

Title: A MORE EFFICIENT USE OF THE RECORDING TIME WITH RANDOMIZED STIMULATION AND AVERAGING (RSA) IN HEARING SCREENING APPLICATIONS.

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Abstract

Background: The auditory brainstem response (ABR) is recorded conventionally (CONV) by averaging auditory responses (sweeps) corresponding to stimuli presented at a fixed rate, lower than 100 Hz. The randomized stimulation and averaging (RSA) method overcomes this limitation by the presentation of jittered stimuli. Since the quality of the ABR increases with the number of averaged sweeps, high stimulation rates might reduce the required recording test time to obtain a constant quality response. However, neural adaptation produces changes in the morphology of the responses, decreasing the SNR. Whether or not high stimulation rates allow the recording of ABR in less time is nowadays very controversial.

Aims: Analyze if high stimulus rates with RSA allows time saving in screening applications.

Methods: Eight normal hearing subjects were explored at the rates 33 Hz (CONV) and 125 Hz (RSA) at sensation levels from 30 to 70 dB, in steps of 10 dB. The quality of each ABR signal was evaluated by an objective procedure, and time reduction was analyzed between signals of the same quality.

Results: Although this study shows a significant time reduction at high levels, at levels near threshold the ABRs are usually of very low amplitude and time reduction could not be defined with precision.

Conclusion: Time saving with RSA has promise in certain applications with high levels of stimulation. However, the benefits of using high stimulation rates with RSA in hearing screening are still unclear. A clinical study with more subjects would be necessary to reach more solid conclusions.