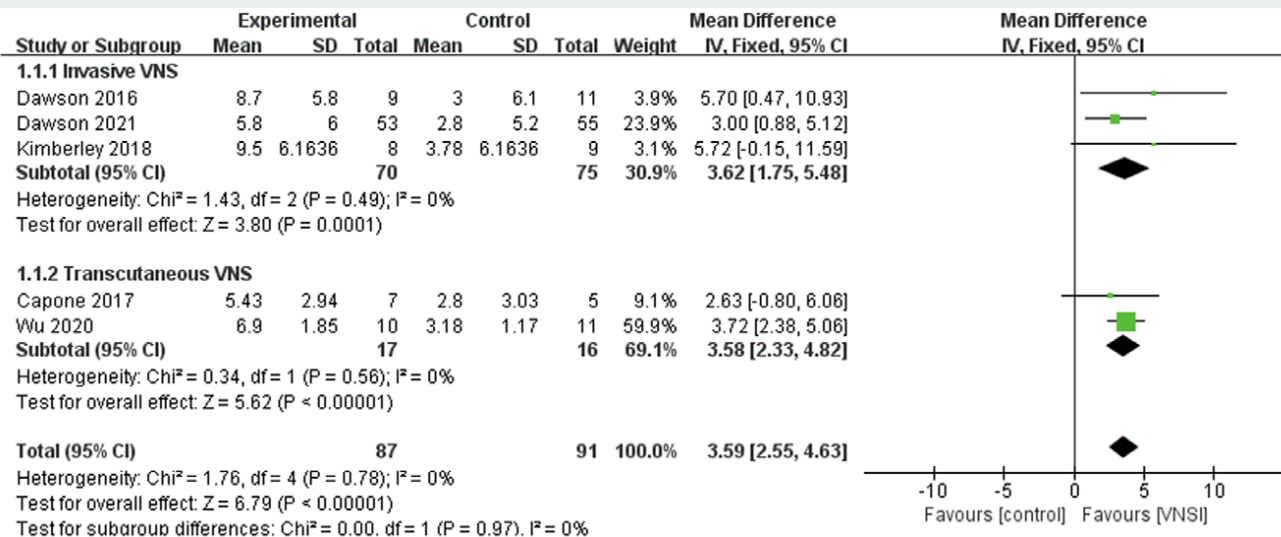


Quarterly Newsletter

BRAIN MODULATION FOR NEURORECOVERY

Vagus Nerve Stimulation (VNS) for Post-Stroke Upper Limb Function Improvement:

Zhao *et al.* in the last month's International Journal of Rehabilitation Research demonstrated, via systematic review and meta-analysis, that VNS paired with rehabilitation improves upper limb function recovery after stroke, but no significant difference in adverse events associated with device implantation. The included 5 studies used a variety of outcome measures, but Fugl-Meyer Upper Extremity (FM-UE) scale was used consistently across all 5 studies and showed a relative improvement of 3.59 points between the VNS and the sham groups, which is closed to clinically important difference (figure below). The other outcome measures included Wolf motor function test (WMFT), Stroke Impact Scale (SIS), Box and Block test, nine-hole peg test, etc. Transcutaneous VNS showed comparable improvements as invasive VNS, but safety profile was surprisingly against transcutaneous approach with one reported adverse event (no adverse events in studies that used invasive VNS). When interpreting the results, the authors caution that the long-term effects remain to be demonstrated.



Zhao K, Yang J, Huang J, Zhao Z, Qu Y. Effect of vagus nerve stimulation paired with rehabilitation for upper limb function improvement after stroke: a systematic review and meta-analysis of randomized controlled trials. Int J Rehabil Res. 2021.

Upcoming events

International Stroke Conference

9-11 February, New Orleans

<https://professional.heart.org/en/meetings/international-stroke-conference/registration>

Neurorehabilitation Stroke Virtual Short Courses

14 January; 11 February; 18 March; 15 April

<https://canosc.com/stroke-short-course/>

WFNR Research Webinars

25 January - Statistics I (Basic Parametric Tests)

24 March - Meta-analysis

28 April - WFNR-Based Study/Outcome Research

26 May - Understand the Process of Publication (Meet the Editor)

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ASNR Annual Meeting

31 March - 2 April 2022

St Louis, USA

www.asnr.com

16th ISPRM World Congress

3-7 July, Lisbon, Portugal

<https://www.isprm.org/meet/future-congresses-2/>

15th Symposium of the International Neurotrauma Society

10-13 July 2022

Berlin, Germany

<http://www.neurotrauma2022.com>

12th World Congress for Neurorehabilitation

14-17 December 2022

Vienna, Austria

<http://www.wfnr-congress.org>

Select Recent Publications of **Brainmodulation** for Neurorehabilitation

ID	TYPE*	TOOL	DISEASE	CITATION
1	1	rTMS	Stroke	Yeung JT, Young IM, Doyen S, Teo C, Sughrue ME. Changes in the Brain Connectome Following Repetitive Transcranial Magnetic Stimulation for Stroke Rehabilitation. <i>Cureus</i> 2021;13:e19105.
2	1	BCI-FES	MS	Carrere LC, Taborda M, Ballario C, Tabernig C. Effects of brain-computer interface with functional electrical stimulation for gait rehabilitation in multiple sclerosis patients: preliminary findings in gait speed and event-related desynchronization onset latency. <i>J Neural Eng</i> 2021;18.
3	1	Tactile Stim.	Stroke	Vatinno AA, Hall L, Cox H, et al. Using Subthreshold Vibratory Stimulation During Poststroke Rehabilitation Therapy: A Case Series. <i>OTJR (Thorofare N J)</i> 2022;42:30-39.
4	2	tDCS	Stroke	Lee JH, Jeun YJ, Park HY, Jung YJ. Effect of Transcranial Direct Current Stimulation Combined with Rehabilitation on Arm and Hand Function in Stroke Patients: A Systematic Review and Meta-Analysis. <i>Healthcare (Basel)</i> 2021;9.
5	1	Phrenic N. Stim.	SCI	Sharma V, Jafri H, Roy N, Dangi M, Kataruka M. Thirty-Six-Month Follow-up of Diaphragm Pacing with Phrenic Nerve Stimulation for Ventilator Dependence in Traumatic Tetraplegia: The Way Forward for Spinal Cord Injury Rehabilitation in a Developing Country. <i>Asian Spine J</i> 2021;15:874-880.
6	1	NMES	Stroke	Gulec A, Albayrak I, Erdur O, Ozturk K, Levendoglu F. Effect of swallowing rehabilitation using traditional therapy, kinesiology taping and neuromuscular electrical stimulation on dysphagia in post-stroke patients: A randomized clinical trial. <i>Clin Neurol Neurosurg</i> 2021;211:107020.
7	2	TENS	Stroke	da Silva MA, Mangilli LD. Transcutaneous electrical nerve stimulation in speech therapy rehabilitation of voice and swallowing function in adults-a systematic review. <i>Clin Exp Dent Res</i> 2021;7:1131-1143.
8	1	RPSS	Stroke	Conforto AB, Machado AG, Ribeiro NHV, et al. Repetitive Peripheral Sensory Stimulation as an Add-On Intervention for Upper Limb Rehabilitation in Stroke: A Randomized Trial. <i>Neurorehabil Neural Repair</i> 2021;35:1059-1064.
9	1	VNS	Stroke	Morrison RA, Hays SA, Kilgard MP. Vagus Nerve Stimulation as a Potential Adjuvant to Rehabilitation for Post-stroke Motor Speech Disorders. <i>Front Neurosci</i> 2021;15:715928.
10	1	nGVS	MS	Lotfi Y, Farahani A, Azimiyani M, Moossavi A, Bakhshi E. Comparison of efficacy of vestibular rehabilitation and noisy galvanic vestibular stimulation to improve dizziness and balance in patients with multiple sclerosis. <i>J Vestib Res</i> 2021;31:541-551.

* 1 = Experimental, 2 = Review



**HAPPY
HOLIDAYS!**

**WISHING YOU
A HAPPY & SAFE
HOLIDAY!**

**Brain Modulation for Neurorecovery
WFNR Special Interest Group**