HEALTH AND SAFETY INFORMATION AND RECOMMENDATIONS FOR STUDENT MUSICIANS

Introduction

The Department of Music, as required by the National Association of Schools of Music, is obligated to inform students and faculty of health and safety issues, hazards, and procedures inherent in practice, performance, teaching, and listening both in general and as applicable to their specific specializations. This includes but is not limited to information regarding hearing, vocal and musculoskeletal health, injury prevention, and the use, proper handling, and operation of potentially dangerous materials, equipment, and technology.

The Department of Music has developed policies, protocols, and operational procedures to guard against injury and illness in the study and practice of music, as well as to raise the awareness among our students and faculty of the connections between musicians' health, the suitability and safety of equipment and technology, and the acoustic and other health-related conditions in the University's practice, rehearsal, and performance facilities.

It is important to note that health and safety depends largely on personal decisions made by informed individuals. The University of Montevallo has health and safety responsibilities, but fulfillment of these responsibilities cannot and will not ensure any individual's health and safety. Too many factors beyond the university's control are involved.

Each individual is personally responsible for avoiding risk and preventing injuries to themselves before, during, and after study or employment in the University of Montevallo, Department of Music. The policies, protocols, and operational procedures developed by the Department of Music do not alter or cancel any individual's personal responsibility, or in any way shift personal responsibility for the results of any individual's personal decisions or actions in any instance or over time to the University.

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 neuromusculoskeletal and vocal health. Whatever your plans after graduation – whether they involve playing, teaching, producing, or simply enjoying music – you owe it to yourself and your fellow musicians to do all you can to protect yourself.

The neuromusculoskeletal system refers to the complex system of muscles, bones, tendons, ligaments, and associated nerves and tissues that support our body’s physical structure and enable movement.

In our presentation today, we’ll be using the term “neuromusculoskeletal” to encompass not only overt physical movements (the pressing of a key, the strumming of a string), but also the small internal movements our bodies make, for example to produce breath and modify vocal sounds.

Therefore, when we say "vocal health," we're referring to a component of neuromusculoskeletal health. And, when we say "neuromusculoskeletal," we're including vocal health. Later on in this presentation, we'll focus specifically on a number of issues that relate directly to vocal health.

So, as you probably know, good health and healthy behaviors are important to all musicians, regardless of instrument or area of specialization.

Vocal health is important, too. As current music students and future music professionals, you not only use your voice to speak, but now or sometime down the road, you may find yourself engaged with the singing voice in your role as a conductor, coach, teacher, recording engineer, researcher, therapist, or other music professional.

Of course, there are certain behaviors, especially those involving excessive physical and vocal stress and strain, which can endanger your neuromusculoskeletal and/or vocal health.

Sometimes our bodies recover from strenuous behaviors rather quickly, but other times the effects linger. Our recovery time is often tied to our level of fitness.

Many of you may be picturing a novice athlete who doesn't warm up properly, who plays too hard during a game or match, and who then ends up with an injury – maybe a sprained ankle or a pulled muscle.

But, as you know, athletes aren't the only ones who train and practice in order to reach the pinnacle of performance. Musicians do that, too.

The work of musicians, like that of athletes, is physically demanding. And musicians, just like athletes, need to warm up. They need to utilize proper form. They need to take breaks. They need to avoid "overdoing it." And they need to take the proper precautions to safeguard their neuromusculoskeletal and vocal health, so that they can continue to play and sing the music they love for years to come.

Some of you may have already been diagnosed with some sort of neuromusculoskeletal or vocal condition or disorder. It may be tied to your genetic makeup. It may be linked to a past injury or infection. Or it may be linked to a particular repeated behavior, your posture, or something else.

The purpose of our session here today is two-fold. First, we want to inform you about some of the most common neuromusculoskeletal and vocal conditions and disorders that affect musicians. And second, we want to empower you to take control of your own neuromusculoskeletal and vocal health. The majority of these conditions are preventable. But you've got to be proactive and protective of your health. Avoid putting yourself at risk.

The bottom line is this: If you're serious about pursuing a career in music, you need to treat your body with respect. You need to demonstrate proper form and technique when playing and singing. And you need to recognize your physical limitations. Sometimes, the most important thing you can do is take a deep breath and take a break.

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 physical dexterity or your voice, or think you may be experiencing the symptoms of a particular neural, musculoskeletal, or voice disorder, 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.

Music, the Musician, and Neuromusculoskeletal and Vocal Health

So, for most of you, practice is paramount to your success as a musician. It's likely that the days when you *don't* practice are few and far between. All of us know that it takes a lot of time, dedication, and skill to be a successful musician. The act of practicing our music gradually takes a toll on us, especially when practice involves long hours and infrequent breaks.

We practice alone, we practice with others, we practice for concerts, we practice for juries, and we practice for competitions. In other words, we practice a lot. We practice to be the best we can be. And from time to time, we experience aches and pains.

All of us know that the life of a musician is busy and strenuous.

Decisions about when we practice – and for how long – have an effect on our neuromusculoskeletal and vocal health. So, too, does our behavior outside of music classrooms, rehearsal halls, and concert venues.

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

The Neuromusculoskeletal System

Let's first turn to this thing called the "neuromusculoskeletal system." As I mentioned earlier, the neuromusculoskeletal system refers to the complex system of muscles, bones, tendons, ligaments, and associated nerves and tissues that allow us to move and to speak and sing. Also, this system supports our body's physical structure.

The "neuro" part of the term "neuromusculoskeletal" refers to our nervous system, which coordinates the ways in which our bodies move and operate. The nervous system consists of the brain, the spinal cord, and the hundreds of billions of nerves responsible for transmitting information from the brain to the rest of the body and back to again, in an endless cycle.

Our nervous systems allow us to move, to sense, and to act in both conscious and unconscious ways. We could not listen to, enjoy, sing, or play music without these structures.

Vocal Anatomy

Our vocal system is a part of our larger neuromusculoskeletal system. Our voice is produced by four component systems. These are often referred to as the "generator," the "vibrator," the "resonator," and the "articulator."

The “generator” is our breath that is provided to us by our lungs. The diaphragm, along with numerous other muscles within our abdomen, ribs, chest, and back, help us to move breath throughout our respiratory system.

After the “generator,” there is the “vibrator.” The vibrator is the larynx, commonly referred to as the “voice box.” Horizontally stretched across the larynx are two folds of mucous membrane. These are called the “vocal folds,” or “vocal cords.” And so, when breath from our lungs passes along our vocal folds, vibrations occur.

After the “vibrator” is the “resonator.” The resonator is the resonating cavity above the larynx that gives the voice its particular tonal quality. The resonator includes the vocal tract, much of the pharynx, or throat, the oral cavity, and the nasal passages.

And finally, after the “resonator,” you’ve got the “articulator.” The articulator includes our tongue, lips, cheeks, teeth, and palate. Together, these parts help us to shape our sounds into recognizable words and vocalizations; they help us to articulate.

These four component parts – the “generator,” the “vibrator,” the “resonator,” and the “articulator” – work together to produce speech, song, and all order of vocalizations.

Performance Injuries

Anyone who practices, rehearses or performs instrumental or vocal music has the potential to suffer injury related to that activity. Instrumental musicians are at risk for repetitive motion injuries. Sizable percentages of them develop physical problems related to playing their instruments; and if they are also computer users, their risks are compounded. Instrumental injuries often include carpal tunnel syndrome, tendinitis, and bursitis. Incorrect posture, non-ergonomic technique, excessive force, overuse, stress, and insufficient rest contribute to chronic injuries that can cause great pain, disability, and the end of careers.

Disorders of the Neuromusculoskeletal System

Sometimes, within our complex physical bodies, something goes wrong, and we find ourselves victim to a neuromusculoskeletal disorder. The causes and contributing factors vary, but such disorders generally fall into one of the following three categories: 1) Disorders with a genetic link; 2) disorders resulting from trauma or injury; and 3) disorders that are related to our behavior.

Some common symptoms of all neuromusculoskeletal disorders include pain, stiffness, aching, throbbing, cramping, and muscular weakness.

Some disorders may be permanent, while others may be temporary.

In some cases, a simple change in behavior or some rest and relaxation can help to eliminate or reduce certain symptoms.

Other times, it’s not so simple, and medical professionals may prescribe certain treatments.

Contributing Factors

The exact causes of behavior-related neuromusculoskeletal disorders are manifold. However, these causes generally fit into one of two basic categories or factors. They are: 1) musculoskeletal overuse and/or misuse and 2) genetic factors.

1. Overuse/Misuse (and Abuse)

Overuse

First, let's talk about what we mean by "overuse." The human body, as we all know, has certain physical limits. In arts medicine terminology, "overuse" is defined as a practice or activity in which anatomically normal structures have been used in a so-called "normal" manner, but to a degree that has exceeded their biological limits. Overuse produces physical changes in our muscles, tendons, ligaments, etc., and that's when we experience symptoms, such as pain and discomfort.

So, how much activity is too much? What exactly constitutes overuse? Well, there's no simple answer to either of these questions. The amount of excessive activity needed to produce these results varies from person to person. Often, it's tied to a person's individual anatomy and physiology.

Musicians who are dealing with changes to their musical routine may find themselves "overdoing it." In the face of high self-expectations, musicians who are beginning at a new school or who are starting lessons with a new instructor may be more apt to overdo it, to push themselves too hard.

Similarly, musicians who are taking up a new instrument may overdo it, as they work to quickly advance their skills.

Really, any musician who rapidly increases his or her practice time or intensity is likely to overdo it and increase his or her level of risk.

When it comes to overuse, what we need to ask ourselves the following questions: "Is my body well conditioned enough to handle this kind and amount of physical activity? Am I changing my musical routine too drastically or too quickly? Why am I making this change?" These are questions that require honest and individualized answers.

Misuse

Another frequent cause of these disorders is "misuse." "Misuse" is when we use our bodies to perform physical tasks in abnormal ways – and sometimes to excessive degrees. When we misuse certain bodily structures, we put them under stress. This can lead us to experience symptoms such as pain and discomfort.

In music, an example of physical misuse is improper technique. Improper technique can involve poor or "lazy" posture. For instrumentalists, it can involve playing with excessive pressure or force. It can also involve a physical mismatch between player and instrument. For singers, it can involve singing too loudly or singing out of range.

Remember, good posture and technique are important. They'll make playing and singing easier, and you'll be less likely to hurt yourself.

Abuse

Related to both overuse and misuse is abuse. We abuse our own bodies when we perform an activity not only excessively or improperly, but also in a conscious, willful manner, over a sustained period of time. A common example is "playing through the pain." Sure, football players are frequent perpetrators, but so are some musicians. In their quest to be the best, they let their own physical well-being take a back seat, and end up hurting themselves.

Playing or singing through the pain is not an acceptable option. If you're hurting, stop. Tell your instructor that you're not okay, and excuse yourself from rehearsal. Ultimately, consult with a medical professional, and follow the treatment plan they provide. Your health is too important to be playing through the pain.

Abuse can also involve the use of alcohol or other dangerous substances. Don't smoke or use any drug not prescribed by a medical professional licensed to do so.

2. Genetic Factors

There are also some genetic predispositions that can increase a person's risk of developing one or more behavior-related disorders.

One of the most common genetic factors in this category is double-jointedness. Medically known as "hypermobility," people with this condition have joints, ligaments, and tendons with an extended range of motion. Such joint instability can increase a person's risk of developing various muscle pain syndromes. It can also lead to tendinitis, an inflammation of the tendon. (Tendons, as you may know, are the tough bands of fibrous tissue that connect muscle to bone.)

Individuals with hypermobile joints tend to compensate for this instability by over-tensing their muscles. While this extra muscle tension can help them to better control their movements, it can also increase their risk of damaging or straining a muscle.

So if you happen to be a person with hypermobile joints, take note. It's important for you to monitor and actively reduce the amount of tension that you carry in your muscles. Such active relaxation may be hard at times, but it'll save you lots of pain and discomfort in the long run.

Specific strengthening exercises can also help, and in some instances, people with hypermobile joints employ external methods of joint support, such as small ring splints or tape.

Neuromusculoskeletal Issues Affecting the Body

Next, I'm going to talk about a number of neuromusculoskeletal complications and disorders, especially those that are likely to affect instrumental musicians.

1. Muscle Pain

First, there's muscle pain. For musicians, muscle pain can be the result of overuse, misuse, poor posture, tension, technical problems, or poor conditioning.

When a muscle is used, it becomes physically shortened. It contracts. This contraction produces lactic acid, and when this substance accumulates, it minimizes the muscle's ability to effectively function and contract. If you don't stop and rest, you put yourself at increased risk for muscle strains, which are small tears in the muscle fibers.

Both muscle strains and lactic acid-induced muscle contractions are painful.

Some kinds of muscle pain may subside once an activity is stopped, but not always.

In the case of muscle strains, the pain may dissipate, but a regimen of rest, ice, and/or anti-inflammatory medications may be necessary in order to reduce swelling and help facilitate a quicker recovery. As always, it's best to get your advice and treatment plan from a medical professional.

For musicians, muscle pain that stems from playing music is commonly felt in specific body locations. The neck and shoulders; the hands, wrists, and fingers; and the lower back are the most frequently affected areas. Some musicians are more susceptible to certain injuries than others. For example, clarinetists are at greater risk for right thumb pain. Double bass players are more likely to experience pain in the lower back.

So, just remember this, when it comes to muscle pain, give your body a break and rest your weary muscles for as long as it takes. Resuming activity prematurely often exacerbates the problem and leads to more trouble in the long run.

2. Neuropathies

Next, let's turn to neuropathies. "Neuropathy" is a general medical term that refers to diseases or malfunctions of the nerves. Neuropathies are classified by the types or locations of the nerves they affect.

Focal neuropathies are those focused on one nerve or group of nerves within a particular area of the body. Symptoms usually appear suddenly and can include pain; sensory disturbances, such as numbness, tingling, "pins of needles" sensations, burning, or even itching; and weakness. In the case of bodily extremities, the pain may occur at the site of a nerve compression or entrapment. Nerve compressions, or entrapments, occur when a nerve passes through a narrowed channel bounded by bone, fibrous bands, bulky muscles, or enlarged arteries on its way to or from its ultimate destination – either toward or away from the brain and spinal cord.

In other cases, the pain may be distributed anywhere along the course of the nerve. Individuals with this kind of nerve pain may later on find themselves experiencing muscle weakness and impaired dexterity.

Three of the most common entrapment neuropathies for musicians include: 1) carpal tunnel syndrome, 2) ulnar neuropathy, and 3) thoracic outlet syndrome.

Carpal Tunnel Syndrome

Often associated with people who type for a living, carpal tunnel syndrome occurs when the median nerve, which runs from the forearm into the palm of the hand, becomes pressed or squeezed at the wrist. The carpal tunnel – a narrow, rigid passageway of ligament and bones at the base of the hand – contains the median nerve and several tendons. When irritated or strained, these tendons may swell and narrow the tunnel, compressing the median nerve. The result can be pain, weakness, or numbness in the hand and wrist that radiates up the arm.

Although some experts tie carpal tunnel syndrome to repeated actions, especially those involving the hands and wrists, others cite a genetic predisposition. It is also associated with certain medical

conditions, including diabetes, arthritis, and hypothyroidism. It is often very difficult to determine the precise cause of carpal tunnel syndrome.

Whatever the cause, it is a good idea to occasionally rest and to stretch the hands and wrists when performing repetitive tasks or musical exercises. For individuals diagnosed with carpal tunnel syndrome, a doctor may recommend the use of a wrist splint, especially at night.

Ulnar Neuropathy

Next, let's move to ulnar neuropathy. Ulnar neuropathy is a condition in which the ulnar nerve, which runs from the neck along the inside edge of the arm into the hand, becomes inflamed due to compression of the nerve.

Symptoms include tingling, numbness, weakness, and pain, primarily along the elbow, the underside of the forearm, and along the wrist or inside edge of the hand.

Compression of the ulnar nerve is often linked to repetitive wrist or elbow movements. Musicians of bowed instruments are at a heightened risk for developing this condition, because playing a bowed instrument involves sustained elbow flexion.

Treatment for ulnar neuropathy may involve pain medication, the use of splints to restrict motion, and various exercises.

Thoracic Outlet Syndrome

The third and final neuropathy that we'll discuss is thoracic outlet syndrome. Thoracic outlet syndrome refers to a group of disorders that occur when the blood vessels or nerves in the thoracic outlet – the space between the collarbone and first rib – become compressed. It is most often the result of poor or strenuous posture, or of constant muscle tension in the neck and shoulder area. Symptoms include pain in the neck and shoulder areas and numbness in fingers.

Doctors may prescribe a variety of stretches and exercises in order to treat the symptoms of thoracic outlet syndrome.

Good playing posture and sufficient muscle strength can both help to decrease the risk of thoracic outlet syndrome among musicians.

3. Dystonia

Now, let's move from neuropathies to a disorder called dystonia.

Dystonia involves sustained muscular contractions. These muscular contractions produce unwanted movements or abnormal postures in people. The exact cause of dystonia is unclear.

Like a focal neuropathy, focal dystonia is focused on a particular area of the body, and certain sets of muscles within that area of the body are involved.

Because men are more frequently affected than women, it is possible that genetic or hormonal factors are to blame.

Also, as is the case with carpal tunnel syndrome, repetitive movements, especially those that are painful, seem to be a trigger for dystonia.

In the instrumental musicians, these sustained muscle contractions frequently affect the upper arm. This is especially true for keyboard, string, percussion, and woodwind players. In brass and woodwind players, the embouchure may be affected.

What Instrumentalists Should Do

The School of Music wishes to thank the Associated Board of the Royal Schools of Music and the Canadian Network for Health in the Arts for the following information:

1. **Evaluate your technique**. Reduce force, keep joints in the middle of their range of motion, use large muscle groups when possible, and avoid fixed, tense positions.
2. **Always warm up**. As an athlete would not begin a vigorous physical activity without warming up, a musician must warm up carefully before practice or performance.
3. **Take breaks to stretch and relax**. Take short breaks every few minutes and longer breaks each hour. Two or more shorter rehearsals each day are more productive than marathon single sessions. Even in performance, find those opportunities to relax a hand, arm, or embouchure to restore circulation.
4. **Pace yourself**. No pain, no gain is a potentially catastrophic philosophy for a musician. Know when enough is enough, and learn to say 'no' to certain performances or lengths of performing that might result in injury.
5. **Check out your instrument**. Does your instrument place undue stress on your body? Is your instrument set up optimally for you to relieve pressure on hands, joints, etc.? Is there a strap, carrier, or stand available to relieve the stress?
6. **Evaluate other activities**. Pains and injuries affecting your music making could be caused by other activities in your daily life. Computer use is notorious for causing afflictions including carpal tunnel syndrome and tendinitis.
7. **Pay attention to your body**. Pain is the mechanism by which your body tells you that something is wrong. Listen to your body; if it hurts, stop what you are doing.
8. **Get medical attention**. Do not delay in seeing a doctor. A physician may prescribe a minor adjustment or, in worst-case scenarios, stipulate not performing for a period of time. As drastic as this may sound, a few months of rest is better than suffering a permanent, career ending injury. Likewise, the demands placed on singers' voices are immense. Hardly a month goes by where a top singer is not forced to interrupt a tour, take a break, or undergo a medical procedure due to problems with their voice. Medical professionals are making the case that the demands put on one's voice when singing one to three hours is as intense as those made on an Olympic marathon runner's body. Additional factors such as nutrition, smoking, drug use, noisy environments, and proper voice training (or the lack of it) all play a role in a singer's ability to perform at her/his best.

Neuromusculoskeletal Issues Affecting the Voice

We’ve been talking a lot about neuromusculoskeletal issues related to the musician’s body, but there are also a number of issues that can adversely affect the musician’s voice.

Some common medical conditions affecting the voice are phonatory instability, vocal strain, and vocal fold motion abnormalities.

1. Phonatory Instability

Phonation, as you may know, is the process by which air pressure, generated by the lungs, is converted into audible vibrations. One method of phonation called "voicing" occurs when air from the lungs passes along the elastic vocal folds at the base of the larynx, causing them to vibrate.

Production of a tonal, pleasant voice with smooth changes in loudness and pitch depends upon the symmetrical shape and movement of the vocal folds.

Phonatory instability occurs when there is asymmetrical or irregular motion of the vocal folds that is superimposed on the vocal fold vibration.

Short-term causes of phonatory instability include fatigue, effects of medication, drug use, and anxiety. These problems tend to resolve rapidly if the cause is removed. Fatigue is another common cause of short-term phonatory instability.

Additionally, over-the-counter allergy medications, anti-depressants, and high caffeine drinks, which stimulate the nervous system, can often cause vocal tremors, a form of phonatory instability.

Drug use, alcohol use, and smoking all adversely affect our control of vocal folds and should be avoided.

2. Vocal Strain

Another issue for vocal musicians is vocal strain. Overuse of the voice in any capacity – singing or speaking – can produce vocal strain.

Singers must be aware of problems associated with singing at the extremes of vocal range, especially the upper end.

Both duration and intensity of singing are as important as they are for instrumentalists. In other words, avoid overdoing it.

Singers should also avoid attempting repertoire that is beyond their individual stage of vocal maturity and development.

Improperly learning and practicing certain vocal styles, such as belting, is also dangerous.

3. Vocal Fold Abnormalities

Prolonged overuse can, in some cases, lead to the development of nodules on the vocal folds. The nodules appear initially as soft, swollen spots on the vocal folds, but overtime, they transform into callous-like growths. Nodules require specialized and prolonged treatment and rehabilitation and can be disastrous for singers.

Basic Protection for All Musicians

As musicians, it's vital that you protect your neuromusculoskeletal health whenever possible. Here

are some simple steps you can take:

1. When possible, avoid situations that put your neuromusculoskeletal health at risk.

2. Refrain from behaviors that could compromise your neuromusculoskeletal health and the health of others.

3. Warm up before you practice and perform.

4. Take regular breaks from practice and rehearsal. 5 minutes rest every half hour seems to be ideal.

5. Limit excessive practice time.

6. Avoid excessive repetition of difficult music, especially if progress is slow.

7. Insomuch as possible, avoid playing and/or singing music that is beyond your physical abilities or outside your natural range.

8. Refrain from sudden increases in practice and playing time.

9. Maintain good posture in life and when you practice and perform music.

10. Use external support mechanisms, such as shoulder rests, neck straps, and flute crutches, when necessary.

11. Maintain good "mental hygiene. Get adequate sleep, good nutrition, and regular exercise.

12. Refrain from recreational drug use, excessive alcohol use, and smoking.

13. Do your best to limit and control stressors. Plan ahead.

14. Give yourself time to relax.

Vocal Protection

Here's some extra advice for safeguarding your voice:

1. Drink plenty of water, at least 8 glasses a day.

2. Limit your consumption of caffeine and alcohol.

3. Don't smoke.

4. Be aware that some medications, such as allergy pills, may dry out your vocal tissues. Be aware of side effects and talk to your doctor if you have questions.

5. Avoid dry air environments. Consider using a humidifier.

6. Avoid yelling or raising your voice unnecessarily.

7. Avoid throat clearing and loud coughing.

8. Opt to use vocal amplification systems when appropriate.

9. Rest your voice, especially if you are sick. Your voice and your body need time to recover.

What Singers Should Do

The School of Music wishes to thank The Singer's Resource, the Texas Voice Center, Houston, and the University of Michigan Vocal Health Center for the following information:

1. **Maintain good general health**. Get adequate rest to minimize fatigue. If you do become ill, avoid "talking over your laryngitis" - see your physician and rest your voice.
2. **Exercise regularly**.
3. **Eat a balanced diet**. Including vegetables, fruit and whole grains, and avoid caffeinated drinks (coffee, tea, and soft drinks) and alcohol. Avoid spicy, acidic, and dairy foods if you are sensitive to them.
4. **Maintain body hydration**; drink two quarts of water daily.
5. **Avoid dry, artificial interior climates**. Las Vegas has an average daily humidity of 36%, a relatively low amount of moisture. Using a humidifier at night might compensate for the dryness.
6. **Limit the use of your voice**. High-ceilinged restaurants, noisy parties, cars and planes are especially damaging to the voice. If necessary, use amplification for vocal projection.
7. **Avoid throat clearing and voiced coughing**.
8. **Stop yelling, and avoid hard vocal attacks on initial vowel words**.
9. **Adjust the speaking pitch level of your voice**. Use the pitch level in the same range where you say, "Umm-hmm?"
10. **Speak in phrases rather than in paragraphs**. Breath slightly before each phrase.
11. **Reduce demands on your voice** - don't do all the talking!
12. **Learn to breathe silently to activate your breath support muscles and reduce neck tension.**
13. **Take full advantage of the two free elements of vocal fold healing**: water and air.
14. **Vocal athletes must treat their musculoskeletal system as do other types of athletes;** therefore, vocal warm-ups should always be used prior to singing. Vocal cool-downs are also essential to keep the singing voice healthy.

Marching Musicians

Now, some of you may be in the marching band or play with a drum corps. It is important that you maintain a high level of physical conditioning, strength, and endurance. As you are well aware, marching band rehearsals and performances are very physical and require very precise movements, all while carrying an instrument.

Marching musicians are at an increased risk for sprained ankles, toe contusions, and knee strains, and the heavy instruments that you carry place great amount of physical stress on the neck, torso, lower back, and legs.

In some climates, high heat, humidity, and extended sun exposure may place added strain on these musicians.

Thorough physical warm-ups, sufficient rest periods, appropriate sun protection, and adequate hydration are essential in promoting the neuromusculoskeletal health of these musicians.

What All Musicians Should Do

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

1. **Stay informed**. Awareness is the key. Like many health-related issues, prevention is much easier and less expensive than cures. Take time to read available information concerning injuries associated with your art.
2. Musicians might find the following books helpful:
Conable, Barbara. *What Every Musicians Needs to Know About the Body* (GIA Publications, 2000)
Klickstein, Gerald. *The Musician's Way: A Guide to Practice, Performance, and Wellness* (Oxford, 2009)
Norris, Richard N. *The Musician's Survival Manual* (International Conference of Symphony and Opera Musicians, 1993)

The following links may be useful:

Associated Board of the Royal Schools of Music (ABRSM), the world's leading authority on musical assessment, actively supporting and encouraging music learning for all.
Performing Arts Medicine Association (PAMA), an organization comprised of dedicated medical professionals, artists educators, and administrators with the common goal of improving the health care of the performing artist.
Texas Voice Center, founded in 1989 for the diagnosis, treatment, and prevention of voice disorders.
National Center for Voice and Speech (NCVS), conducts research, educates vocologists, and disseminates information about voice and speech.
Vocal Health Center, University of Michigan Health System, recognized locally, regionally and nationally as a leading institution for the treatment and prevention of voice disorders. At the heart of the Center is a professional team comprised of experts from the University of Michigan Health System and U-M School of Music, encompassing the fields of Laryngology, Speech Pathology, and Vocal Arts.

Department-Owned Instruments

The School of Music maintains a collection of musical instruments for checkout and use by members of the music faculty and students enrolled in our courses and performing ensembles. As with other items we use in the course of our daily lives, musical instruments must be cared for properly and cleaned regularly. Each instrument in the School's collection receives a thorough inspection at the conclusion of the academic year. Every year, thousands of dollars are spent to clean, adjust, and return instruments to full playing condition.

Antiseptically Clean

More and more our society is pushing for products that are anti-fungal, anti-bacterial and anti-viral. Some even go the next step further aiming to achieve sterile. However, our bodies by design are not meant to live in a sterile environment. As kids we played in the dirt, ate bugs and countless other things and became stronger because of it. Keep in mind that total sterility is a fleeting moment. Once

a sterile instrument has been handled or exposed to room air it is no longer considered to be sterile. It will however remain antiseptically clean until used.

Most viruses cannot live on hard surfaces for a prolonged period of time. Some die simply with exposure to air. However, certain groups are quite hardy. Therefore, musicians must be concerned with instrument hygiene. Users of school owned and rented musical equipment might be more susceptible to infections from instruments that are not cleaned and maintained properly.

If the cleaning process is thorough, however, musical instruments will be antiseptically clean. Just as with the utensils you eat with, soap and water can clean off anything harmful. Antibacterial soaps will kill certain germs but all soaps will carry away the germs that stick to dirt and oils while they clean. No germs/ no threat.

Infectious Disease Risks

Sharing musical instruments is a widespread, accepted practice in the profession. However, recent discussion in the profession has included concern regarding shared musical instruments and infectious disease, especially HIV.

The Centers for Disease Control (CDC), has confirmed that there is no risk of transmission of HIV (the virus that causes AIDS), or Hepatitis B (HBV) through shared musical instruments. The reasons for this are that these diseases are passed via a blood-to-blood, sexual fluid or mucous membrane contact. There has been no case of saliva transmission of HIV (the virus that causes AIDS), or Hepatitis B (HBV).

Instrument Hygiene

While the possibility of transmission of the above bacteria and viruses is not a real consideration, it is apparent that there should be a protocol with regard to shared musical instruments. Sharing of instruments is routine in music schools, where students practice and perform on borrowed instruments throughout the year. In our discussion with our consultants, certain basic considerations and recommendations for standard operating procedures regarding shared instruments were recommended as follows:

1. All musicians or students should have their own instrument if possible.
2. All musicians or students should have their own mouthpiece if possible.
3. All students and faculty sharing reed instruments **MUST** have their own individual reeds. Reeds should **NEVER** be shared.
4. If instruments must be shared in class, alcohol wipes or Sterisol germicide solution (both available from the Department of Music) should be available for use between different people. When renting or using a Department-owned musical instrument, each user must understand that regular cleaning of these musical instruments is required in order to practice proper hygiene. The student must initial and date the following statement upon checkout of the institutionally owned wind instrument.

Mouthpieces

The mouthpiece (flute headjoint), English Horn and bassoon bocal, and saxophone neck crook) are essential parts of wind instruments. As the only parts of these instruments placed either in or close to the musician's mouth, research has concluded that these parts (and reeds) harbor the greatest quantities of bacteria.

Adhering to the following procedures will ensure that these instrumental parts will remain antiseptically clean for the healthy and safe use of our students and faculty.

Cleaning the Flute Head Joint

1. Using a cotton swab saturated with denatured, isopropyl alcohol, carefully clean around the embouchure hole.
2. Alcohol wipes can be used on the flute's lip plate to kill germs if the flute shared by several players.
3. Using a soft, lint-free silk cloth inserted into the cleaning rod, clean the inside of the headjoint.
4. Do not run the headjoint under water as it may saturate and eventually shrink the headjoint cork.

Cleaning Bocals

1. Bocals should be cleaned every month with a bocal brush, mild soap solution, and running water.
2. English Horn bocals can be cleaned with a pipe cleaner, mild soap solution, and running water. Be careful not to scratch the inside of the bocal with the exposed wire ends of the pipe cleaner. Cleaning Hard Rubber (Ebony) Mouthpieces 1. Mouthpieces should be swabbed after each playing and cleaned weekly.
2. Select a small (to use less liquid) container that will accommodate the mouthpiece and place the mouthpiece tip down in the container.
3. Fill the container to where the ligature would begin with a solution of half water and half white vinegar (50% water and 50% hydrogen peroxide works too). Protect clarinet mouthpiece corked tenons from moisture.
4. After a short time, use an appropriately sized mouthpiece brush to remove any calcium deposits or other residue from inside and outside surfaces. This step may need to be repeated if the mouthpiece is excessively dirty.
5. Rinse the mouthpiece thoroughly and then saturate with Sterisol germicide solution. Place on paper towel and wait one minute.
6. Wipe dry with paper towel.
7. Note: Metal saxophone mouthpieces clean up well with hot water, mild dish soap (not dishwasher detergent), and a mouthpiece brush. Sterisol germicide solution is also safe for metal mouthpieces.

Cleaning Saxophone Necks (Crooks)

1. Swabs and pad-savers are available to clean the inside of the saxophone neck. However, most saxophonists use a flexible bottlebrush and toothbrush to accomplish the same results.
2. If the instrument is played daily, the saxophone neck should be cleaned weekly (and swabbed out each day after playing).
3. Use the bottlebrush and mild, soapy water to clean the inside of the neck.
4. Rinse under running water.

5. Sterisol germicide solution may be used on the inside of the neck at this time, if desired (not necessary). Place on paper towel for one minute.
6. Rinse again under running water, dry, and place in the case.
7. If using pad-savers, do not leave the pad-saver inside the neck when packed away.

Cleaning Brass Mouthpieces

1. Mouthpieces should be cleaned monthly.
2. Using a cloth soaked in warm, soapy water, clean the outside of the mouthpiece.
3. Use a mouthpiece brush and warm, soapy water to clean the inside.
4. Rinse the mouthpiece and dry thoroughly.
5. Sterisol germicide solution may be used on the mouthpiece at this time. Place on paper towel for one minute.
6. Wipe dry with paper towel.

Other Instruments

1. String, percussion, and keyboard instruments present few hygienic issues that cannot be solved simply by the musician washing their hands before and after use.

Noise-Induced Hearing Loss

Note - *The information in this document is generic and advisory in nature. It is not a substitute for professional, medical judgments. 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.*

Part of the role of any professional is to remain in the best condition to practice the profession. As an aspiring musician, 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. If you are 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.

Music & Noise In the scientific world, all types of sound, including music, are regularly categorized as noise. A sound that it 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.

Noise-Induced Hearing Loss (NIHL)

We experience sound in our environment, such as the sounds from television and radio, household appliances, and traffic. Normally, we hear these sounds at safe levels that do not affect our hearing. However, when we are exposed to harmful noise-sounds that are too loud or loud sounds that last a

long time-sensitive structures in our inner ear can be damaged, causing noise-induced hearing loss (NIHL). These sensitive structures, called hair cells, are small sensory cells that convert sound energy into electrical signals that travel to the brain. Once damaged, our hair cells cannot grow back. NIHL can be caused by a one-time exposure to an intense "impulse" sound, such as an explosion, or by continuous exposure to loud sounds over an extended period of time. The humming of a refrigerator is 45 decibels, normal conversation is approximately 60 decibels, and the noise from heavy city traffic can reach 85 decibels. Sources of noise that can cause NIHL include motorcycles, firecrackers, and small firearms, all emitting sounds from 120 to 150 decibels. Long or repeated exposure to sounds at or above 85 decibels can cause hearing loss. The louder the sound, the shorter the time period before NIHL can occur. Sounds of less than 75 decibels, even after long exposure, are unlikely to cause hearing loss. Although being aware of decibel levels is an important factor in protecting one's hearing, distance from the source of the sound and duration of exposure to the sound are equally important. A good rule of thumb is to avoid noises that are "too loud" and "too close" or that last "too long."

It is very important to understand that the hair cells in your inner ear cannot regenerate. Damage done to them is permanent. There is no way to repair or undo this damage.

According to the American Academy of Audiology, approximately 26 million Americans have hearing loss. One in three developed their hearing loss as a result of exposure to noise. As you pursue your day-to-day activities, both in the Department of Music and in other educational, vocational, and recreational environments, remember:

1. Hearing health is essential to your lifelong success as a musician.
2. Your hearing can be permanently damaged by loud sounds, including music. Technically, this is called Noise-Induced Hearing Loss (NIHL). This danger is constant.
3. Noise-induced hearing loss is generally preventable. You must avoid overexposure to loud sounds, especially for long periods of time.
4. The closer you are to the source of a loud sound, the greater the risk of damage.
5. Sounds over 85 dB (your typical vacuum cleaner) in intensity pose the greatest risk to your hearing.
6. Recommended maximum daily exposure times to sounds at or above 85 dB are as follows: 85 dB (vacuum cleaner, MP3 player at 1/3 volume) - 8 hours 90 dB (blender, hair dryer) - 2 hours 94 dB (MP3 player at 1/2 volume) - 1 hour 100 dB (MP3 player at full volume, lawnmower) - 15 minutes 110 dB (rock concert, power tools) - 2 minutes 120 dB (jet planes at take-off) - without ear protection, sound damage is almost immediate
7. Certain behaviors (controlling volume levels in practice and rehearsal, planning rehearsal order to provide relief from high volume works, avoiding noisy environments) reduce your risk of hearing loss.
8. The use of earplugs (Sensaphonics, ProGuard, Sensorcom) helps to protect your hearing health.
9. Day-to-day decisions can impact your hearing health, both now and in the future. Since sound exposure occurs in and out of the Department of Music, you also need to learn more and take care of your own hearing health on a daily, even hourly basis.
10. If you are concerned about your personal hearing health, talk with a medical professional.
11. If you are concerned about your hearing health in relationship to your study of music at UNLV, consult with your applied instructor, ensemble conductor, advisor, or Department Chair.

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

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 â€" 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 â€" Hearing Health (http://www.hei.org/education/health/health.htm)

National Institute on Deafness and Other Communication Disorders â€" 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/)

http://nasm.arts-accredit.org/site/docs/PAMA-NASM_Advisories/1_NASM_PAMA-Admin_and_Faculty_2011Nov.pdf

Information on University of Montevallo Health Services

The following is a link to information regarding health services at the University of Montevallo

Information regarding Safety on the University of Montevallo Campus

The following two links are to information regarding safety on the Butler University campus.

http://www.butler.edu/public-safety/university-police/safety-info/

http://www.butler.edu/public-safety/

Conclusion

We hope our presentation has made you think more carefully about your own neuromusculoskeletal and vocal 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 behavior in and outside of the music unit. Your day-to-day decisions have a great impact on your neuromusculoskeletal and vocal health, both now and years from now.

Do yourself a favor. Be smart. Protect your body and your voice. Don't take unnecessary risks. Take care of yourself. You owe it to yourself.

Resources – Information and Research

Neuromusculoskeletal and Vocal 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

Organizations Focused on Neuromusculoskeletal and Vocal Health

American Academy of Neurology
(http://www.aan.com)

American Academy of Orthopaedic Surgeons
(http://www.aaos.org)

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

American Association for Hand Surgery
(http://www.handsurgery.org)

American Laryngological Association
(http://www.alahns.org)

American Physical Therapy Association
(http://www.apta.org)

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

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

National Association of Teachers of Singing
(http://www.nats.org)