

SpineX, Inc. Announce A Groundbreaking Study Providing Optimism for Paralyzed Patients with Impaired Breathing

Daily nonsurgical spinal neurostimulation therapy provides long-lasting improvements in breathing and coughing for individuals with severe tetraplegia



Los Angeles, Aug 17, 2020 ([Issuewire.com](https://www.issuewire.com)) - [“Enabling respiratory control after severe chronic tetraplegia: An exploratory case study”](#) was recently published in the Journal of Neurophysiology (ref 1). The case study, from Dr. Parag Gad and Prof. Reggie Edgerton, demonstrates that acute and chronic TESCoN therapy over the cervical spinal cord positively impacts the breathing and coughing ability in a patient with chronic tetraplegia. Respiratory dysfunction is one of the most debilitating effects of spinal cord injury (SCI) impacting the quality of life of patients and caregivers. In addition, breathing difficulties impact the rehabilitation routine a patient may potentially undergo. Transcutaneous electrical spinal cord neuromodulation (TESCoN) developed by SpineX Inc., is a novel approach to reactivate and retrain spinal circuits after paralysis.

The study, funded by Walkabout Foundation, Dana & Albert Broccoli Charitable Foundation, and Nanette and Burt Forester, was conducted at Rancho Research Institute, Downey, CA.

Commenting on the paper, Dr. Edgerton, SpineX co-founder said, "There are two key features of this study: First the importance of improving breathing during active rehabilitation exercises for patients with severe tetraplegia and second, the impact of breathing and coughing on the overall quality of life of these patients. Both features are targeted and improved with TESCoN therapy, a completely non-invasive, non-surgical and low-cost approach,"

[Video Link](#)

SpineX Inc. is a seed-stage medical device company developing Neuromodulation devices leveraging cutting-edge research from the lab of Dr. V Reggie Edgerton, PhD at UCLA. Over 10M people in the US deal with some form of paralysis and these individuals suffer from lost sensation, bladder, bowel ([ref 2](#)), sexual dysfunction, compromised trunk, hand and arm function, respiratory and cardiovascular distress. The proprietary, non-surgical neuromodulation system, TESCoN, can generate significant improvements for each of these issues.

Patients with low cervical spinal cord injuries have impaired breathing and coughing function but are ineligible for currently approved devices. TESCoN therapy enables voluntary (not stimulation-induced) breathing and coughing function within a few seconds of turning on the stimulation. The data has shown that one hour of therapy per day has a long-lasting impact on the rest of the day. According to the authors, the spinal cord is capable of learning wherein daily TESCoN therapy of an hour a day results in neural plasticity in the brain and spinal cord, resulting in long-lasting changes.

According to Dr. Gad, "This is the first and only therapy that has demonstrated improvement in multiple organ systems including standing, stepping, trunk control, hand and arm control and autonomic functions including breathing, bowel, bladder, cardiovascular and sexual function sometimes simultaneously simply moving a patch electrode along the length of the spinal cord".

Considered the "Father of modern spinal neuromodulation," Prof. Edgerton has published over 500 papers on muscle fiber types, muscle design and plasticity, and spinal cord injury and rehabilitation. To bring these technologies to the patients that need it the most, Dr. Edgerton and Dr. Gad founded SpineX Inc. to focus on commercializing spinal neuromodulation technology.

Ref 1: [Gad PN, Kreydin E, Zhong H, Edgerton VR. Enabling respiratory control after severe chronic tetraplegia: An exploratory case study \[published online ahead of print, 2020 Aug 5\]. *J Neurophysiol.* 2020;10.1152/jn.00320.2020. doi:10.1152/jn.00320.2020](#)

Ref 2: [Kreydin E, Zhong H, Latack K, Ye S, Edgerton VR, Gad P. Transcutaneous Electrical Spinal Cord Neuromodulator \(TESCoN\) Improves Symptoms of Overactive Bladder. *Front Syst Neurosci.* 2020;14:1. Published 2020 Feb 6. doi:10.3389/fnsys.2020.00001](#)

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