Field Study News

SlimTip Preference

Key factors for SlimTip fitting

Summary

Today, two different material options are available for the SlimTip, the hard option, SlimTip, and the soft option, SlimTip Soft. The SlimTip Soft was recently introduced in the market and preference for it increased up to 50% compared to SlimTip which composes now also around 50% of the market. However, nowadays, the factors and criteria's of a successful SlimTip fitting are unknown. Thus, the identification of the main key factors for the recommendations of SlimTip or SlimTip Soft were evaluated. 31 participants were recruited for this study to determine SlimTip preference during three lab measures and a home trial. Results showed an overall preference of 52% for SlimTip and 48% of SlimTip Soft. Furthermore, key factors such as diameter and geometry of the ear canal, gender, age as well as sound quality and insertion into the ear canal were important criteria's in the SlimTip preference.

Introduction

The increase in popularity of "mini" and "micro" Behind-The-Ear (BTE) hearing instruments (HIs) has been due, in part, to the effective combination of style and substance that appeals to a new generation of HI users (BGS, April09). In the US market, which for several decades has been dominated by custom instruments, these devices have fuelled large gains in BTE sales overall, which now comprise roughly one-half of the total number of HIs dispensed. Of this amount, about 20% are "mini" or "micro" BTE HIs. Opinion leaders predict that this will further increase to around 40-50% in the future. Currently, micro BTE's are most commonly fit with domes or hard acrylic custom earpieces. Although there are many advantages to these, there are also limitations: Domes are not suitable for severe hearing losses. They cannot always provide a comfortable fit due to variability of ear canal size and shape. They are more prone to retention problems resulting in poor acoustics and/or feedback. Hard acrylic can cause discomfort and it is more of a challenge to provide a good fit deep in the ear canal. Inflexibility of hard acrylic material in combination with jaw or head movements can lead to poor positioning, altered acoustics and risk of feedback. With the goal to provide an earpiece which is a comfortable interface between the ear and the HI, SlimTip Soft was created and introduced into the market. Recent market results confirmed the new SlimTip Soft variation by exploding sales worldwide.

Goal of the Trial

Identification of the main key factors and variables for the decision of SlimTip vs. SlimTip Soft were evaluated.

Set-up of the Study

The study was conducted at the University of Applied Science in Oldenburg, Germany and in the Hearing Center of Phonak US, Warrenville.
Baseline audiological testing was conducted, followed by imprints of the ear canals from which SlimTips and SlimTips Soft were produced. HIs were fitted bilaterally with SlimTips and SlimTips Soft in a cross-over design. Fine tuning was applied if necessary. Participants were sent into a 10 day home trial with a questionnaire. After the home trial, the SlimTips were exchanged, and the second home trial, equivalent to the first trial, started.
The questionnaires completed by the hearing care professionals asked questions about the texture of the ear tissue, the amount of hair in the ear canal, motor skills of the participant, length of the SlimTube/CRT, geometry and diameter of the ear canal.
The home trial questionnaire was handed out to participants in order to sensitize for the key factor evaluation and to pay attention for differences of the two SlimTip variants. The preference questionnaire, where subjective key factors of SlimTip preference were asked, were completed at the end of the two home trial periods.

Subject and Devices

31 participants were recruited for the project. 19 subjects in Germany and 12 in the US. In total, 27

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data sets were available for further calculation of the SlimTip preference. The mean age was 62.9 years with a standard deviation of 11.1 years. 43% of the participants were female and 71% first time users. The other 29% were experienced HI wearers. 42% were fitted with Audéo Yes, 10% with Certéna micro, 26% with micro Exélia Art, 3% with micro Savia 100dSZ and 6% with Versáta micro. For 13%, no data was available.

Results

The client's subjective key factors were analyzed with mean and error bars. Significant differences were proofed with parametrical and non-parametrical analyses of ranks and variance in order to detect different key factors depending from the preference of SlimTip vs. SlimTip Soft.

The overall preference for SlimTip was 52%, for SlimTip Soft 48%. Participants preferring SlimTip rated the variants between the hard version and the soft from "very big" to "medium", whereas test subjects preferring SlimTip Soft rated the differences between SlimTips as "medium" to "very small", indicating that the decision for the SlimTip is clear.

The results regarding the client's characteristics showed that those with a small ear cannel diameter preferred SlimTip, whereas those with a large diameter preferred SlimTip Soft. Further, test subjects with a straight ear canal preferred SlimTip, whereas those with a curved ear canal chose SlimTip Soft as depicted in Table 1.

Diameter of the ear channel			Preference SlimTim Alternative A HARD	Preference SlimTim Alternative B SOFT	Total
small		Count	5	3	8
			62,5%	37,5%	100,0%
medium		Count	7	6	13
			53,8%	46,2%	100,0%
large		Count	2	4	6
			33,3%	66,7%	100,0%
Total		Count	14	13	27
			51,9%	48,1%	100,0%

Geometry of the ear canal			Preference SlimTim Alternative A HARD	Preference SlimTim Alternative B SOFT	Total
straight		Count	9	3	12
			75,0%	25,0%	100,0%
narrows		Count	3	4	7
			42,9%	57,1%	100,0%
curved		Count	2	6	8
			25,0%	75,0%	100,0%
Total		Count	14	13	27
			51,9%	48,1%	100,0%

Table 1: Preference of SlimTip vs SlimTip Soft by diameter and geometry of the ear canal

The most important reasons for both groups for preferring the two variants were aspects of wearing comfort, better retention and less pressure marks (Fig. 1). As shown in Fig. 2, for subjects preferring SlimTip, aspects like "sound quality is more pleasant", "speech intelligibility is better" and "less background noises" were more important than for those preferring SlimTip Soft. Further, the aspects of "insertion in the ear canal" and "appearance (outside of the ear)" were more important for those preferring SlimTip.

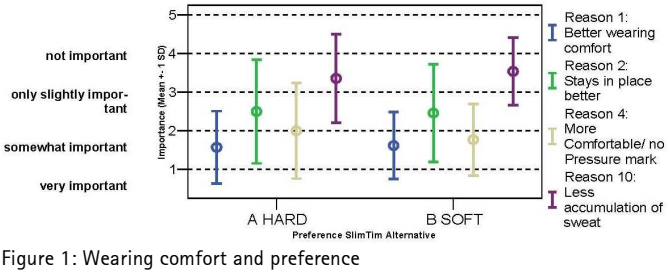

Figure 1: Wearing comfort and preference

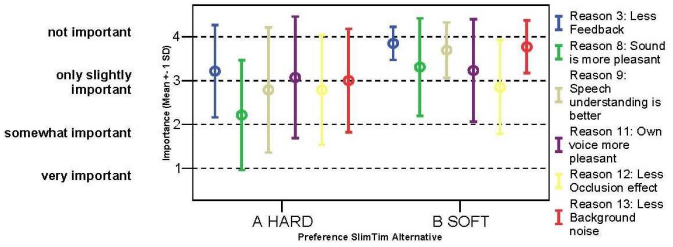

Figure 2: Sound quality, speech intelligibility and preference

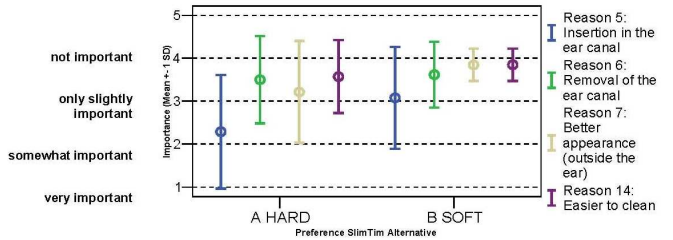

Figure 3: Usability, design and preference

Some interesting socio-demographic results were obtained: 67% of female prefer SlimTip, while 60% of male preferred SlimTip Soft. Furthermore, 69% of test subjects over 65 years preferred SlimTip, whereas 62% of younger subjects below 65 years preferred SlimTip Soft.

Discussion

Clients preferred both SlimTip options due to aspects of wearing comfort, better retention and less pressure marks. With SlimTip Soft, a huge step towards maximising comfort and acoustical performance of BTE and CRT devices is achieved. Preference of SlimTip Soft are based on wearer comfort, especially for long periods of time, better seal in the ear, resulting in fewer feedback problems and better retention in the canal especially during sports and for challenging canal shapes as well as less occlusion due to higher acoustic damping properties of the material.

Based on different subjective preferences and also material options, an optimal fitting of SlimTips might be challenging. But based on the recent findings from this study, one can conclude that SlimTip might be recommended for subjects with a small diameter and straight ear canals, whereas SlimTip Soft may be recommended for subjects with a larger diameter and curved ear canals. However, it has been shown that socio-demographic aspects might interact with the SlimTip preference as well.

Nowadays, SlimTips and SlimTip Soft provide a more cosmetically acceptable alternative to traditional style earpieces for those with more severe hearing losses.

References

Background story: SlimTip Soft – an alternative to hard acrylic. Phonak, April 2009.

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