

Quantifying the benefits of hearing aid fitting: counterbalanced, crossover, repeated-measures, single-blinded, clinical trial of REM versus initial-fit method

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Background: Hearing aid (HA) adjustment using Real-Ear Measurements (REM) is recommended as a standard fitting procedure by the recent ISO-standard. However, audiometricians prefer the manufacturer's proprietary softwares (initial-fit, IF) because they are more user friendly and faster.

Aim: To compare the audiological results and patient preferences between the REM and IF fitting.

Method: 55 adults eligible for HA rehabilitation were randomized to either IF or REM fitting. The participants used these fitting parameters for 60 days, after which the fitting method was crossed over. The audiological results (speech perception in noise, SPIN) were measured with the Matrix Sentence Test before the intervention and after acclimatization to each fitting parameters. Participants were requested to choose which fitting parameter they preferred.

Result: The mean change in SPIN (before and after HA fitting) was -1.65 dB (SNR) in the IF group and -1.99 dB (SNR) in the REM group. The mean difference between the two fits was 0.34 (95% CI: [0.07, 0.6], $p=0.013$, Cohen's d 0.2). 30 (55%) and 25 (45%) participants chose the IF method and REM, respectively ($p=0.332$).

Discussion: A statistically significant and clinically relevant improvement in SPIN was detected in both groups. REM fitting provided statistically significant better mean SPIN results than IF parameters, however the effect size was small and clinically not relevant. No differences were observed in patient preferences. Our preliminary data suggest that HA fitting with the IF method is adequate, being less time-consuming and providing equal results.