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Music To Your Ears: A Study Of Headphone Types, dB Levels, And The Risk Of Potential Hearing Loss

The purpose of this experiment was to see if certain headphones would cause a person to lower the volume of their music to safer decibel levels. I hypothesized that if the subject listens to music with noise-canceling over-the-ear headphones, clip-on over-the-ear headphones, or earbuds, then the results will show that the noise-canceling headphones will have the lowest dB reading and the earbuds will have the highest dB reading. The experiment involved creating a volume to dB chart using an isolation test chamber and testing each song and volume level 3 times using the three types of headphones. Fifty-four subjects were tested with the 3 types of headphones and 2 songs (baseline/choice) for 6 tests per subject. White noise background was used at 70dB. The data collected partially supported the original hypothesis. The average listening level for all subjects (baseline song) showed that earbuds were 7.2dB higher than the other two types of headphones. The earbuds averaged 9.5dB higher when the choice song was evaluated. While noise-canceling headphones averages were slightly lower than over-the-ear headphones, the data did not support noise-canceling headphones having the lowest dB reading as the range between the two was less than 2dB (meter has an accuracy of +/-2dB). I also discovered that 37% - 39% of subjects tested were not affected by the type of headphone used as their ranges were 4dB or less. These findings lead me to believe that earbuds have much more potential to cause noise-induced hearing loss than over-the-ear or noise-canceling headphones.