

ABSTRACT

## Efficacy of nGVS to improve postural stability in people with Bilateral Vestibulopathy

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Bilateral vestibulopathy occurs when the neural signals from the balance organs (vestibular apparatus) to the brain are weak. This leads to imbalance and blurry vision during head movements (Fujimoto et al., 2019). To date, there are few successful treatment options once damage has occurred (Hain et al., 2018). Noisy galvanic vestibular stimulation (nGVS) is a non-invasive electrical stimulation, delivered at a low level to the vestibular system. When used to boost the weak physiological signal from the vestibular system nGVS has the potential to restore absent vestibular information and improve balance (Dlugaiczek et al., 2019). This presentation will include the results of my systematic literature review and meta-analysis, examining the evidence for the use of nGVS as a means of improving postural control in people with bilateral vestibulopathy and discussing how these results will inform my research. A comprehensive systematic search of five databases up to July 2022 was performed. The search identified studies applying nGVS to people with bilateral vestibulopathy, with the aim of improving their postural control. Two independent reviewers screened and identified eligible studies, completed a Cochrane risk of bias evaluation, and extracted relevant data. Seven studies met the eligibility criteria with 5 studies being suitable for meta-analysis. The standardized mean difference (SMD) based on Hedges' g was calculated as a measure of effect size, for the primary outcome measure that best identified postural control, and a forest plot generated. Meta-analysis found that nGVS improved postural control during standing and walking (pooled SMD = 0.47 95% CI, [0.25, 0.7]). nGVS-mediated improvements in postural control were most evident standing on a firm surface with eyes closed, and in measures of lateral stability during gait. Identifying that nGVS is effective in people with bilateral vestibulopathy, and that the efficacy is context-specific, will help inform the development of treatments for people with bilateral vestibulopathy.

### References

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