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Trends in Exercise and Listening Habits of the Sacred Heart University Community

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Trends in Exercise and Listening Habits of the Sacred Heart University Community

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Introduction

- Loud sound levels from the environment can potentially cause permanent damage to the delicate cells inside the hearing organ, the cochlea playing a crucial role in the hearing mechanism.
- Noise-induced hearing loss (NIHL) is an avoidable cause of permanent hearing impairment worldwide (1,2).
- It is estimates that 1.1 billion teenagers and young adults are at risk of hearing loss as the result of the unsafe use of personal listening devices (PLDs) (1,2).
- NIHL is dependent on the loudness and duration of noise exposure (Figure 1).

Figure 1. Recommended Exposure Time to Loud Sounds



Dangerous Decibels - A public health partnership for prevention of noise-induced hearing loss and tinnitus. (n.d.). Retrieved April 02, 2018.

- Research measuring NIHL in the college-age population is limited. It is estimated that 31% of college students are at risk for NIHL (3) with increased prevalence of hearing loss in young adults in the United States (4).
- Factors contributing to NIHL include increased exposure to recreational noise and minimal use of hearing protection (5).
- Music has an ergogenic effect on exercise performance, eases anxiety, and increases motivates a person to increase PA (6, 7).
- Physical activity (PA) recommendations for adults include at least 150 minutes of moderate PA per week while additional health benefits can be gained with 300 minutes per week of cardiovascular activity in addition to muscular fitness, flexibility, neuromotor activities (8).
- During exercise, individuals commonly use PLDs, which research has shown have minimal regulations for upper limits of loudness (9).
- Despite increased popularity of the PLD use, little attention has been given to the effects of this practice in increased noise exposure, particularly in a fitness setting.

Purpose

- To assess physical activity and listening habits of SHU Community using the fitness center.

Hypothesis

- It was hypothesized that the tested sample, particularly students, would exceed safe loudness levels when listening to their personal listening devices (PLDs).

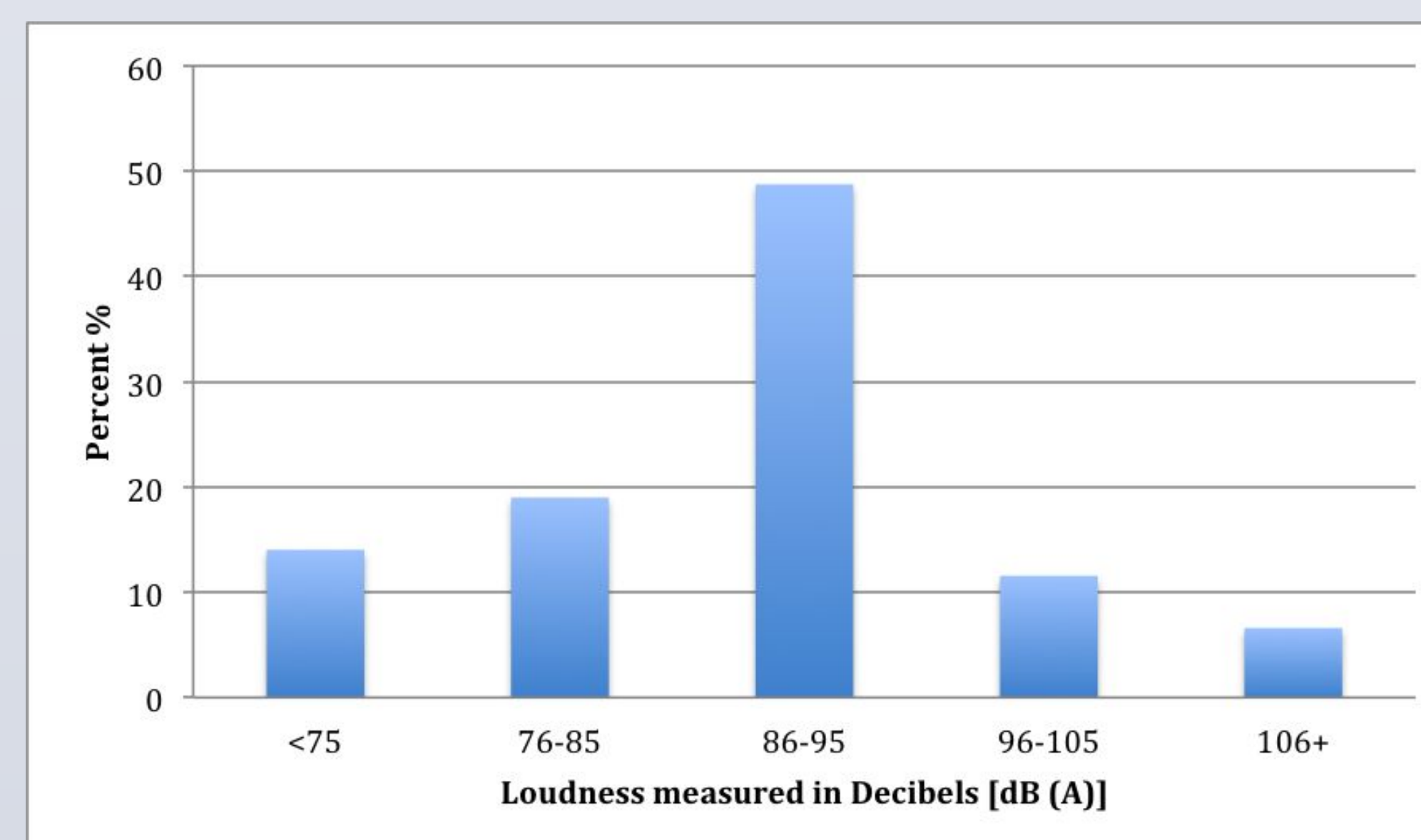
Methods

- Participants were recruited at the main fitness center on Sacred Heart University campus.
- PA level was assessed by a modified short version of the International Physical Activity Questionnaire.
- Music loudness levels were assessed by a sound pressure level mannequin with a built-in microphone.
 - 30 second sample in 5 second intervals was used to assess the sound level of the PLDs via headphones.
 - Sample average and PA duration were used to categorize participants as meeting or exceeding recommended listening levels (Figure 1).
- Data was collected by the Exercise Science and Speech-Language Pathology students.
- Descriptive statistics were determined for all variables.

Results

- 121 participants completed the assessment
 - 120 students and 1 staff member
 - 50.4% males vs 49.6% females
- Percentage of participants who workout with music:
 - 71% Always
 - 27.27% Sometimes
 - 1.73% Never

Figure 2. Average Loudness of Music Samples Across Participants



- Characteristics of Participants
 - 4.9 (± 1.8) average number of workout per week
 - 1.4 (± 0.9) hrs average time per workout
 - 2.6 (± 1.8) hrs estimated average time spent listening to PLDs per day
- 46.3% of participants exceeded recommended listening levels of their PLDs
- Women appeared to exceed PLD listening recommendations more than men (55.4% vs 44.6% respectively)

Results (cont.)

Figure 3. Comparison Between Participants Meeting and Exceeding Recommended Listening Levels

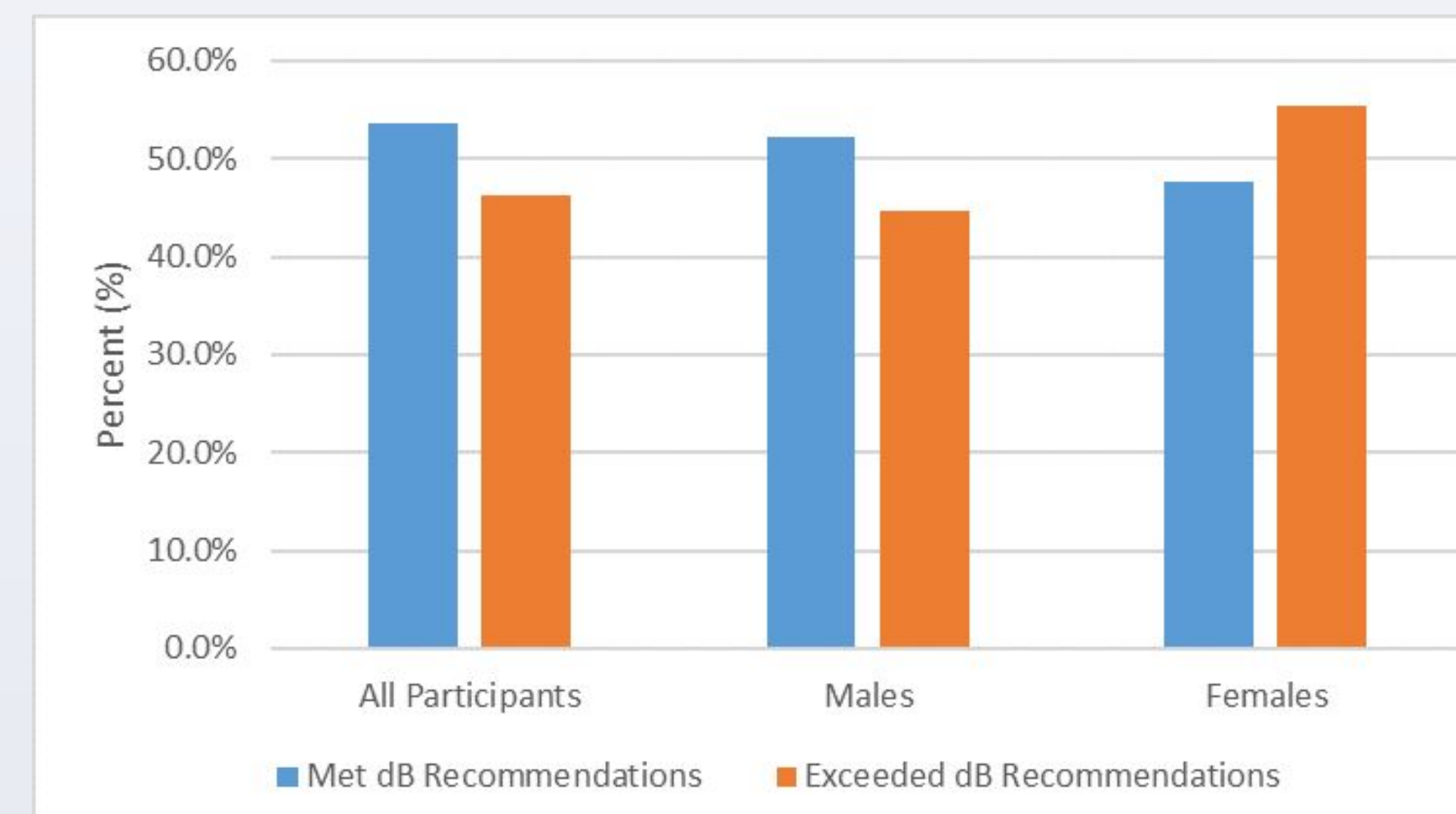


Figure 4. Students Measure Loudness Levels of Personal Listening Devices in the Pitt Center



Discussion

- Almost half of participants attending the fitness center at Sacred Heart University are listening to their personal listening devices at high levels and are at greater risk for noise-induced hearing loss.
- Our hypothesis was supported, as students within the SHU community do not keep the volume of their personal listening devices at a safe level during workouts.
- Listening to music increases motivation during exercise, yet not many individuals realize that as the volume of the music increases, so too does the risk for damage to their hearing. Prolonged exposure to high intensity sound can cause gradual noise-induced hearing loss.

Discussion (cont.)

- Strengths:
 - Intentional recruitment of participants utilizing the fitness center as population as risk for NIHL
 - Increase awareness of healthy listening and exercise habits on college campus.
- Limitations:
 - The testing location (fitness center) tends to be a noisy thus the environmental noise level possibly affected high volume of PLDs while working out, which might not be consistent with an outdoor environment.
 - Participants were aware that their personal listening device was tested, which may have influenced the volume level they selected for testing.
 - Data not representative of all college students on SHU campus

Conclusion

- We recommended that trends in exercise and listening habits of the Sacred Heart University community universally change in order to prevent noise-induced hearing loss. Recommendations for safe use of personal listening devices during workouts include keeping volume at a safe level, below 85 dB(A), and limiting time spent using the device during workouts.
- When using a personal listening device, one should opt for over-ear headphones instead of earbuds to keep the source of sound farther away from the inner ear.

Acknowledgements

- This project was supported and funded by the Sacred Heart University College of Nursing and College of Health Professions Interprofessional Education Award.
- The project involved undergraduates studying Speech-Language Pathology (SLP) and Exercise Science (EX) to share knowledge with peers and to educate the Sacred Heart University community on the prevention of noise-induced hearing loss, as well as to encourage healthy exercise habits.

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