Assessment of methods for determining field-equivalent sound levels from real-ear and manikin measurements
Hammershøi, Dorte; Møller, Henrik

Published in:
Journal of the Acoustical Society of America

Publication date:
1999

Citation for published version (APA):
Collapsing of the ear canal resulting from using supra-aural earphones has been studied in a group of 52 noise-exposed workers. Prevalence and audiometric manifestations of collapsing the ear canal were determined based on comparison of pure-tone air-conduction thresholds obtained when insert earphones are substituted for supra-aural ones in the same individuals. Results indicate that as many as 17% of candidates showed in one ear or the other, threshold elevations of 6.6 dB on average at 3 kHz, of 8.1 dB on average at 4 kHz, and of 9 dB on average at 6 kHz as a result of shifting from insert to supra-aural earphones. This finding is of special concern when considering the particular attention paid for the correct positioning of the two types of devices, and the systematic tearing of the tragus in the anterior direction to force the ear canal opening in the positioning of supra-aural earphones. It suggests supra-aural earphones may partially collapse the entrance of the ear canal as a result of the excess pressure applied to the pinna. A model that may help predict the effects of this insidious yet pervasive condition of collapsing ear canals on hearing thresholds of noise-exposed workers will be discussed.