Biofeedback on Voice Use in Call Center Agents in Order to Prevent Occupational Voice Disorders

Bert Schneider-Stickler, Christina Knell, Birgitta Aichstilt, Werner Jocher

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Summary

Background

Call center agents (CCAs) are at high risk of voice disorders because of high-demanding vocal load and work-related stress factors. Goal of this prospective study was to examine the voice use at work and to introduce biofeedback software into real-life workplace situation to improve vocal performance. Individual fundamental frequency, sound pressure level (SPL) of speaking voice, and syllables per second should be optimized by visualization on-screen. Further, its impact on vocal attrition and vocal constitution should be investigated.

Methods

Over a period of 6 months, 76 call center advisors voluntarily participated in this study (37 female, 39 male, mean age 29.3 years). At the beginning of the study, all the subjects received voice range profile (VRP) measurements and acoustic voice analyses at the beginning and at the end of shift. Additionally, several questionnaires have been completed. The subjects were classified into either the study group (group 1) or the control group (group 2). Group 1 had open access to results of the biofeedback software program at their workplace, and group 2 did not. The VRP measurements, questionnaires, and acoustic voice analyses were repeated 4 weeks later again at the beginning and at the end of shift.

Results

All the subjects confirmed a rather high vocal load. In contrast, almost none of the subjects received any voice training before entering the floor. The percentage of voice-related hoarseness and regular throat clearing was rather high in both groups. The statistical analyses revealed a significant improvement of vocal performance in subjects with vocal fatigue in the study group when compared with the control group after a 4-week biofeedback intervention. All the subjects with vocal hypofunction defined as maximum SPLs lower than 90 dB in VRP measurements improved to normal voice constitution at the end of the study in contrast to the control group.

Conclusion
Biofeedback is a suitable method to improve vocal awareness and vocal performance of CCAs.

Vienna, †Linz, Austria

**Key Words:** Call center agents, Occupational voice disorders, Vocal hypofunction, Biofeedback, Voice use

- Department of Otorhinolaryngology, Division of Phoniatrics-Logopedics, Medical University of Vienna, Vienna, Austria

† Anton Bruckner Private University, Linz, Austria

Address correspondence and reprint requests to Berit Schneider-Stickler, MD, Department of Otorhinolaryngology, Division of Phoniatrics-Logopedics, Medical University of Vienna, Waehringer Guertel 18-20, A-1090 Vienna, Austria.

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