

NOISE AND THE EFFERENT AUDITORY SYSTEM ACTIVATION: A SCOPING REVIEW

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ABSTRACT

Introduction: The efferent auditory system is a descending system that connects the central and peripheral auditory system. One way to activate the system is by stimulating the contralateral ear while measuring the response from the ipsilateral ear. The objective of this paper is to conduct a scoping review that 1) catalogues the different types of contralateral acoustic stimuli used to activate the efferent auditory system, and 2) identifies the methods used to measure the activation of the efferent auditory system.

Methods: Systematic search using keywords 'efferent auditory system', 'contralateral suppression', 'contralateral stimulation', 'efferent feedback', 'contralateral inhibition', 'contralateral acoustic stimuli', 'efferent pathway', 'medial olivocochlear', and 'corticofugal system' via five databases (Scopus, PubMed, ScienceDirect, CINAHL, and ProQuest) resulted in 781 hits. Final of 267 studies that met the inclusion criteria were reviewed.

Results: Out of 267 studies investigating the efferent auditory system, the different types of contralateral acoustic stimuli used were broadband noise (55.7 %), white noise (25.0%), narrowband noise (4.10%), pure tones (3.69%), and various other types of noises (11.51%). For testing methods to record the efferent auditory system activity, transient-evoked otoacoustic emission (TEOAE) was used for 114 times, distortion product otoacoustic emission (DPOAE) for 63 times, click-evoked otoacoustic emission (CEOAE) for 23 times, and various other methods for 74 times.

Conclusion: Broadband noise is the preferred contralateral acoustic stimuli used to activate the efferent auditory system. TEOAE appears to be the most preferred method of measuring the efferent system activation.

Keywords: scoping review, efferent auditory system, medial olivocochlear system, contralateral acoustic stimuli, contralateral suppression, otoacoustic emission

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