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## **Influence of tone decay on speech recognition in moderate to profound hearing loss**

Despite similar hearing thresholds in the critical speech frequency range (4FPTA), the recommendation for hearing care can vary greatly with unclear causes. Possible disturbances in retrocochlear processing are usually not taken into account. This study aims to investigate the relationship between tone decay and speech recognition in patients with 4FPTA = 50-80 dB HL.

In thirty-nine cases, speech recognition was assessed using the Freiburg monosyllabic word test with and without hearing aids (WRS<sub>65</sub>(HA) and WRS<sub>max</sub>), hearing thresholds in the tone audiogram at 0.5-4 kHz, and tone decay in the Carhart test.

The 4FPTA showed no significant correlations with speech recognition. However, when tone decay was considered in the 4FPTA, a clear correlation was found in both cases (WRS<sub>max</sub>:  $R = -0.47$ ,  $p = 0.002$ ; WRS<sub>65</sub>(HA):  $R = -0.43$ ,  $p = 0.006$ ). This result underscores the role of the Carhart test as a differential diagnostic tool in evaluating hearing aid fitting. Furthermore, tone decay could be another predictive factor for predicting treatment success with a cochlear implant.