

Under the Influence of Technology

You can't go anywhere these days without seeing children and adults wearing headphones or earbuds connected to some form of electronic device. People wear headphones or earbuds while exercising, sitting at their work or school desks, walking on the sidewalk or street, and in their homes to hear music, podcasts, audiobooks or the telephone. Headphones are used in school settings, outdoors for people walking along the sidewalk, playing videogames, and even while sleeping to block out noise. The popularity of headphones has given rise to at least 15 types of headphone choices such as earbuds, in ear headphones, over the ear headphones, noise canceling headphones, and wireless headphones. Headphones and earbuds provide good to great sound quality to the listener and they prevent the sounds of the music, podcasts, audiobooks, voice on the telephone or videogames from bothering other people in the area. However, if the headphones or earbuds are turned up too loudly, they can damage hearing permanently and cause annoying ringing in the ears (tinnitus). Worse yet, worn in the wrong situation, they can endanger your safety, your life, and the lives of those around you.

By now, we all have been informed of the dangers of texting on a cell phone while driving since driving while visually distracted can and does cause car accidents and deaths. Driving while distracted by earphones is just as dangerous because it can prevent you from hearing other important sounds around you. Some drivers use earbuds/headphones to listen to music while driving. Others use them as Bluetooth devices to talk on the phone while operating a vehicle, as it allows their concentration to remain on the roadway if they do not have to look at their cellphones. In the state of Ohio, wearing earphones over the both ears, or earplugs in both ears is not permitted while driving. Using speakers built into protective headgear or hearing aids is allowed.

Unfortunately, many people use headphones or earbuds connected to cellphone or music players while walking, jogging, or biking. Distracted walking and exercising may come with risks similar to those of distracted driving: Last year, for the first time in four years, pedestrian deaths rose, according to the Governors

Highway Safety Association. Experts blame this increase on pedestrians being distracted by watching or listening to cellphones and music players. As a result, some state lawmakers are trying to crack down on this type of multitasking. In New York, for instance, a pending bill would make it illegal for walkers and joggers to use any kind of electronic device while crossing the street. Pending laws in Oregon and Virginia, if passed, would fine bicyclists as much as \$90 for riding "under the influence of technology". While these proposals may not become enforceable laws, they make one thing clear: Being distracted by sound from headphones or by visually looking at an electronic device during a walk, bike ride or run can be very hazardous to your health.

Surprising dangers of listening to music while walking and exercising

While many people use music to make a walk, run, or exercise routine less boring and more pleasant, it can be dangerous if the music volume is too loud to hear other sounds around you. Music should never be played while biking. Diana Deutsch, Ph.D., a psychologist at the University of California at San Diego who researches the perception of sound, states that listening to music while performing tasks such as walking, running and biking not only hampers your ability to hear other noises like a car or even an attacker approaching, it "floods the brain and takes over your thought processes. You concentrate on the lyrics, or the music evokes certain memories or sends you into a daydream."

Some scientists speculate that music may even have the power to dampen your ability to see. "The tempo can interfere with the rate at which your brain perceives images that are passing by you, which could trip you up," says Deutsch. In short, music played too loudly draws your attention away from what you're doing and increases your risk of dangerous accidents like stepping into the pathway of an oncoming car or bus, a malicious stranger, or even stepping off of a curb and falling into the path of a car.

Many people walk or run with one earphone in their ear and the other tucked away, thinking it's safer than playing music in both ears. But that's not the case, since the brain relies on both ears to determine which direction a noise is coming from. It's better to wear two earphones that sit on top of the ears (rather than earbuds which plug the ears) and to keep the volume down low enough so that

you can hear your surroundings. This recommendation is for children and adults, and adults should monitor the volume level of their children's headphones on a consistent basis.

Speaking of reduced volume, it's also important to remember that just like any excessively loud sound, headphones played too loudly can permanently damage the ear and cause annoying tinnitus (ringing) in the ears. Just before I began writing this article today, one of my patients asked me a question about her 23-year old daughter. Her daughter has been complaining about ringing in her ears after she works her shift at a department store. I asked her if her daughter worked any kind of noise and she said no, there was no loud noise at this well-known department store. However, further questioning revealed that she wears a headset to communicate with other employees while working. The headsets are turned up loudly so that they can hear above the noise level of the store. The symptom of ringing in the ears following headphone use is a strong warning sign that the ear piece volume is too loud. This is an all too common scenario and people are unaware of the damage that can be done by wearing headsets in seemingly quiet work and play situations.

Another common headphone sight that is causing ear damage is someone using a lawnmower and wearing a headset with music playing. The major problem with this is that the headphone volume is turned to louder than normal levels to overcome the noise of the lawnmower. This loud noise can and will cause hearing loss and tinnitus in the future for that person. This practice also jeopardizes the safety of the person mowing as well as people and animals around him or her because the person mowing will not hear sounds around him or her with loud music playing. Standard earmuffs or earplugs with no music should be worn when operating noisy equipment and power tools. This may not be enjoyable but it certainly outweighs a future of permanent hearing loss and bothersome tinnitus. Planning for the future (good hearing, no tinnitus) is more important than that current hour or two of listening to music while mowing.

Just like headphone music damaging the ears during exercise, music played from speakers while exercising can cause the same damage. With the rising popularity of fitness classes such as Zumba, Crossfit and Spinning, loud, pounding music is

played by instructors to motivate the participants to move their bodies, raise their heart beats, and become physically fit. But studies have shown that participants in these classes are at a serious risk of damaging their hearing and acquiring long term tinnitus, and the instructors are at an even bigger risk due to extended hours in that loud environment. It's not just the fitness classes that play loud, damaging music. Many gyms play music that is at damaging levels to gym users and employees.

Lisa Packer, staff writer, at Healthy Hearing Magazine wrote in March, 2015,

“With the music cranked up, typical decibel levels for fitness classes can reach unsafe levels quickly. Researchers from George Mason University in Virginia found that spinning classes, though increasingly popular, are among the worst offenders with noise levels blaring anywhere from 100 to 110 decibels. That is somewhere between the decibel level of a chain saw and a jet engine. And typical decibel levels in aerobics or Zumba are well over 90 decibels. Even Crossfit, which is gaining popularity across the country, is not without its problems. The banging of weights, dropping of heavy objects and flipping of tires creates sounds with intense shock waves similar to explosions. And none of it is healthy for your hearing.”

We don't want to scare you away from using headphones or exercising. We hope to educate people so that they can turn down the volume on their headphones and to be assertive in their environments and request that the music be turned down when it is set to damaging levels. There are multiple sound level meter apps for both iPhone and Android phones which can be used to measure sound in your environment. Some phone apps are limited to measuring only up to 80dB and should therefore be avoided, since the damaging sound is at 85dB or greater and needs to be measured.

Regarding the loud sound level of exercise classes, Ms. Packer further writes:

“The answer might not only lie in the fitness clubs, but in the clients as well. The fitness clubs want to retain the business and the clients have convinced themselves that unless the music is pounding and loud, they are not getting a great workout. Go to any spinning class and you're likely to hear shouts of, “Turn it up!” when the volume dips too low. This is where a physiological component comes into play: It turns out that loud music stimulates the body's stress response a phenomenon otherwise known as fight or flight. Your body releases more adrenalin, your heart rate goes up, you breathe faster and you start to sweat more. Sound familiar? The “fight or flight” response has all of the hallmarks of an intense workout.”

“The fact is that noise-induced hearing loss (NIHL) is the leading cause of preventable hearing loss. Although you may eventually get used to the throbbing music in your Zumba class, your ears don’t. The microscopic hair cells in the inner ear that transmit sound to the brain become damaged and eventually die. And once they are lost, they don’t regenerate. NIHL starts innocently enough, with the loss of high frequency sounds. It is gradual and by the time you notice you have it, it is unfortunately too late for any type of prevention.”

The Audiologists at Northwest Ohio Hearing Clinic agree with Ms. Packer and believe that noise induced hearing loss and tinnitus is preventable. We invite you to join us in becoming advocates for safe listening levels for headphones and earbuds as well as for exercise classes. Monitor your headphone volume and that of your children, speak to fitness class instructors and gym managers when the noise levels are too loud. Download sound level apps and measure just how loud those sounds in your daily environment are so that you can take control of protecting your ears from permanent hearing loss and annoying tinnitus. Lastly, get your hearing tested, especially if you’ve experienced ringing or fullness in your ears for more than 24 hours after noise exposure as well as annually if you are regularly exposed to noise. Audiologists are great resources for ear protection as well. Call us at Northwest Ohio Hearing Clinic at 419-873-4327 or 419-383-4012 and we’d be happy to talk with you about noise exposure and hearing protection.