

# Music, MP3 Players and Hearing Health

By Patricia M. Chute

**M**usic surrounds us every day whether we are in an elevator, in a store or sitting in the comforts of our homes. Research has shown that music can have a positive effect on improving the quality of life of individuals undergoing brain surgery, as well as for mothers whose babies were in the Neonatal Intensive Care Unit.

Studies of music and exercise indicate positive relationships between changes in range of motion in children with severe burns and how intensely we exercise. The cultural implications of music can be traced back through history developing from the most rudimentary forms of instruments to the technological evolution available today.

The portability of music has changed markedly through the years as technology transformed from large home turntable systems to "boom boxes" to portable cassette and CD players and now MP3 players. A global market study performed in 2006 indicated that 20 percent of Americans aged 12 years and older own at least one MP3 player and six percent own more than one.

Many educational institutions are utilizing this medium in an effort to bring lecture presentations to students as they go about their daily activities. Medicine has turned to the iPod to educate patients. With a generation that aspires to being more connected, it is no wonder that this technology is rapidly gaining acceptance across the different age groups.

However, as diverse as this technology can be, one should approach it with caution especially with regard to the constant auditory stimulation and its effect on hearing.

The Occupational Safety and Health Administration (OSHA) standards note that exposure to noise during an eight-hour work day should not exceed 90 dB (decibels). For every 5 dB of increase in intensity a halving of exposure time takes place.

**Henry Wadsworth Longfellow notes that "Music is the universal language of mankind." Certainly, this generation and those that preceded us have embraced this universal language to relax and energize, to sing and listen and to ignore and attend. However, it is never too early to start telling children about the potential damage that personal music systems can do to their hearing.**

Therefore, if the sound is 95 dB then exposure time should be only four hours; at 100dB it should only be two hours, etc. Damage to hearing, either permanent or temporary, can occur as intensity level increases along with exposure time.

## **Young Adults and Personal Music Systems**

A recent study on young adult use and output levels of personal music systems was conducted on over 1,000 college students. Over 90 percent of them reported using a portable listening system with over 50 percent noting their listening habits as being, on average, one to three hours in duration at medium to loud levels.

Black and African-American students listened for longer durations (five hours or more) and at increased loudness levels. Overall, men listened at higher levels than women. The implications of these trends are alarming when taking into account the intensity issues coupled with exposure time. Vogel, Brug, Hosli, van der Ploeg, and Raat found high school adolescents unconcerned about the potential damage to their hearing from listening to loud music for long periods of time despite awareness of the potential for damage. This kind of attitude gives professionals and parents pause in

considering an effective method of addressing this issue.

Parents can begin with monitoring use of the listening devices by their children at as early an age as possible. A good rule of thumb is that music is too loud if the child is wearing the earbuds and the parent is able to hear the sound while standing next to them. More importantly, parents should not purchase an MP3 player for young children. There is simply not enough data available to determine the effects of continuous listening on such young ears.

Education at an early age about the dangers of listening to loud music through portable MP3 devices should be part of the school health curriculum. Programs should demonstrate the effects of hearing loss on communication so that students can appreciate the results of hearing loss. Although knowledge of danger and subsequent changes in behavior are often elusive, educational programs should still be in place.

The effects that hearing loss has on everyday function ranges from a disruption in communication to learning challenges and psychosocial disturbances. It is senseless to disregard data that clearly demonstrates hearing loss as a result of loud sound exposure. It is even more senseless in light of the way hearing loss changes lives. If, as Longfellow states, "Music is the universal language of mankind" then it is our role as parents and professionals to ensure that mankind is able to communicate throughout our lifetime. ■■■



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## Protecting Kids' Hearing: Why It Matters

www.noisyplanet.nidcd.nih.gov/  
800.421.1044

The National Institute of Deafness and Other Communication Disorders, National Institutes of Health covers everything you need to know and more. Order your Noisy Planet posters, car magnet, calendar and more fun things to drive the point home to your children.

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### Loudness War

You won't believe what you read about this topic. Go to [http://en.wikipedia.org/wiki/Loudness\\_war](http://en.wikipedia.org/wiki/Loudness_war)

### Turn it to the Left

The American Academy of Audiology presents the program, "Turn it to the Left," encouraging people to turn down the volume on their portable sound systems.

Noise-induced hearing loss (NIHL) is a major public health concern. Theoretically, noise-induced hearing loss is entirely preventable; in practice, exposure to high-level sound is one of the most common causes of permanent, sensorineural hearing loss and inner ear damage.

Recognizing that the risk of permanent hearing loss from noise exposure is very real for individuals of all ages, the American Academy of Audiology has undertaken a campaign to raise public awareness about the dangers of exposure to high-level sound and to raise funds in support of noise-induced hearing loss research. Go to [www.turnittotheleft.com](http://www.turnittotheleft.com).



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