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Noise induced hearing loss among gym teachers

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INTRODUCTION:

Noise is one of the most common workplace hazards, being the source of several problems to the workers' health and to the organization. In fact, noise-induced hearing loss (NIHL) has been listed as one of the most prevalent self-reported illness in Europe (Eurostat, 2004), being subject of great concern at occupational settings. The development process of the NIHL is along the years of exposition, being the initial damage caused by loud sounds often small and the source of slight hearing problems like temporary hearing threshold shift. However, with repeated exposure to loud sounds, hearing disturbances increase and NIHL will be developed. For other side, peak sound levels can be the source of an acoustic trauma. Despite the importance of NIHL, people exposed to high noise levels can also experience other health effects as tinnitus, hyperacusis, diplacusis and balance dysfunction. These health problems related with noise exposition are largely described for industrial settings; however, other professional groups can also be exposed to high noise levels from different sources than noisy machines, as is the case of loud music, which can be also the source of NIHL. In fact, several studies had showed that occupational exposure to music at a high sound pressure level could be the source of NIHL (Sataloff and Sataloff, 1998). Indoor gymnasiums are one of the occupational environments where professionals can be exposed to loud music. Different gym classes can be identified at gymnasiums, which are accompanied by music at high sound pressure levels that can exceeding the legal recommendations. Accordingly, professors can be exposed to high noise levels in the course of classes, being important to assess the risk of NIHL.

OBJECTIVES:

This work aims to evaluate the prevalence of loud music induced hearing disturbances among gym teachers.

MATERIALS AND METHODS:

A sample of 10 gym teachers, ages between 28 and 43 years old, took part in this study. Sound pressure levels exposure has been evaluated with acoustic dosimeters during the different gym classes - cycle, dance kids, push power and bodybuilding. Audiological evaluation took place including pure tone audiometry, tympanometry, stapedial reflex threshold and transient otoacoustic emitions.

RESULTS AND DISCUSSION:

Subjects worked more than 10 years, 6 days per week and between 3 to 8 hours per day. They had a normal hearing but a slight acoustic trauma at 3 to 6 KHz. Tympanometry, stapedial reflex threshold and transient otoacoustic emissions were normal. None complaint about tinnitus was identified and only one reported to balance dysfunction. These results were related to the high noise levels found in the course of the classes. Gym teachers were exposed to values of average equivalent continuous sound pressure levels (L_{Aeq}) between 79,2 dB(A) and 102,6 dB(A). Lower L_{Aeq} values were found at bodybuilding classes and higher levels at Push Power. In relation to the peak sound pressure level (L_{Cpeak}), the obtained values ranged between 120,5 dB(C) and 133,6 dB(C), being lower than the actual lower exposure action value presented in the Portuguese legislation. According the results, it is expected that in the course of the years of exposition the audiological damages from getting worse, being important the implementation of risk reduction measures.

Table 1 - Noise exposure

Gym classes	$L_{Aeq\ (dB)}$	L_{Cpiak}
Cycle	100,9	133.2
Dance kids	98,8	133.6
Push power	102,6 79,2	132.5
Bodybuilding		120.5

CONCLUSION:

High sound pressure level exposure is real among gym teachers. They may be at risk for hearing loss. In order to prevent it, is necessary to raise awareness to the problem and develop hearing conservation programs to this population.

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