

Performing Arts Safety Primer

Musicians and MSI



Actsafes Performing Arts Safety Primers

This book is one in a series of Performing Arts Safety Primers that also includes:

- The Performing Arts Safety Primer
- Dancers and MSI

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Introduction

A Musculoskeletal injury (MSI) is any injury or disorder of the muscles, bones, joints, tendons, ligaments, nerves, blood vessels, or related soft tissues. This includes a strain, sprain, or inflammation that is caused or aggravated by activity.

Musicians (including vocalists) are prone to MSI that is caused or aggravated by practice, rehearsal, or performance. Playing a musical instrument may be second only to computer use in terms of population exposure to MSI. Some studies have shown that approximately half of professional musicians and music students experience significant MSI symptoms.

There are many things you can do to help prevent and treat MSI. An MSI can be painful and can interfere with both your professional and personal life, so it's important to use prevention strategies. If you already have an MSI, there are treatment options that will help you stop the injury from getting worse and speed up the healing process.

MSI symptoms

If you develop an MSI, you may experience symptoms that interfere with your ability to perform at the level you are accustomed to, including:

- pain
- weakness
- numbness
- tingling
- stiffness (reduced range of motion)
- loss of muscular control

Some musicians assume that their painful condition is normal and find ways to mask the effects of the developing injury. This is partly due to a performance culture in which there is a long-standing philosophy that “the show must go on,” and partly due to a common concern among professional musicians of being labelled as a musician with an injury.

There is also a predominant medical perspective that MSI is neither life-threatening nor medically serious. However, an MSI can be artistically and professionally limiting, or even career-ending,

with devastating effects on your physical, emotional, and financial well-being. If you experience pain that may indicate MSI, take steps to deal with the problem.

Below are the five levels of MSI signs and symptoms in performers. If you are at Level 1 or 2, modify your activities to prevent further progression of symptoms. If you are at Level 3 or higher, seek professional assistance.

Level 1

Pain occurs after class, practice, rehearsal, or performance, but you are able to perform normally.

Level 2

Pain occurs during class, practice, rehearsal, or performance, but you are not restricted in performing.

Level 3

Pain occurs during class, practice, rehearsal, or performance, and begins to affect some aspects of daily life. You must alter technique or reduce the duration of activity.

Level 4

Pain occurs as soon as you attempt to participate in class, practice, rehearsal, or performance, and is too severe to continue. Many aspects of daily life are affected.

Level 5

Pain is continuous during all activities of daily life, and you are unable to participate in class, practice, rehearsal, or performance.

MSIs common to musicians

Jaw and head

- Temporomandibular joint (TMJ) dysfunction

Shoulder

- Shoulder impingement syndrome

Back and neck

- Spondylolysis
- Back and neck pain

Hand and arm

- Cubital tunnel syndrome
- Thoracic outlet syndrome
- Carpal tunnel syndrome
- De Quervain's syndrome
- Arthritis
- Lateral dystonia
- Lateral epicondylitis (tennis elbow)
- Medial epicondylitis (golfer's elbow)



Tendon and muscle disorders

Tendon and muscle disorders that affect musicians include tendinitis and tenosynovitis, strains, and focal dystonia.

Tendinitis and tenosynovitis

Tendons are rope-like structures made of strong, smooth fibres that do not stretch. During movement, tendons normally slide within a lubricated tendon sheath. Excessive tension in the tendon or the friction of repeated movements can result in irritation of the tendon (tendinitis) or sheath (tenosynovitis). Awkward postures that stretch or bend tendons around joints increase tension and friction, contributing to the risk of MSIs such as tendinitis.

Strains

A strain is a stretch or tear of muscle fibres or connecting tissues such as tendons or fascia. Chronic strains result from prolonged overuse of muscles. Acute strains result from traumatic injuries to muscles.

Excessive tension or impacts can eventually tear tendon fibres much like a rope can become frayed. Tendon strains usually result in the formation of scar tissue. Repeatedly strained

tendons can become thickened, bumpy, and irregular. Prolonged irritation of the tendon sheath can cause the lining of the sheath to thicken and constrict, making it difficult for the tendon to slide in the sheath.

Focal dystonia

Focal dystonia is a muscle malfunction at a specific location, which may result in:

- cramping
- involuntary flexing or straightening of a joint
- a sense of fatigue
- loss of coordination

Focal dystonia may or may not be painful, but it will interfere with your ability to play an instrument.

Muscle cramping is not necessarily focal dystonia. Cramping or stiffness may occur as a result of the fatigue induced by a particularly long or difficult practice session, rehearsal, or performance. However, focal dystonia is a condition in which muscle dysfunction can occur in the absence of fatigue.

Focal dystonia typically affects the:

- hands and fingers of string and keyboard players
- feet of drummers
- vocal chords of vocalists
- embouchure of brass players

You may experience referred symptoms in other parts of your body when cramping or spasm occurs in the neck or back muscles.

Tendon and muscle disorders in specific body parts

Each musical instrument has particular physical and postural demands that place stresses on the body. Knowing the parts of your body that are more prone to injury may help you prevent MSI.

Hand, wrist and forearm injuries

Description of symptoms: Muscle strains occur in the small hand muscles that control lateral finger movement and finger spread, as well as those that flex the finger at the large metacarpal joint.

Common with keyboards and guitar.

Description of symptoms: De Quervain's syndrome is pain in the tendons at the base of the thumb and on the thumb side of the forearm. It becomes painful to move the thumb away from the hand or engage in activities that require a firm grip or twisting motion.

Common with clarinet, oboe, flute, keyboards and percussion.

Description of symptoms: Irritation occurs in the muscles and tendons in the forearm that flex and extend the wrist.

Common in instruments that require awkward postures, force, and fine coordinated movement of the hands and fingers, including strings, oboe, French horn, and flute.

Elbows and shoulders

Description of symptoms: Epicondylitis is elbow soreness where the forearm muscles attach to the bone on the elbow's outer edge (lateral epicondylitis) or inner edge (medial epicondylitis). It may also cause forearm or wrist pain.

Common in instruments that require complex postures with rotation of the forearm, bending of the wrist, and independent finger movement, including keyboards, percussion, clarinet, oboe, harp, and trombone.

Description of symptoms: Rotator cuff tendinitis is irritation of the shoulder tendons. Pain usually occurs in the top or front part of the shoulder, or on the outer part of the upper arm.

Common with instruments that require the arm to be in a raised position with the elbow pointing outward or forward, including violin, viola, cello, double bass, and bassoon.

Back and neck

Description of symptoms: Low back pain.

Common with musicians sitting in restricted postures for long periods.

Description of symptoms: Upper back and neck pain.

Common with instruments that require specific playing postures and force, particularly of the

head and upper arms, to support the instrument, including violin, viola, flute, harp, saxophone, keyboard, double bass, and bassoon.

Head and face

Description of symptoms: Muscle strains occur in the muscle that controls the shape of the mouth and lips (orbicularis oris).

Common with vocalists and horn players.

Description of symptoms: Disorders occur in the temporomandibular joint (TMJ), where the jaw joins the skull in front of the ears. Pain may seem to be a headache or involve the face and neck, and is usually related to either excessive muscle tension (for example, teeth clenching) or to degradation of the joint itself.

Common with instruments that require careful and sustained jaw positioning, such as the violin, viola, saxophone, clarinet and French Horn.

Nerve compression or entrapment

Nerve compression or entrapment results when there is pressure on or irritation of motor or

sensory nerves. This tends to happen at specific locations: where the nerve crosses a joint or where it travels through areas that are restricted in size by surrounding tissues. Aggravation of tendons or muscles that share space with nerves can result in local swelling that compresses the nerves.

Common nerve compression or entrapment injuries.

Carpal Tunnel Syndrome

What is it?

- Irritation of tendons causes swelling within the carpal tunnel and compression of the median nerve at the wrist.
- Thought to be related to activities that require repetitive or sustained wrist flexion, particularly with a lot of finger movement.

What are the symptoms?

- Numbness, tingling, or pain in the thumb, index, and middle fingers.

Who does it usually affect?

- violin and viola players (left hand)

- guitar players (left hand) - particularly if playing in the 12th or 13th position for too long.

Cubital Tunnel Syndrome

What is it?

- Compression or entrapment of the ulnar nerve at the inside groove of the elbow.

What are the symptoms?

- Numbness, tingling, pain, or loss of coordination in the fourth (ring) and fifth (little) fingers, and pain at the elbow.

Who does it usually affect?

- violin and viola players (left hand)
- guitar players (left hand)

Thoracic Outlet Syndrome

What is it?

- Compression of the group of nerves travelling toward the arm between the first rib and collarbone.

What are the symptoms?

- Numbness, tingling, or pain in the thumb,

index, and middle fingers.

- Numbness, tingling, pain, or loss of coordination in the fourth (ring) and fifth (little) fingers, and pain at the elbow.

Who does it usually affect?

- violin and viola players (left hand)
- guitar players (left hand)
- flute players (left and right)
- keyboard players (left and right)

Sciatica

What is it?

- Irritation or compression of the sciatic nerve as it leaves the spine in the low back and travels down into the leg.

What are the symptoms?

- Pain in the legs and buttocks.

Who does it usually affect?

- musicians who sit for prolonged periods, particularly if bent slightly forward or rotated to the side.
- musicians who sit on a chair or bench that is too high or has a square edge on the front of the seat pan.

Prevention

You can help prevent MSI by using these six strategies:

1. Maintain your personal health and well-being.
2. Develop good practice habits.
3. Select appropriate practice locations.
4. Select appropriate instruments and furniture.
5. Carry and set up equipment safely.
6. Maintain body awareness.

Maintain your personal health and well-being

The first level of prevention is maintaining your personal health and well-being in all aspects of daily life. To prevent MSI and recover more quickly from physically demanding practices, rehearsals, or performances, follow these guidelines:

- Eat a healthy, well-balanced diet.
- Drink plenty of water.
- Exercise regularly.
- Get plenty of good quality sleep.
- Manage stress using healthy strategies.

Reduce or eliminate your consumption of nicotine, alcohol, coffee, and drugs. They can predispose you to MSI (for example, by reducing blood flow to your extremities or interfering with normal nerve function).

Develop good practice habits

Good practice habits are an excellent way to help prevent MSI. Risk factors most associated with MSI are lack of warm-up and lack of adequate breaks during practice sessions.

Warm up gently

A warm-up helps stimulate blood flow and physically warms the muscles and joints you will use while playing. Your physical warm-up should involve gentle, smooth motions for several minutes. Your musical warm-up at the beginning of a practice session, rehearsal, or performance should start with long, slow notes to warm your muscles and encourage blood flow to the areas that will be demanding it.

Stretch properly

Before stretching, slowly move each part of your body through its comfortable range of motion. This begins the process of lubricating the joints and preparing your body for activity.

Next, perform light aerobic activity (for example, walking, jogging, or skipping) for approximately 5 minutes to raise your body temperature and enhance blood flow to the muscles. Stretch smoothly and gently (don't bounce). Hold static stretches for 30–60 seconds.

Take regular rest breaks

Rest breaks help relieve the stress of long practice sessions, rehearsal, or performance and allow your muscles to become increasingly strong. Rest breaks may also help your mind. Research indicates that learning may be more effective when practice occurs in brief periods alternating with short rest breaks.

The suggested ratio of practice to rest varies. Here are some suggestions:

- 5 minutes of rest for every 25 minutes of playing
- 10 minutes of rest for every 50 minutes of playing
- 10–15 minutes of rest for every 30 minutes of playing

If necessary, spread practice time throughout the day in order to get enough rest.

Build variety into practice sessions

Work with a variety of music or exercises during practice to help prevent some of the repetition that may occur from practising a single phrase repeatedly. Build in time to work with simpler pieces to provide a partial rest. Try using imaging and visualization techniques to reduce the physical playing time required to master a piece of music.

Increase duration and intensity gradually

One of the most commonly reported risk factors is a sudden increase in the duration and intensity of practice sessions. This typically occurs during preparation for a performance, during preparation of a new and difficult piece of music, or when returning from a holiday. Gradually increase the duration and difficulty of practice so your body can adapt to the changing demand.

Select appropriate practice locations

Environmental factors such as cold or poor lighting can increase your risk of MSI. Cold environments reduce blood flow to the fingers and arms, interfere with adequate lubrication of tendons and joints, and can slow nerve conduction in the

extremities. Lighting levels influence your ability to read music, which may affect your playing posture and result in eye strain.

Select a practice environment that is properly heated and well lit. Where this is not possible, wear adequate clothing and warm your hands before playing. Use portable task lamps or battery-powered clip lights to illuminate sheet music in poorly lit environments.

Select appropriate instruments and furniture

Taking an ergonomic approach to your selection of instruments and furniture can help you eliminate many MSI risk factors.

Instruments

Select an instrument that fits you well. Be cautious anytime you change instruments or play a new instrument of the same type (including a better-quality instrument).

Avoid playing poorly designed or poorly maintained instruments. For example, wind instruments with leaky valves or pads and string instruments with bridges that are too high will

require more effort to play well. Pianos with excessive dead space at the tops of the keys will require more force to get enough volume.

Furniture

Set chairs or stools at a height that allows your feet to sit flat on the ground with your knees at a 90° angle. If the chair is too tall, use a footrest (even something as simple as a phone book) to support your feet. If the chair is too short, add a cushion to the seat, or place wooden blocks under the chair feet.

Adjust music stands so the top of the sheet music is at or just below eye level. If the music stand must be substantially lower than eye level, make an effort to look at the sheet music by lowering your eyes rather than tilting your head. Place the music stand directly in front of you to minimize neck rotation.

Use specialized devices to help achieve proper posture or force. A high chin rest can help you position a violin or viola without tilting your head excessively or elevating your shoulder. Harnesses can help support the weight of heavier instruments such as drums or tubas.

Carry and set up equipment safely

Lifting and carrying heavy equipment can put the upper extremities and back at risk and contribute to fatigue or aggravate existing conditions.

Lift equipment safely

Pay attention to safe lifting technique and plan your lift from start to finish. Avoid high-risk behaviours such as twisting your back or rapid lifting. Take the time to do the job right.

When planning a lift, ensure that you:

- know how heavy the load is
- have a stable base with your feet shoulder width apart
- are positioned to face the item you are lifting
- have a solid grip on the item
- have a clear route to your destination



Use safe lifting techniques to help prevent MSI in your upper extremities and back.

When moving heavy equipment, ensure that you have enough people to help. Ask for assistance, especially if you have an existing injury. Where possible, use a lifting assist such as a dolly or hand truck, or pack equipment in wheeled containers. Allow enough time for set-up to prevent rushing around while carrying equipment and to allow for adequate rest and recovery before playing.

Select appropriate containers

When transporting your equipment, select containers that are not excessively heavy and that have well-constructed, padded handles and wheels (as appropriate). Try to avoid large, heavy loads in containers that will need to be lifted. It is better to make two trips with a smaller load than one trip with a heavy load.

Maintain body awareness

Body posture while playing influences the risk of MSI. Posture includes not only your back and neck, but also the positioning of your shoulders, arms, hands, and legs, as well as the force that you use to play your instrument.

Practise a body awareness or movement discipline to help create the awareness that is required to ensure good posture while playing. Training in disciplines such as the Alexander Technique, Feldenkrais Method, Pilates Method, yoga, or Tai Chi helps increase awareness and tends to enhance physical fitness.

Treatment

The first level of injury management is recognizing early warning signs and symptoms, and administering simple self-help techniques such as the RICE treatment protocol. The second level is recognizing signs and symptoms that are persistent or unusual and seeking professional medical assistance.

Early warning signs and symptoms

Learn to recognize MSI signs and symptoms. Early warning signs and symptoms include:

- discomfort, pain, tingling, or numbness while playing
- weakness in your hands or difficulty with fine control of your fingers
- stiffness or limited range of motion
- postural changes (for example, shoulders elevated or rounded forward)
- local swelling or redness

If you notice discomfort or pain while playing your instrument, take a break until the symptom subsides. Avoid playing through the pain. In most cases it will only get worse if you continue to play.

RICE treatment protocol

Use the RICE treatment protocol (rest, ice, compression, and elevation) during the immediate stages of injury to help reduce the amount of damage to your body. The RICE protocol helps decrease swelling, discomfort, and muscle spasm as well as prevent further injury.

Although the RICE treatment protocol will help manage your injury, seek guidance from a health-care professional to manage persistent or worsening symptoms.

Rest

Rest the injured area to avoid further aggravation.

Ice

Apply ice or cold packs to the injured area for 15–20 minutes to help reduce swelling and manage pain. Never place ice directly on your skin as this can result in frostbite. Place crushed or cubed ice in a wetted towel and then place the towel on the affected area. If ice is not available, a pack of frozen vegetables works just as well.

Do not use alternative methods of icing (creams, balms, or rubs) because they only cool the first layers of skin and not deeper into the injured area. Never use ice to numb an area so you can keep performing through pain. This only masks the symptoms and you may make the injury worse.

Compression

Wrap the injury in a tensor bandage, using a criss-cross method. Get directions for appropriate wrapping techniques from a health-care professional. Compression and ice often can be combined by wrapping the ice in the tensor bandage.

Elevation

Elevate the injured area above the level of the heart to help move fluid away from the injury.

When to seek medical assistance

If symptoms continue to occur each time you play, continue to get worse, or are unusual for you, seek medical assistance. If symptoms continue to persist after you have stopped practising, or if they appear at times other than when you are playing your instrument (for example, during sleep), seek immediate help from a health-care professional who is experienced in treating musicians' injuries.

Additional information

All of the documents listed below are available at no cost from our website (www.actsafe.ca) or in hardcopy from our office. For further details, contact us at info@actsafe.ca.

Pain is Optional For Office Workers

Actsafes produced comic book discussing MSI symptoms and prevention common to office workers. Great information for anyone who works on a computer.

Performing Arts Safety Bulletins

Safety guidelines for the performing arts industry in British Columbia focusing on a variety of health and safety topics.

Performing Arts Safety Primer

A 36 page booklet that contains concise and relevant information and guidelines that relate to issues that all artists, managers, and crafts people may encounter. Answers basic health and safety questions that may come up in day to day production and rehearsal.

Performing Arts Safety Primer: Dancers and MSI

Includes information on symptoms, prevention and treatment for MSIs common to dancers.

To see our full library of health and safety information and materials, please visit our website at www.actsafe.ca.

What is Actsafe?

Actsafe is dedicated to the promotion of health and safety in British Columbia's motion picture and performing arts industries. Our role is to provide arts workers and employers with the necessary support to ensure everyone goes home safely at the end of the day.

Actsafe is governed by the industries it represents. We operate through two standing committees that represent the motion picture and performing arts communities. Membership on these committees includes both employer and worker representatives.

Our mandate includes providing subsidized training and free industry-related communication, education, services and advice.

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There are many things you can do to help prevent and treat MSI. An MSI can be painful and can interfere with both your professional and personal life, so it's important to use prevention strategies. If you already have an MSI, there are treatment options that will help you stop the injury from getting worse and speed up the healing process.

This primer provides information on symptoms, prevention and treatment of MSIs common to musicians.

