

Field Study News

Audéo ZIP

In the Ear. In an Instant. Incredibly Discreet

Summary

Audéo ZIP is based on the CORE chip-platform and designed to ideally suit and fulfill the key needs and unique demands of first time users with a mild to moderate hearing loss. The open TwinVent avoids occlusion and the MultiFlex Canal guarantees a high level of wearing comfort.

This study was designed to test speech intelligibility, localization abilities as well as discrimination of high-frequency speech cues. Subjective ratings were determined using a fitter's observation protocol and a questionnaire completed by each study participant.

Results show that the selection of the correct dome is crucial to ensure a comfortable and secure fit while providing appropriate amplification. The risk of occlusion is potentially higher than for open fit BTE's. Feedback was not found to be a problem and SoundRecover improved consonant identification when compared to an identical setting without SoundRecover.

Introduction

Audéo ZIP is an impressive combination of innovative design and CORE performance and provides with a selection of the correct dome a comfortable and secure fit while providing appropriate amplification. Further, it offers benefits from an extended hearing range with SoundRecover for mild to moderate hearing losses. By compressing and shifting otherwise inaccessible high frequency sounds into an area of better hearing, SoundRecover broadens perceptual bandwidth for natural and feedback free reproduction of sounds without being harsh or tinny (Glista et al., 2009; McDermott, 2010; Wolfe et al., 2009).

The unique design of Audéo ZIP with the MultiFlex Canal allows the necessary mobility to accommodate individual anatomical differences. It ensures that regardless of the shape and orientation of the ear canal, the instrument sits correctly and comfortably in the ear. It also moves in conjunction with jaw movements that affect the ear canal while talking or chewing. Further, with a range of new hypoallergenic silicone domes that offer high retention in the ear, Audéo ZIP is comfortable and secure right from the beginning. The new

open, closed and power silicone domes ensure the right amount of venting and gain to match the configuration of hearing loss.

Goal of the Trial

The objective of this study was to investigate objectively and subjectively the benefits of Audéo ZIP in quiet and noise.

Set-up of the Study

Audiometric tests and measurements were carried out at the Phonak Hearing Center in Stäfa, Switzerland.

A Freiburger word test was used to test speech intelligibility in quiet where results express the % of words correctly repeated out of a list of 10 monosyllabic words. The Localization test was used to report the degrees of deviation between the actual sound source and the perceived direction of the test signal. The task was to localize a male voice in a cafeteria background noise. With the Logatom test (Boretzki, 2009), an adaptive phoneme test for measuring the identification of consonants, discrimination of high-frequency speech cues was determined and the effectiveness of SoundRecover was tested. The adaptive procedure measures the necessary loudness threshold for the comprehension of different consonants.

Subjective evaluations were done by an observation protocol completed by the fitter during each appointment and a test subject's questionnaire completed at home before the next appointment.

Subject and Devices

A total of 18 test subjects (16 male and 2 female) with mild to moderate hearing loss participated in the study. Two test subjects slightly beyond the fitting range of Audéo ZIP were deliberately selected to check the performance when the devices operate at their limits. 8 test

subjects were experienced HI users while 10 subjects had no previous experience with HIs. Audéo ZIP HIs were fitted with iPGF 2.6. 12 test subjects were fitted with Audéo ZIP IX, whereas the remaining 6 test subjects were equally fitted either with Audéo ZIP III or Audéo ZIP V in order to cover all models in this trial. Audéo ZIP was benchmarked against a comparative open fitted CRT device in the Freiburger word test.

Results

Speech test: Freiburger word test

The Freiburger word test in quiet was performed for Audéo ZIP and a comparative open fitted CRT device. They showed similar performance at 50dB as well as at 65dB as shown in Figure 1.

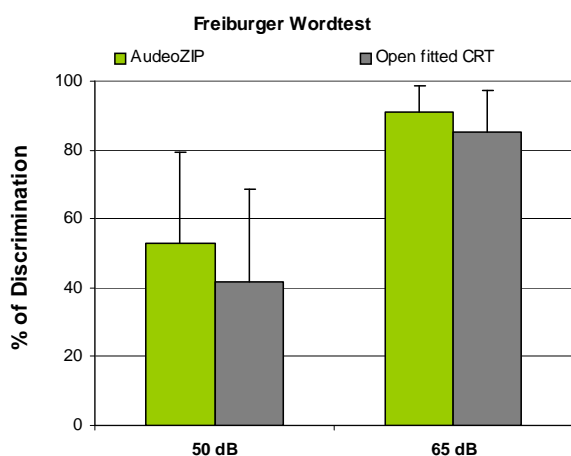


Figure 1: Similar performance of Audéo ZIP and a comparative open fitted CRT device in the Freiburger word test.

Localization test:

The Localization test was performed with SoundRecover disabled (left side), enabled (middle) and without a HI (right side). Results showed that the average deviation of test subjects was the same for all HI tested as shown in Figure 2. These data were expected since with the deep fitting CIC and also without HI no effects on localization were anticipated. Further, results showed that SoundRecover does not negatively affect localization abilities.

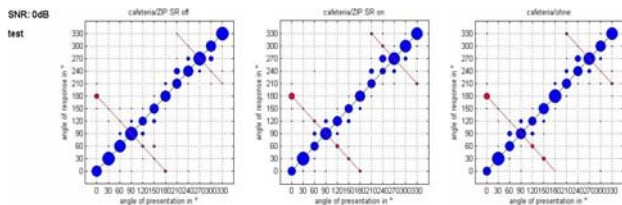


Figure 2: The localization of a male's voice in a cafeteria background noise was performed with SoundRecover disabled, enabled and without HI. In all conditions, Audéo ZIP performed more or less the same,

Logatom test:

The syllable material was enunciated by a woman, because, at about 9 kHz, the energy emphasis of the female /s/ is higher than that of the typical male /s/. For each tested consonant, an identification threshold with Audéo ZIP had to be defined.

The results of the Logatom test where Audéo ZIP was tested with SoundRecover enabled and disabled showed similar results for both test conditions except for the 9 kHz /s/ where Audéo ZIP with SoundRecover enabled showed an improvement compared to SoundRecover disabled (Figure 3).

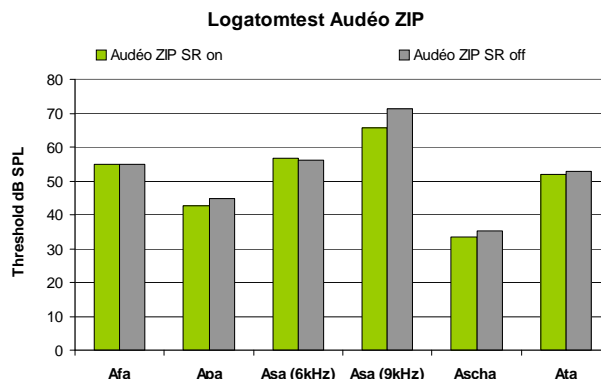


Figure 3: The Logatom test with SoundRecover enabled and disabled revealed that with Audéo ZIP and SoundRecover enabled, the 9 kHz /s/ is markedly improved.

The analysis of the observation protocol filled out by the fitters revealed that with the choice of the correct dome, own voice was accepted and there were no occlusion issues. Further, obtained results showed that end-users had no critical issues with the usability of Audéo ZIP and own voice sound quality as well as speech in noise sound quality was rated as being pleasant.

Conclusion

A clear strength of Audéo ZIP is the ability to be fitted instantly using the standard domes available in every audiology practice. Further, it offers good sound quality in various listening situations comparable to the benchmark, and allows good localization abilities. SoundRecover has been shown as being the proven solution to enhance high frequency speech discrimination also with Audéo ZIP.

References

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