respiratory as well as cardiac disease, giving the patient some relief." Haouzi has filed a provisional patent for this work.

Provided by Pennsylvania State University

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