

# **Protect Your Hearing Every Day**

## **Information and Recommendations for Student Musicians**

*A Sample Order and Script for Music Student Orientation*

*Standard Version*

**National Association of Schools of Music  
Performing Arts Medicine Association**

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# **Protect Your Hearing Every Day**

## **A Sample Order and Script for Music Student Orientation**

### **How to Conduct Your Own Music Student Orientation**

NASM and PAMA have created a sample order and script for addressing issues of hearing health during orientation for music students. We encourage you to revise this script to fit the needs of your department, school, or institution. The actual words of this presentation are not as important as the content itself, so feel free to be creative and write your own script.

This information may be presented as part of a larger orientation or as an individual orientation session focused solely on issues of hearing health. It may also be presented by faculty members as part of the early instruction of an introductory music class.

The orientation may be supplemented by the presence of a medical professional with in-depth knowledge of hearing health. A medically oriented presentation may be substituted for the sections of this script on permanent and temporary noise-induced hearing loss.

We also recommend:

- Providing information on institutional hearing health policies, protocols, and facilities.
- Creating a [handout for students](#) that addresses the basics of hearing health.
- Directing students to research holdings at your institution's library.
- If applicable, providing information on the institution's health center or affiliated hospital.

This information is important to your students. We wish you the best as you share it with them.

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**Please note:** Information in this Web resource is subject to change at any time without prior notice.

# Protect Your Hearing Every Day

## A Sample Order and Script for Music Student Orientation

### Introduction

In working toward a degree in music, you are joining a profession with a long and honored history. Part of the role of any professional is to remain in the best condition to practice the profession.

For all of you, as aspiring musicians, this involves safeguarding your hearing health. Whatever your plans after graduation – whether they involve playing, teaching, engineering, or simply enjoying music – you owe it to yourself and your fellow musicians to do all you can to protect your hearing.

As you may know, certain behaviors and your exposure to certain sounds can, over time, damage your hearing.

You may be young now, but you're never too young for the onset of hearing loss. In fact, in most cases, noise-related hearing loss doesn't develop overnight. (Well, some does, but we'll address that issue later in our presentation.) As I was saying, the majority of noise-induced hearing loss happens gradually.

So the next time you find yourself blasting music through those tiny earbuds of your iPod or turning up the volume on your amp, ask yourself, "Am I going to regret this someday?" You never know; you just might. And as a musician, you cannot afford to risk it.

The bottom line is this: If you're serious about pursuing a career in music, you need to protect your hearing. The way you hear music, the way you recognize and differentiate pitch, the way you play music; all are directly connected to your hearing. Do yourself a favor: protect it. I promise you won't regret it.

### Disclaimer

Okay, first a quick disclaimer. The information in this presentation is generic and advisory in nature. It is not a substitute for professional, medical judgments or advice. It should not be used as a basis for medical treatment. If you are concerned about your hearing or think you may have suffered hearing loss, consult a licensed medical professional.

We can help you in so far as we can refer you to the health center on campus. The health center staff will take it from there.

## **Purpose of this Presentation**

The purpose of our presentation is to share with you some information on hearing health and hearing loss and let you know about the precautionary measures that all of us should practice daily.

## **Music and Noise**

Throughout our presentation we'll be referring to “noise-induced” hearing loss. You may be wondering why we're referring to music—this beautiful form of art and self-expression—as “**noise**.”

Here's why: What we know about hearing health comes from medical research and practice. Both are based in science where “noise” is a general term for sound. Music is simply one kind of sound. Obviously, there are thousands of others. In science-based work, all types of sound, including music, are regularly categorized as different types of **noise**.

Terminology aside, it's important to remember this fundamental point: A sound that is too loud, or too loud for too long, is dangerous to hearing health, no matter what kind of sound it is or whether we call it noise, music, or something else.

Music itself is not the issue. Loudness and its duration are the issues. Music plays an important part in hearing health, but hearing health is far larger than music.

All of us, as musicians, are responsible for our art. We need to cultivate a positive relationship between music and our hearing health. Balance, as in so many things, is an important part of this relationship.

## **Noise-Induced Permanent Hearing Loss**

Let's first turn to what specialists refer to as “noise-induced permanent hearing loss.”

The ear is made up of three sections, the outer, middle, and inner ear. Sounds must pass through all three sections before sending signals to the brain.

Here's the simple explanation of how we experience sound:

Sound, in the form of sound waves, enters the outer ear. These waves travel through the bones of the middle ear. When they arrive in the inner ear, they are converted into electrical signals **that** travel via neural passages to the brain. It is then that you experience “hearing” the sound.

Now, when a **loud** noise enters the ear, it poses a risk to the ear's inner workings.

For instance, a very loud sound, an explosion, for example, or a shotgun going off at close range, can actually dislodge the tiny bones in the middle ear, causing conductive hearing loss, which involves a reduction in the sound level experienced by the listener and a reduction in the listener's ability to hear faint sounds. In many cases, this damage can be repaired with surgery. But loud noises like this are also likely to send excessive sound levels into the inner ear, where permanent hearing damage occurs.

The inner ear, also known as the **cochlea**, is where most hearing-loss-related ear damage tends to occur. Inside the cochlea are tiny hair cells that are responsible for transmitting sound waves to

the brain. When a loud noise enters the inner ear, it can damage the hair cells, thus impairing their ability to send neural impulses to the brain.

The severity of a person's noise-induced hearing loss depends on the severity of the damage to these hair cells. The extent of the damage to these cells is normally related to the **length** and **frequency** of a person's exposure to loud sounds **over long periods of time**.

Because noise-induced hearing loss is painless, you may not realize that it's happening at first. Then suddenly one day you'll realize that you're having more and more trouble hearing high frequency sounds – the ones that are the most high-pitched. If you don't start to take precautions then, your hearing loss may eventually also affect your ability to perceive both speech sounds and music.

It is very important to understand that these hair cells in your inner ear cannot regenerate. Any damage done to them is permanent. At this time, there is simply no way to repair or undo the damage.

### **Noise-Induced Temporary Hearing Loss**

Now it's also important to note that not all noise-induced hearing loss is necessarily permanent. Sometimes, after continuous, prolonged exposure to a loud noise, we may experience what's called "noise-induced temporary hearing loss."

During temporary hearing loss, known as **Temporary Threshold Shift (TTS)**, hearing ability is reduced. Outside noises may sound fuzzy or muted. Normally, this lasts no more than 16 to 18 hours, at which point your hearing levels will return to normal.

Often during this Temporary Threshold Shift, people will experience tinnitus, a medical condition characterized by a ringing, buzzing, or roaring in the ears. Tinnitus may last only a few minutes, but it can also span several hours, or, in extreme instances, last indefinitely.

Also, if you experience a series of temporary hearing losses, you may be well on the way to permanent damage sometime in the future.

### **Noise Levels and Risk**

Now, how do you know when a noise or sound is too loud—when it's a threat to your hearing health? Most experts agree that prolonged exposure to any noise or sound over **85 decibels** can cause hearing loss. You may have seen decibels abbreviated "little 'd,' big 'B.'" They are the units we use to measure the intensity of a sound.

Two important things to remember:

1. The longer you are exposed to a loud noise, the greater the potential for hearing loss.
2. The closer you are to the source of a loud noise, the greater the risk that you'll experience some damage to your hearing mechanisms.

At this point, it helps to have some frame of reference. How loud are certain noises?

Consider these common sounds, their corresponding decibel levels, and the recommended maximum exposure times established by the National Institute for Occupational Safety and Health (NIOSH), a branch of the Centers for Disease Control and Prevention (CDC).

A whisper is 30 dB. There's no risk involved at this level of sound intensity.

Your average conversation is around 60dB. Again, there's no risk.

An alarm clock is 80 dB. No real risk, but it would certainly be annoying if you listened to it for very long.

85 dB is the magic number. Sounds above the **85 dB threshold** pose a potential threat to your hearing.

Blenders, food processors, blow-dryers, and the subway come in at 90 dB. The recommended maximum exposure time for 90 dB sounds is around 2 hours.

MP3 players at full volume, lawnmowers, and snowblowers come in at 100 dB. The recommended maximum exposure time for these items is 15 minutes.

Now, before you get too worried and give up mowing the lawn, remember, there are ways to reduce your exposure.

For instance, turn down the volume on your MP3 player. Did you know that normally, MP3 players generate about 85 dB at one-third of their maximum volume, 94 dB at half volume, and 100 dB or more at full volume? Translated into daily exposure time, according to NIOSH standards, 85 dB equals 8 hours, 94 dB equals 1 hour, and 100 dB equals 15 minutes. Do yourself a favor, and be mindful of your volume.

Also, remember to wear a pair of earplugs or earmuffs when you mow the lawn or when you use a snowblower.

Here are some other figures for you:

Rock concerts, certain sporting events, and power tools come in at 110 dB. At full volume, the recommended maximum exposure time is 2 minutes. (Again, remember there are precautions you can take!)

Jet planes at take-off – 120 dB

Sirens, race cars, and jackhammers – 130 dB

Gun shots and fireworks at close range – 140 dB

When you're dealing with sounds like these, those that produce between 120 and 140 dB, you're putting yourself at risk for almost immediate damage. At these levels, it is imperative that you utilize protective ear-coverings. Better yet, if it's appropriate, avoid your exposure to these sounds altogether.

## **Musicians and Noise-Induced Hearing Loss**

Nowadays, more and more is being written about the sound levels of certain musical groups. It's no secret that many rock concerts expose performers and audiences to dangerously high levels of noise. The ringing in your ears after a blaring rock concert can tell you that. But now professional and college music ensembles are receiving attention.

It's true that musicians are exposed to elevated levels of sound when they rehearse and perform music. But that doesn't equal automatic risk for hearing loss.

Take for instance a typical practice session on the piano. When taken at close range to the instrument over a limited period of time, a sound level meter fluctuates between a reading of 60 and 70 decibels. That's similar in intensity to your average conversation (60dB). There will, of course, be moments when the music peaks and this level rises. But these moments are not sustained over several hours. At least not under normal practice conditions.

While the same is true for most instruments, it is important to understand that certain instrumental sections tend to produce higher sound levels. Sometimes these levels relate to the piece of music being performed and to notational requirements (*pianissimo*, *fortissimo*); other times, these levels are what naturally resonate from the instrument.

For example, string sections tend to produce decibel levels on the lower end of the spectrum, while brass, percussion, and woodwind sections generally produce decibel levels at the higher end of the spectrum.

What's important is that you are mindful of the overall volume of your instrument and of those around you. If you're concerned about volume levels, share your concerns with your instructor.

## **Mindful Listening**

Now, let's talk about how you can be proactive when it comes to music and hearing loss.

It's important to think about the impact noise can have on your hearing health when you:

1. Attend concerts;
2. Play your instrument;
3. Adjust the volume of your car stereo;
4. Listen to your radio, CD player, and MP3 player.

Here are some simple ways to test if the music is too loud:

It's too loud (and too dangerous) when:

1. You have to raise your voice to be heard.
2. You can't hear someone who's 3 feet away from you.
3. The speech around you sounds muffled or dull after you leave a noisy area.
4. You experience tinnitus (pain, ringing, buzzing, or roaring in your ears) after you leave a noisy area.

## **Evaluating Your Risk for Hearing Loss**

When evaluating your risk for hearing loss, ask yourself the following questions:

1. How frequently am I exposed to noises and sounds above 85 decibels?
2. What can I do to limit my exposure to such loud noises and sounds?
3. What personal behaviors and practices increase my risk of hearing loss?
4. How can I be proactive in protecting my hearing and the hearing of those around me?

## **Basic Protection for Musicians**

As musicians, it's vital that you protect your hearing whenever possible.

Here are some simple ways to reduce your risk of hearing loss:

1. When possible, avoid situations that put your hearing health at risk.
2. Refrain from behaviors that could compromise your hearing health and the health of others.
3. If you're planning to be in a noisy environment for any significant amount of time, try to maintain a reasonable distance from the source of the sound or noise. In other words, there's no harm in enjoying a fireworks display, so long as you're far away from the launch point.
4. When attending loud concerts, be mindful of the location of your seats. Try to avoid sitting or standing too close to the stage or to the speakers, and use earplugs.
5. Keep the volume of your music and your listening devices at a safe level.
6. Remember to take breaks during a rehearsal. Your ears will appreciate this quiet time.
7. Use earplugs or other protective devices in noisy environments and when using noisy equipment.

## **Future Steps**

Now that we've shared with you some of the basics of hearing health and hearing loss prevention, we encourage you to keep learning. Do your own research. There's a wealth of information out there, and it's yours to discover.

## **Conclusion**

We hope our presentation has made you think more carefully about your own hearing health. Just remember that all the knowledge in the world is no match for personal responsibility. We've given you the knowledge and the tools; now it's your turn. You are responsible for your exposure to all sorts of sounds, including music. Your day-to-day decisions have a great impact on your hearing health, both now and years from now.

Do yourself a favor. Be smart. Protect your precious commodity. Protect your hearing ability.



## **Resources – Information and Research**

### **Hearing Health Project Partners**

National Association of School of Music (NASM)  
<http://nasm.arts-accredit.org/>

Performing Arts Medicine Association (PAMA)  
<http://www.artsmed.org/index.html>

PAMA Bibliography (search tool)  
<http://www.artsmed.org/bibliography.html>

### **General Information on Acoustics**

Acoustical Society of America  
(<http://acousticalsociety.org/>)

Acoustics.com  
(<http://www.acoustics.com>)

Acoustics for Performance, Rehearsal, and Practice Facilities  
Available through the NASM Web site ([click here to purchase](#))

### **Health and Safety Standards Organizations**

American National Standards Institute (ANSI)  
(<http://www.ansi.org/>)

The National Institute for Occupational Safety and Health (NIOSH)  
(<http://www.cdc.gov/niosh/>)

Occupational Safety and Health Administration (OSHA)  
(<http://www.osha.gov/>)

### **Medical Organizations Focused on Hearing Health**

American Academy of Audiology  
(<http://www.audiology.org/Pages/default.aspx>)

American Academy of Otolaryngology – Head and Neck Surgery  
(<http://www.entnet.org/index.cfm>)

American Speech-Language-Hearing Association (ASHA)  
(<http://www.asha.org/>)

Athletes and the Arts  
(<http://athletesandthearts.com/>)

House Research Institute – Hearing Health  
(<http://www.hei.org/education/health/health.htm>)

National Institute on Deafness and Other Communication Disorders –  
Noise-Induced Hearing Loss  
(<http://www.nidcd.nih.gov/health/hearing/noise.html>)

### **Other Organizations Focused on Hearing Health**

Dangerous Decibels  
(<http://www.dangerousdecibels.org>)

National Hearing Conservation Association  
(<http://www.hearingconservation.org/>)