

Clinical Publications



Pharyngeal Electrical Stimulation

1. [Link](#): Hamdy S, Aziz Q, Rothwell JC, et al. The cortical topography of human swallowing musculature in health and disease. *Nat Med.* 1996;2(11):1217-1224. doi:10.1038/nm1196-1217
2. [Link](#): Hamdy S, Aziz Q, Rothwell JC, et al. Explaining oropharyngeal dysphagia after unilateral hemispheric stroke. *Lancet.* 1997;350(9079):686-692. doi:10.1016/S0140-6736(97)02068-0
3. [Link](#): Hamdy S, Aziz Q, Rothwell JC, et al. Recovery of swallowing after dysphagic stroke relates to functional reorganization in the intact motor cortex. *Gastroenterology.* 1998;115(5):1104-1112. doi:10.1016/s0016-5085(98)70081-2
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5. [Link](#): Fraser C, Power M, Hamdy S, et al. Driving plasticity in human adult motor cortex is associated with improved motor function after brain injury. *Neuron.* 2002 May 30;34(5):831-40. doi: 10.1016/s0896-6273(02)00705-5
6. [Link](#): Jayasekaran V, Singh S, Tyrrell P, et al. Adjunctive functional pharyngeal electrical stimulation reverses swallowing disability after brain lesions. *Gastroenterology.* 2010 May;138(5):1737-46. doi: 10.1053/j.gastro.2010.01.052
7. [Link](#): Restivo DA, Casabona A, Centonze D, Marchese-Ragona R, Maimone D, Pavone A. Pharyngeal electrical stimulation for dysphagia associated with multiple sclerosis: a pilot study. *Brain Stimul.* 2013;6(3):418-423. doi:10.1016/j.brs.2012.09.001
8. [Link](#): Michou E, Mistry S, Jefferson S, et al. Characterizing the mechanisms of central and peripheral forms of neurostimulation in chronic dysphagic stroke patients. *Brain Stimul.* 2014;7(1):66-73. doi:10.1016/j.brs.2013.09.005
9. [Link](#): **Suntrup S, Marian T, Schröder JB, et al. Electrical pharyngeal stimulation for dysphagia treatment in tracheotomized stroke patients: a randomized controlled trial. *Intensive Care Med.* 2015;41(9):1629-1637. doi:10.1007/s00134-015-3897-8.**
10. [Link](#): **Youssef G, and El-Banna M. The outcome of intraluminal electrical pharyngeal stimulation (EPS) on oropharyngeal dysphagia in acute stroke patients. *Al-Azhar Assiut Med Journal.* 2015; 13(1):68-72.**
11. [Link](#): Bath PM, Scutt P, Love J, et al. Pharyngeal Electrical Stimulation for Treatment of Dysphagia in Subacute Stroke: A Randomized Controlled Trial. *Stroke.* 2016;47(6):1562-1570. doi:10.1161/STROKEAHA.115.012455
12. [Link](#): Suntrup-Krueger S, Bittner S, Recker S, et al. Electrical pharyngeal stimulation increases substance P level in saliva. *Neurogastroenterol Motil.* 2016;28(6):855-860. doi:10.1111/nmo.12783
13. [Link](#): Vasant DH, Michou E, O'Leary N, et al. Pharyngeal Electrical Stimulation in Dysphagia Poststroke: A Prospective, Randomized Single-Blinded Interventional Study. *Neurorehabil Neural Repair.* 2016 Oct;30(9):866-75. doi: 10.1177/1545968316639129.
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15. [Link](#): **Muhle P, Suntrup-Krueger S, Bittner S, et al. Increase of Substance P Concentration in Saliva after Pharyngeal Electrical Stimulation in Severely Dysphagic Stroke Patients - an Indicator of Decannulation Success?. *Neurosignals.* 2017;25(1):74-87. doi:10.1159/000482002.**
16. [Link](#): **Dziewas R, Stellato R, van der Tweel I, et al. Pharyngeal electrical stimulation for early decannulation in tracheotomised patients with neurogenic dysphagia after stroke (PHAST-TRAC): a prospective, single-blinded, randomised trial. *Lancet Neurol.* 2018;17(10):849-859. doi:10.1016/S1474-4422(18)30255-2.**
17. [Link](#): **Bath PM, Woodhouse LJ, Suntrup-Krueger S, et al. Pharyngeal electrical stimulation for neurogenic dysphagia following stroke, traumatic brain injury or other causes: Main results from the PHADER cohort study. *EClinicalMedicine.* 2020;28:100608. Published 2020 Nov 10. doi:10.1016/j.eclinm.2020.100608**
18. [Link](#): Beirer S, Grisold W, Dreisbach J. Therapy-resistant dysphagia successfully treated using pharyngeal electrical stimulation in a patient with the pharyngeal-cervical-brachial variant of the Guillain-Barré syndrome. *eNeurologicalSci.* 2020;20:100255. Published 2020 Jul 15. doi:10.1016/j.ensci.2020.100255

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19. [Link](#): Koestenberger M, Neuwersch S, Hoefner E, et al. A Pilot Study of Pharyngeal Electrical Stimulation for Orally Intubated ICU Patients with Dysphagia. *Neurocrit Care*. 2020;32(2):532-538. doi:10.1007/s12028-019-00780-x
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21. [Link](#): Muhle P, Labeit B, Wollbrink A, et al. Targeting the sensory feedback within the swallowing network-Reversing artificially induced pharyngolaryngeal hypesthesia by central and peripheral stimulation strategies. *Hum Brain Mapp*. 2021;42(2):427-438. doi:10.1002/hbm.25233
22. [Link](#): Traugott M, Hoepler W, Kitzberger R, et al. Successful treatment of intubation-induced severe neurogenic post-extubation dysphagia using pharyngeal electrical stimulation in a COVID-19 survivor: a case report. *J Med Case Rep*. 2021;15(1):148. Published 2021 Mar 22. doi:10.1186/s13256-021-02763-z
23. [Link](#): Blakemore C, Hunter J, Bhaskar B. Rapid Swallow Improvement Following Pharyngeal Electrical Stimulation in a COVID-19 With Long-Term Severe Neurogenic Dysphagia: A Case Report. *Journal of Rehabilitative Medicine: Clinical Communications*. Published December 20, 2021. Doi: 10.2340/20030711-1000073
24. [Link](#): Herrmann C, Schradt F, Lindner-Pfleggar B, Schuster J, Ludolph AC, Dorst J. Pharyngeal electrical stimulation in amyotrophic lateral sclerosis: a pilot study. *Ther Adv Neurol Disord*. 2022;15:17562864211068394. Published 2022 Feb 8. doi:10.1177/17562864211068394
25. [Link](#): Traugott MT, Hoepler W, Kelani H, Schatzl M, Friesse E and Neuhold S. Pharyngeal Electrical Stimulation Treatment of Critically Ill Intensive Care Tracheostomized Patients Presenting with Severe Neurogenic Dysphagia: A Case Series. *Austin J Pulm Respir Med*. 2022; 9(1): 1088.
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28. [Link](#): Cheng I, Bath PM, Hamdy S, et al. Predictors of pharyngeal electrical stimulation treatment success in tracheotomised stroke patients with dysphagia: Secondary analysis from PHADER cohort study. *Neurotherapeutics*. Published online August 23, 2024. doi:10.1016/j.neurot.2024.e00433
29. [Link](#): Williams T, Walkden E, Patel K, et al. Management of dysphagia using pharyngeal electrical stimulation in the general critical care population. *British Journal of Anaesthesia*. 2024;133(2):471, doi:10.1016/j.bja.2024.04.069
30. [Link](#): Cheng I, Bath PM, Hamdy S, et al. Clinical predictors of outcome after pharyngeal electrical stimulation (PES) in non-stroke related neurogenic dysphagia after mechanical ventilation and tracheotomy: results from subgroup analysis of PHADER study. *Neurol Res Pract*. 2025;7(1):23. Published 2025 Apr 7. doi:10.1186/s42466-025-00380-
31. [Link](#): Everaert M, Hamdy S, Goeleven A, Tack J, Vanuytsel T, Rommel N. Pharyngeal electrical stimulation favorably modifies healthy human pharyngoesophageal function: a randomized trial using high-resolution manometry impedance. *J Appl Physiol (1985)*. 2025;138(4):988-1001. doi:10.1152/japplphysiol.00516.2024
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33. [Link](#): Sasegbon A, Cheng I, Dai M, Li W, Hamdy S. Device-based solutions supporting patients with swallowing problems. *Expert Rev Med Devices*. Published online May 25, 2025. doi:10.1080/17434440.2025.2508452