

## **Influence of Loudness Compression on Hearing with Bone Anchored Hearing Implants**

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**Abstract :** Bone Anchored Hearing Implants (BAHI) are routinely used in patients with conductive or mixed hearing loss, e.g. if conventional air conduction hearing aids cannot be used. New sound processors and new fitting software now allow the adjustment of parameters such as loudness compression ratios or maximum power output separately. Today it is unclear, how the choice of these parameters influences aided speech understanding in BAHI users. In this prospective experimental study, the effect of varying the compression ratio and lowering the maximum power output in a BAHI were investigated. Twelve experienced adult subjects with a mixed hearing loss participated in this study. Four different compression ratios (1.0; 1.3; 1.6; 2.0) were tested along with two different maximum power output settings, resulting in a total of eight different programs. Each participant tested each program during two weeks. A blinded Latin square design was used to minimize bias. For each of the eight programs, speech understanding in quiet and in noise was assessed. For speech in quiet, the Freiburg number test and the Freiburg monosyllabic word test at 50, 65, and 80 dB SPL were used. For speech in noise, the Oldenburg sentence test was administered. Speech understanding in quiet and in noise was improved significantly in the aided condition in any program, when compared to the unaided condition. However, no significant differences were found between any of the eight programs. In contrast, on a subjective level there was a significant preference for medium compression ratios of 1.3 to 1.6 and higher maximum power output.

**Keywords :** Bone Anchored Hearing Implant, baha, compression, maximum power output, speech understanding

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