**INTRODUCTION**

Exposure to loud music can cause hearing loss; thus, case reports describing music-induced hearing loss are common (for review, see Peters, et al., 2005). Unfortunately, musicians often resiel hearing protection devices (HPDs). Latimer (2005) reported only 29% of participants used earplugs often or always while practicing. Across studies, participants complain that HPDs hinder performance, make it difficult to hear others play, are unpleasant or uncomfortable, are difficult to use, create communication problems in rehearsals, and create tuning difficulties (Zander et al. 2008; Latimer, 2005; Mendes et al. 2007). These results suggest a need for programs designed specifically for musicians to inform them of the effects of music on hearing and teach them to properly use earplugs during practice. The importance of education where hearing conservation programs is well-recognized (Faulst et al., 2005; Foller, 2003). Programs can change adolescent attitudes; changes in knowledge have been described after Dangerous Decibels® training have been reported (Griest et al. 2007, Dall & Holmes, 2010). A critical question is whether changes in knowledge/attitude translate to changes on behavior.

We assessed changes in earplug use by members of high school marching bands after an educational intervention consisting of the Adopt-a-Band training program developed by Elymotic Research. This hearing conservation program is targeted specifically to musicians and provides information about how the ear works, how loud sound (including loud music) affects hearing, and what can be done to protect the ear and preserve hearing. As part of the training program, each musician receives a pair of ER-20 ETY Plugs and training on correct use. Changes in earplug use were the primary outcome.

Long-term studies including audiometric testing will be critical for determining the overall success of educational programs in reducing the risk of noise-induced hearing loss.

**METHODS**

Participants

93 students from 2 high school marching bands entered the study (completed first two surveys); 69 participants (37M, 32F) completed the study (completed third survey). The 69 students that completed the study included 21 freshmen, 19 sophomores, 14 juniors, and 14 seniors (45 at school #1 and 34 at school #2). There were no reliable differences in demographic subsets of subjects as a function of gender or grade level across the two schools. Subjects included 29 woodwind players, 30 brass players, and 10 percussion players.

Procedure

This study was approved by IRB-02 at the University of Florida.

The study included three surveys. The first two surveys were distributed at summer marching band camp. The third survey was distributed after hearing conservation training. The third survey was completed either immediately after, 1 week, or 3 weeks later, after marching band season ended. Each survey asked questions regarding how frequently subjects wear earplugs or use any form of hearing protective devices. Students rated earplug use for: Always, Often, Occasionally, or Never. The surveys also asked students to talk about their knowledge and understanding of hearing and hearing loss, as well as how to prevent it.

The first survey (Before) was distributed before any information was given. After the first survey was completed, the Elymotic Adopt-a-Band DVD was played. Educational handouts and ER-20 earplugs provided by Elymotic as part of the program were distributed.

The second survey (After) was distributed after the educational session to assess subjects’ intentions to use earplugs. Students were asked if any of the information presented in this program was surprising to them.

The third survey (End of Season) was distributed at the end of marching band season. The survey assessed how frequently the subjects actually wore earplugs. The students were asked about specific factors that may influence earplug use, such as use by other band members and encouragement by the band director, and they were invited to provide feedback on what factors would make them more likely to use earplugs in the future.

**RESULTS**

**Ear Plug Use**

There was a statistically significant change in earplug use among high school marching band members (p<0.05). The Chi-square statistic was used to compare the distribution of responses regarding earplug use prior to Adopt-a-Band training, and at the end of the season.

**DISCUSSION**

This study measured current ear plug use by high school marching band members (2 bands), and assessed effects of hearing conservation education on ear plug use. (Figure 1) Ear-plug use among students at school #1 and school #2 during pre-season camp; ear plug use was surveyed prior to training and ~3 months later at the end of the season. Anticipated ear plug use was measured as part of survey 2. Ear plug use increased for most surveyed students used ear plugs. The following reasons were offered, suggesting opportunities to improve future outreach.

• Comfort: Some students (n=6) did not like the feeling of HPDs, or they reported itching while wearing them. (Figure 2) Ear-plug use among students at school #2 during end of season. (The Chi-square statistic was used to compare the distribution of responses for ear plug use before and after the training program)

**SUMMARY AND CONCLUSIONS**

The current data highlight the significant disconnect between attitudes and intentions measured immediately after the completion of hearing conservation education, and longer-term changes in behavior. 77% percent of the subjects entered the study never using earplugs, only 6% reported that they would use earplugs in the future, when surveyed at the end of the season. There is evidence that students entered the training program when they were asked to wear earplugs and were told they would earn ear plugs if they were to report a change in behavior. Approximately 47% of the subjects at school #1 and 54% of subjects at school #2 reported encouragement by the band director. Students were more likely to wear earplugs if they had an obvious sign of damage. Students suggested ear plugs, bleeding, and feeling pain as a response to loud noise.

**REFERENCES**


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