

Therapeutic Role of taVNS in Neuro Rehabilitation: A Narrative Review of Current Evidence

SIMRAN¹, AMAN KANDA²

ABSTRACT

Introduction: Non-invasive neuromodulation techniques are increasingly being recognised for their potential to improve outcomes in neurorehabilitation. Transcutaneous auricular Vagus Nerve Stimulation (taVNS) is an emerging, low-risk technique that stimulates auricular branch of the vagus nerve, which influences the central nervous system activity, promotes neuroplasticity, and supports functional recovery. Given that taVNS has been applied in various neurological conditions, it is important to conduct a thorough review of its current therapeutic effectiveness in neurorehabilitation to guide clinical practice and direct future research.

Aim: The purpose of this narrative review is to compile and analyse the existing evidence regarding the therapeutic use of taVNS in neurorehabilitation among individuals with chronic neurological conditions.

Materials and Methods: A comprehensive search was carried out across PubMed, Google Scholar, and Cochrane Library from 2015 to 2025. After screening, Randomised Controlled Trials (RCTs) and pilot studies were included, which examined the effects of taVNS in participants with neurological disorders.

Results: The studies showed varying levels of effectiveness across the different patient groups. The taVNS improved sleep quality and measurable sleep parameters, motor function and nonmotor symptoms like gait, balance, sensorimotor integration, and cardiovascular regulation. It also increased cortical arousal and alertness, and improved brain connectivity. Overall, taVNS was found to be safe and well-tolerated in all the studied populations.

Conclusion: The current findings suggest that taVNS has a promising role in neurorehabilitation.

Keywords: Chronic insomnia, Neurological rehabilitation, Parkinson disease, Stroke, Vagus Nerve stimulation.

PARTICULARS OF CONTRIBUTORS:

1. MPT Neurology Student, Amar Jyoti Institute of Physiotherapy, University of Delhi, New Delhi, India.
2. MPT Neurology Student, Amar Jyoti Institute of Physiotherapy, University of Delhi, New Delhi, India.

NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:

Ms. Simran,
MPT Neurology Student, Amar Jyoti Institute of Physiotherapy, University of Delhi, New Delhi, India.
Email: simranhooda2001@gmail.com