Are musicians exposed to excessive noise in Portuguese orchestras?

M.A. Rodrigues*[1], M.A. Freitas[1], M.P. Neves[1,2], M.V. Silva[1]

[1] Research Centre on Health and Environment, School of Allied Health Technology of Institute Polytechnic of Porto, Portugal; [2] Environmental Health Department, National Health Institute Dr. Ricardo Jorge, Portugal

Corresponding Author: *matilde.rodrigues@eu.ipp.pt

Noise exposure is broadly recognized as one of the most frequent risk factor at industrial settings, however, for musicians the problematic of noise exposition is not well characterized. Previous studies showed that musicians, in particular orchestral musicians, could be exposed to high sound levels, which can result in hearing damages. These injuries have a negative impact on its performance due to the strongly dependence of their audition system. However, the concern about the exposure of these professionals is reduced. Some studies tried to characterize the exposition of musicians in some orchestras. However, there are no studies for Portuguese orchestras that characterize the exposure of musicians. Therefore, this study is a first attempt to analyse the noise exposures of musicians from a Portuguese orchestral, in order to understand their risk of hearing loss. Rehearsals of 7 different repertoires were analysed. Test subjects were selected in accordance with their position in orchestra. Participants were requested to wear noise dosimeters during the entire rehearsals. The microphone was located on the left or right shoulder of the test subject, according the more exposed ear. In the case of string instruments, the microphone was positioned on the opposite shoulder of the instrument. A sound meter was used to analyse the conductor exposition. Values of Peak noise level and Equivalent Continuous noise level were collected. The results showed that the sound levels vary with the instrument, the repertoire and the number of musicians. Values of equivalent continuous sound pressure level vary between 65.0-87.6 dB(A) for strings, 84.9-96.7 dB(A) for woodwinds, 87.0-97.4 dB(A) for brass, 85.9-91.8 dB(A) for percussion and timpani, and 77.2-86.3 dB(A) for conductors. Higher Peak noise levels were found for percussion and timpani (129,6-135 dB(C)). These results show that in the course of rehearsals, the musicians of the orchestra analysed are exposed to high sound levels that can lead to hearing damages. Among the musicians analysed the percussion and timpani musicians show particular preoccupation, because besides the high noise levels obtained, Peak noise levels achieved the lower exposure action level presented in Decreto-Lei nº 182/2006. The results obtained in this study indicate that more attention to these professionals is recommended. This study is still in course, including more exposure sources in to determine their levels of exposition, comparing individual exposure levels with guidelines.