

Treating Musicians

Linking Injuries to Instruments

BY DOUG NELSON, DEBORAH LIEBERMAN, AND JAN KIENER

M

usicians seldom think of themselves as upper body athletes, individuals as immersed in the physiology of performance as anyone who plays a sport. Each of the authors has treated numerous athletes and have noted that athletes often have an understanding of the physiology of movement that musicians lack. This initial observation led to the performance of a research study, by Deborah Lieberman, Jan Kiener, and J. McCrackan, examining the correlation between certain instruments and the existence of specific injuries. The plight that musicians encounter when faced with musculoskeletal discomfort is illustrated in the narrative of violist T.M. Her story is the story of countless musicians.





“I just don’t understand why this is happening. I used to have pain, but I have been studying with this great teacher and I changed my technique to a more efficient movement pattern. I just can’t have this pain right now!”

T.M. looked at me with eyes that revealed her intensity, intelligence, and deep concern. She has been playing the viola since she was three—music is her whole life. It is her dream and passion; T.M.’s deep emotion is evident when she plays the instrument. No longer just a collection of notes, in the hands of T.M., the music cuts right to the heart. Her playing is masterful, moving, true art. Now physical pain threatens all that she has worked for. In the short term it threatens her participation in an upcoming orchestra recital, of which she is the concertmaster. In the long term, pain may destroy her performing career.

T.M. is not alone. Music injuries are being recognized increasingly as a potential hazard of the physical nature of playing instruments. While high profile artists, including pianists Gary Graffman and Leon Fleisher, have suffered music injuries from overuse, numerous other musicians of all levels and disciplines have suffered enormously, too.

In the past, there were few resources for helping the special needs of musicians. Resources are available for athletes, but students involved in the arts are not treated in the same way. There are perhaps two reasons: one is that the revenue available for the arts is generally modest; the other is that students and their teachers do not think of themselves as upper extremity athletes. The physiology of artistry is often overlooked. When student musicians hurt, rest seems to be the only option. Student athletes are immediately given strategies to get them back on the field as soon as possible, whereas musicians are consistently told to take a break from playing. In one sad but humorous encounter, a student, getting his master’s degree from Juilliard was asked by his doctor if perhaps he

would consider switching instruments to help his hands. With quick wit, he immediately asked the doctor if he had ever thought about being a veterinarian.

When musicians hurt, three questions must be explored. First: is this pain the result of ongoing processes, such as faulty technique? Second: is this pain a result of inappropriate physiology, such as playing without warming up, playing too long, lack of stretching, etc.? Third: what is the underlying history of this particular pain?

Technique issues can be the most important aspect of healthy playing, yet finding the right teacher is not an easy prospect. There are few physiologically-based methodologies in music education. For playing stringed instruments, the Rolland method is a fine example of striving for the most elegant and physiologically-based approach. One of the authors knows of a fine piano teacher who used a full human skeleton, placed next to the piano during lessons, to instruct students the physiological processes, as well as the musical and physical technique. Finding such teachers who understand physiology is not easy.

Musicians must be evaluated by experts in their chosen instrument who can help them play with maximum physiological efficiency. Injury is a substantial reason for students dropping out of master’s programs in music performance. If the people who attain an advanced degree have never struggled with injury, their lack of personal experience with performance injuries leaves them ill-equipped to help injured students. Most therapists who treat musicians are not experts in each instrument; meanwhile, instructors often tell students just to play through the pain, leading to disastrous consequences.

“She was amazing,” T.M. told me about her new instructor. “After so many years of playing, she completely changed the way I play the viola. I guess, if you look from the outside, I am not sure you could see the changes. To me, the changes seem radical. It took some faith and patience, but I play better, use less energy, and the pain I felt completely disappeared. That is, until now,” T.M. added with remorse. Knowing that T.M. was obviously in the hands of a fine teacher, I resolved that technique was not an issue. This made my job infinitely easier. I could focus on other issues.

“How much have you been playing lately?” I asked.

“About as much as I always do. I practice a lot,” she added. “Actually, I guess that is not true,” she corrected. “In addition to my normal practice routine, I have had this big orchestral concert coming up and we are doing a Brahms symphony. It is beautiful but there are some difficult passages, which I have had to play over and over to master. Also, my friend is doing her doctoral recital and I told her I’d play for her, which happens to overlap with my own recital coming up, which I have also been preparing for. I guess I have been playing a lot more than I usually do,” she confided.

A STRUGGLE FOR SUPPORT

Researching the topic of musicians and pain, we were struck by how taboo a subject it appears to be. Though this problem is widespread, apparently musicians fear being blacklisted if they admit they are struggling with pain.

In a May 2002 article in *The Neurologist*, author Richard Lederman details the frequency of playing-related problems in musicians. He describes a survey completed in 1988 by the International Conference of Symphony and Opera Musicians (ICSOM) in which 2,212 instrumentalists responded to a questionnaire about their medical problems. This number represented about 55 percent of the members of the 48 orchestras surveyed. Of the



The physiology of artistry is often overlooked.



participants, 76 percent listed at least “one problem characterized as severe in its effects on performance and the bulk of these were musculoskeletal in type.” The author continued by explaining he has to do a musculoskeletal exam of the upper body as part of his treatment assessment of musicians who consult him for care.¹ Clearly, musculoskeletal strains abound in instrumental musicians.

In his clinic in Cleveland, Lederman has treated several musicians for pain syndromes and nerve entrapment syndromes. The musicians report pain in the upper extremity, upper trunk, and neck most frequently. Lederman describes a correlation between injuries and specific instruments played. For example, violinists tend to injure the left (fingering) arm or hand more frequently than the right (bowing) arm. Lederman also discusses focal dystonia, or occupational cramp in musicians, as well as nerve entrapment syndromes.

CONTINUES >

Page 85
1/2 Vertical Ad
Talus Corp

Questionnaire Results: Instrument(s) Played vs. Pain

		AREA(S) OF DISCOMFORT														
		Neck R	Neck L	Shoulder R	Shoulder L	Hand R	Hand L	Extensors R	Extensors L	Flexors R	Flexors L	Other				
INSTRUMENT(S) PLAYED	Bass	m m	x m m		m											L Piriformis: x
	Bassoon	x														
	Cello	x					x									
	Clarinet	x x														
	Drums	m	m													
	Flute	x	m m		x x m	m		m								
	French Horn	x x														
	Guitar		m		m		x m m	m	m							
	Harp			x												
	Oboe		x				x x									
	Piano			m	m											
	String Bass/ Electric Bass							m				m				
	Trom bone	x	x					x								
	Tuba	x														
	Viola	m	x m m	x m m n	x	nm	x x m	x m	m			x m x				
	Violin	x x x m m m m x m m m m	x x x x m m m m m m m m	m m m m x	x x m m m m	m	m m m m	m m	x m m	m	m	m				
	Violin & Mandolin	m	m	m				m								

x = Questionnaires with one area marked.

m = Others who had more than one area marked, and m appears in all areas. One musician could have 3 or 4 different ms

n = Musician who played violin and viola.

In her book *Playing (less) Hurt—An Injury Prevention Guide for Musicians*, cellist Janet Horvath writes, “We’re all afraid of real or imagined stigmas associated with injury. Rationally or irrationally, we may wonder, does our pain signal that we have failed in some way? Will we be branded as bad musicians, flawed people?”² She then explains that the risk of repetitive strain injury (RSI) is quite high in orchestral musicians. To combat this, some organizations are advocating assistance to musicians who are playing with pain. The continued awareness of RSI due to factory work and computer work has helped open the discussion of pain in musicians, too.

Drawing on comparisons between instrumental musicians and competitive athletes, authors Barbara Paull and Christine Harrison outline many of the causes for musculoskeletal pain in musicians in their book *The Athletic Musician: A Guide to Playing Without Pain*. They point out the frequent lack of supportive resources available to instrumentalists, compared to athletes who usually have a coach, trainers, sports psychologists, and a slew of other professionals at their disposal.³

Due to the lack of information and assistance, musicians rarely understand the importance of self-care as they are practicing and performing numerous hours a day. They often do not seek care until the situation is advanced and they are unable to play their instruments. As massage therapists, we would like to see that change, and we seek musicians as clients before they are at that point in their pain. Our study we conducted, described below, is part of an effort to improve bodywork approaches for musicians.

“In any way is the present pain like the pain you felt years ago, before you started studying with your new teacher?” I asked T.M.

“Yes,” she replied, “this is very similar to what I felt years ago. That is what is frustrating,” she explained. “I thought I was done with this. My technique is good. Why should this be resurfacing now?”

OUR STUDY

The idea for a musician research study surfaced during a discussion at a Precision Neuromuscular Therapy (PNMT) seminar. One of the authors (Lieberman) had played clarinet since 1973 and was all too aware from personal experience that pain is frequently involved in playing a musical instrument. Unfortunately, many of the musicians who are playing in pain believe there is no other way to play their instruments. Our research study was initiated to determine whether, in musicians, there is a relationship between the area of soft-tissue pain/discomfort and the instrument played. This information could be useful in treating musicians as a starting point or guide of possible areas of soft-tissue injury.

The investigators, Deborah Lieberman, Jan Kiener, and J. McCrackan, had each of the sixty-eight study participants fill out a questionnaire about the areas in which they feel pain. (A chart summarizing the results is on page 86.) The musicians also stated whether or not the pain forced them to stop playing their instrument(s). There were several additional musicians who filled out the initial questionnaire, but who were not included in the study since they played their instruments for too few hours each week to determine if their discomfort was due to playing the instrument or to other life activities.

Seventeen different instruments were played by the musicians in the study. Looking at the data to compare and contrast the players of the various instruments, we drew some preliminary conclusions. The wind instrument players all had pain in their necks. The flute players also exhibited discomfort in their left shoulder and hand. Oboe players also showed pain in the right hand. Overall, the violinists most often reported pain in their necks and shoulders. There were some instances of pain in hands and forearms, too. One violin player noted pain in her left jaw when she played standing up. The viola players exhibited pain in almost all of the observed regions, with the exception of the flexors of the right forearm. The cellists had pain in their right neck and hand respectively. The guitarists complained of pain mostly on the left—in the neck, shoulder, hand, and forearm extensors—with one player also feeling pain in the right forearm extensors. The drummer had pain in both sides of the neck. The pianist had pain in both shoulders. One violinist who also played mandolin felt pain in both sides of the neck, as well as the right shoulder and right forearm extensors. Finally, bass players exhibited bilateral pain in the neck, along with left shoulder and left piriformis, but a string bass player who also played the electric bass had pain in the right forearm extensors and the left forearm flexors. The harp player reported pain in the right shoulder.



THE AUTHORS WOULD LIKE TO THANK: THE CINCINNATI CHAMBER ORCHESTRA, MISCHA SANTORA, MUSIC DIRECTOR; THE DAYTON PHILHARMONIC, NEAL GITTLEMAN, MUSIC DIRECTOR; THE DAYTON PHILHARMONIC, KAREN JOHNSOM, VIOLIST; THE FT. COLLINS SYMPHONY, WES KENNEY, MUSIC DIRECTOR.

Overall, players of twelve of the different instruments exhibited pain in the right side of the neck, whereas pain in the left side of the neck showed up in players of nine different instruments. The right extensors and left shoulder areas had the next highest number with players of six different instruments affected. There were players of five different instruments with pain in the right hand or right shoulder. Players of the same three instruments had discomfort in the left hand and left extensors, and a player of one other instrument also had pain in the left hand, but not extensors. Finally, players of three different instruments mentioned pain in the left forearm flexors, but only one violinist of the group (who also had pain in three other areas) had pain in her right forearm flexors.

Following questionnaire completion, investigators met with each study participant for a free fifteen minute massage, during which the therapist palpated the areas of pain to determine the specific hypertonic muscles. We attempted to find the most aggravated area, though some participants had more than one region in which they were experiencing pain. Finally, as a thank you to the musicians for their participation, we did a brief PNMT treatment for each musician to release the muscle or group of muscles that were most contracted and painful.

“Did you ever have this treated?” I asked.

“Well, I did have massage and physical therapy, but nothing so focused and targeted as what you just did a minute ago,” she replied. “Do you think this is a remnant of my painful past?”

“I do,” I said. “I think these little areas of injury were in the tissue, lying in a latent state. With the sudden high demand, your tissue reached what we call failure tolerance; it just hit a threshold where unresolved old injuries suddenly resurfaced. If we treat them thoroughly, not only will they stop hurting now, we may be able to clear them out for good.”

RESULTS AND CONTINUED STUDY

It is difficult to come to any statistical conclusions with the data from our study for several reasons. Our study was not blinded; subjects told the researchers which instrument(s) they played. Also, the researchers were not consistent in asking the participants to self-select one area that was the most painful to touch. Some of the participants listed several areas of discomfort, while others focused on the most uncomfortable area. At times, a participant said that he or she felt the pain most prominently in one area, but during the assessment, discovered the most painful area(s) were on the opposite side or in another region altogether. This could be a result of trigger point pain patterns in which a subject feels the pain sensation in one area of the body, though the hypertonic muscle causing the pain is elsewhere. For some of the instruments played, the small sample size also makes it difficult to draw conclusions.

Future observational or interventional studies could be completed to further the investigation of a possible link between players of specific instruments and the area of soft-tissue pain/discomfort or musculoskeletal injuries they sustain. We discovered that many musicians had tenderness or pain in the iliocostalis cervicis muscle. A point for consideration in a future study would be the determination of whether this muscle is frequently painful or tender in the general population or just in musicians. The results would then be evaluated to see if this particular muscle is more often hypertonic in players of specific instruments.

Ultimately, we hope the knowledge we gain will aid in the prevention and treatment of repetitive strain injuries and other related problems experienced by musicians. Other considerations for future research include Lederman's suggestion of longitudinal studies with instrumentalists from a young age. Additionally, we could research the possible benefits of PNMT treatments and regular self-care techniques, including stretching and postural awareness on musicians as they learn to play their instruments, as they play as amateurs or professionals, and as measured against a control group of musicians who do not receive the care. There are many possible future research options.

“Do you think I can play in the orchestral concert next Friday?”

“I think that is very possible,” I replied. “It will mean some changes in your practice routine. You will need to limit playing time to no more than forty-five minutes at a stretch. I want you to play difficult passages slowly at first. Use your inner hearing, play the passage in your mind before you play it on the viola. If you can clearly imagine the fingering, you will find your fingers will follow what your mind has already imagined. There is no need to practice incorrect playing over and over. Also, you are not to have large spikes in playing time. You may play, but then you must rest. Maximum efficiency is the goal. Okay?”

“Okay,” she replied, with a smile that revealed a sense of hope and resolve.

THE ROLE OF BODYWORK

Possible preventive programs would need to be designed to counteract problems caused by muscle overload. As precision neuromuscular therapists, our interest in these problems lies in understanding the causes of this soft-tissue pain and in being part of the self care regimen to help alleviate potentially career-destroying injuries. Besides receiving PNMT therapy, practicing good self-care habits can go a long way

Page 89
Full page ad
Freedom from Pain/ Erik Dalton

in diminishing a musician's playing-related musculoskeletal problems. Self-care becomes more motivating when we realize what a difference it can make.

The good news is that muscle pain is treatable. As doctors Janet G. Travell and David G. Simons say in *Myofascial Pain and Dysfunction: The Trigger Point Manual*, "When patients mistakenly believe that they must 'live with' trigger point pain because they think it is due to arthritis or a pinched nerve that is inoperable, they restrict activity in order to avoid pain. Such patients must learn that the pain comes from muscles, not from nerve damage, and not from permanent arthritic changes in the bones. Most important, they must know it is responsive to treatment. This gives the pain a new meaning. When these patients realize the twin facts that their pain is myofascial and is treatable, their lives take on new meaning and they are started on the road to recovery of function."⁴

How do muscles get into trouble to begin with? Situations that create overwork and injury in muscles are: small repeated actions (muscles thrive on variety); intrinsic domination (small muscles working when larger muscles are better suited to the task); static holding (muscles don't get rest or blood flow); and mechanical disadvantage (using energy for less than optimal positioning and posture).⁵ As the muscle is put into any of the above situations, it becomes constricted, develops trigger points (a focus of hyperirritability), and can constrict the blood vessels running through it and entrap nerves. Tendons of the muscles also can become irritated or inflamed from the repeated friction during use. Of course, playing an instrument involves many of these situations and the nature of the beast is overuse of muscles and tendons.

The Breat Rest Imagin Move (BRIM) self-care chart, which follows on page 91, provides a general list of goals for muscle rescue. Where there is constriction of blood vessels and loss of oxygen and waste removal, our goal is to increase circulation with movement. Where there is tissue starved for oxygen, our goal is to increase the supply with occasional deep breaths. Where there is muscle fatigue from repeated actions, our goal is finding even minutes of rest during activity. And finally, where there is mechanical disadvantage from awkward postures, our goal is to bring the body into alignment as much as possible with adaptive devices and body awareness. This list of goals is presented for therapists to share with their musician clients.

What's so encouraging is how forgiving muscles are, how small moments of rest, recovery, movement, and adjustments in position can be so restorative. These things, especially when combined with well-balanced, moderate exercise, and massage therapy, can create a healthy atmosphere for muscles, the delivery system for the musician's art.

Sitting in the concert hall that evening, I resolved to observe and analyze T.M. to detect any reason for her previous pain and discomfort. While a noble intention, as the music began and the emotional power of Brahms filled every millimeter of this immense hall, I could not seem to focus on the nuances of her mechanics when presented with the beauty that flew from her fingers. The music was moving, powerful, commanding. It would not let me try to disassemble the whole experience into fragments. I stopped watching T.M.'s graceful movements, content only to close my eyes and let the music move me to my very soul. Through discipline, science, and attention to detail, the

work with T.M. had resolved her pain. Now, as I sat transfixed by the beauty of the sounds, I was inspired by the elevation of science and discipline to mastery and artistry, a truly moving experience at the very essence of art.

6 Douglas Nelson has been a massage therapist since 1977. He owns a clinical practice in Champaign, Illinois, which employs sixteen therapists. In addition, he is the founder of Precision Neuromuscular Therapy and has taught hundreds of seminars across the United States and abroad. His company, NMT MidWest, Inc. has been conducting numerous research studies in soft-tissue therapy. He can be reached at doug@nmtmidwest.com or at 407 W. Windsor Road, Champaign, IL 61820.

6 Jan Kiener is an LMT and travels across the United States as an instructor for Precision Neuromuscular Seminars. She maintains a private massage practice in Cincinnati, Ohio, and has recently produced a *Relaxation Into Sleep CD* (www.meditatetosuccess.com), which has been featured on Delta Air Lines.

6 Deborah Lieberman, MA, CPNMT, owns *L'Équilibre Massage* (in both Boulder and Fort Collins, Colorado) and focuses on repetitive strain injuries. As a clarinetist, she directly understands the challenges that face musicians. Lieberman has written and published other articles on alternative and complementary healthcare. She teaches introductory massage courses at Colorado State University.

NOTES

1. Richard Lederman, "Neuromuscular Prolaps in Musicians," *Neurologist* 8, no. 3 (May 2002): 163-74.
2. Janet Horvath, *Playing (less) Hurt—An Injury Prevention Guide for Musicians* (Kearney, NE: Morris, 2003).
3. Barbara Paull and Christine Harrison, *The Athletic Musician: A Guide to Playing Without Pain* (Lanham, MD: The Scarecrow Press, 1997).
4. Janet G. Travell and David G. Simons, *Myofascial Pain and Dysfunction: The Trigger Point Manual* (Hagerstown, MD: Williams & Wilkins, 1983), 31.
5. Doug Nelson, *Precision Neuromuscular Therapy: Upper Extremity Manual* (2000), 47.