

RESEARCH DIRECTIONS

Can noise stimulation help fight peripheral neuropathy symptoms?

Dr Paul Breen of the MARCS Institute and his research team* has been granted funding by the National Health and Medical Research Council to test a new electrical noise stimulation device on people with peripheral neuropathy. This project aims to identify how this technology interacts with neural signals, find the frequency spectrum that produces the greatest reduction in symptoms, and determine the effect it has on mobility and balance in people suffering from this debilitating condition.

'Peripheral neuropathy is common in older people, diabetics and those with chronic conditions, and can lead to pain and loss of sensation in the limbs', Dr Breen explains. 'It is the result of damage to affected neurons in the nervous system, and is a life sentence for sufferers as there is no cure.' To help ease the symptoms of peripheral neuropathy Dr Breen has developed a unique technology: a subsensory electrical noise stimulation (SENS) device, which modifies the remaining neural impulses to amplify sensory input. The SENS device sends a small imperceptible electric current into nerves through electrodes attached to the skin. SENS technology has already been shown to improve neural function in healthy individuals, older adults and participants with diabetes.

This research will focus on the use of different frequencies of stimulation to determine the optimal combination of settings for fighting symptoms. A modified, wireless version of the technology is being developed in parallel. This wearable version will be used to examine the long-term utility of the technology and determine if improvements in sensitivity and mobility can be maintained over extended periods of time. The results will inform the development of SENS technology for future medical use and commercialisation.



Restoring feeling and mobility to those with peripheral neuropathy will greatly improve their confidence, autonomy and quality of life. SENS technology is a promising alternative to costly drug treatments that may have unpleasant side effects.

Project Title: Enhanced sensory perception via jitter reduction and neural synchronisation evoked by subsensory electrical noise stimulation – Restoring sensitivity in peripheral neuropathy
Funding has been set at: \$308,247
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July 2015

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