

PREVALENCE OF PAIN/INJURY AMONG WIND CONDUCTORS

Statement of Problem

Currently, there is no specific research focusing on conducting related injuries. Although stories of conductor injuries are common, there is no data that documents the nature or prevalence of such injuries. This raises a number of questions requiring rigorous examination. Are conductor injuries a common occurrence? Conductors may experience aches, pains, and injuries just as other musicians and athletes do, but is such discomfort related to the same musculoskeletal issues? Are such injuries due to or only coincident with the act of conducting? Each of these questions needs to be addressed to raise awareness of potential physical stress, to support conductors' wellness, and to promote healthy and long lasting conducting careers.

Despite the lack of data specifically on conductor related injuries, there is research that has been focused on musician and athlete health, wellness, and injuries. Researchers have shown that musicians develop musculoskeletal issues due to poor posture, overuse, and other pedagogical issues. How do conductors fit into this picture? Is physical discomfort reported by conductors due to musculoskeletal issues as well?

Among professional performing musicians, injuries to the upper arm, shoulder, and neck region have been found to be preventable and maintainable with physical therapy (Chan, Driscoll, and Ackermann, 2013). Such treatment may be an effective intervention for injuries among conductors, as well. Further research is needed to determine the degree to which injuries reported by conductors could be similar to those presented by other professional musicians. Unfortunately, musicians that sustain injuries find it difficult to find a healthcare provider that specializes in diagnosis, prevention, and recovery from a performance related injury (Guptill, 2011). Likewise, healthcare providers may lack a thorough understanding of the practical demands unique to professional music performance (Guptill, 2011). Providing accessible and knowledgeable healthcare support could assist in preventing and treating musician injuries (Chan, Driscoll, and Ackermann, 2013). Nevertheless, the degree to which conductors experience such injuries remains unclear. Such injuries could be caused by poor posture, tension, size of gesture, or even overuse, particularly in the case of ensemble educators who may engage in conducting for many hours on a daily basis (Wiklund, Brulin, & Sundelin, 2003).

The proposed research is intended to establish an initial baseline providing evidence for the frequency of reported injuries or chronic discomfort among band conductors and to document self-reported descriptions of these afflictions. Prevalence of conducting related injuries would substantiate the need for further research into potential causes and ways conductors might manage injury or pain through such interventions as physical therapy (Chan and Ackermann, 2014), wellness classes, or guided physical activities.

Purpose

The purpose of this study is to gather evidence of injury or persistent and chronic problems among conductors.

Research Questions

Among the participants in this study, how prevalent and how frequently are conducting related pain/injuries reported?

- What are the demographics of those who experience conducting related injuries?
- How are the participants describing the conducting related injuries?
- Is there a relationship between demographic variables and the type of conducting related injuries?

Method

Upon securing appropriate permissions, a link to the following online survey has been sent to all members of College Band Directors National Association. Participants include band directors throughout the United States and may represent both high school and college levels of teaching. The band directors contacted will also have permission to forward this survey to other directors in order to maximize the potential response pool. Through a series of multiple choice and free response questions, quantitative data will be collected regarding demographics, conducting variables, presence and location of pain/injury, and use of preventative measures. All responses will be anonymous. Participants will also have the option to indicate interest in participation in further research. Future research may include interviews, video analysis, and potential trial exercise regimen.

Survey Questions:

Demographics:

1. What level of band do you teach?
 - A. Elementary School- Grades Kindergarten - 5th
 - B. Middle School/Junior High School- Grades 6th- 8th
 - C. High School- Grades 9th - 12th
 - D. College/University/ Post Secondary
 - E. Community Band
 - F. Other. Please Explain: _____
2. If you answered OTHER to question one please explain:
3. Please enter your age.
4. Please enter the gender in which you identify with.
5. How many years have you taught band?
6. How many years have you taught a music ensemble?
7. How many years have you taught music?

8. Which best describes you:
- A. Right Handed
 - B. Left Handed
 - C. Ambidextrous

Conducting Variables:

9. How many hours a day do you conduct?
- A. Less than three hours per day
 - B. Between three and six hours a day.
 - C. More than six hours a day.
10. Do you use a baton while conducting?
- A. Yes
 - B. No
11. Please choose the best description of your teaching environment.
- A. Room with a tiered Floor
 - B. Room with a flat floor
 - C. Multiple rooms: both flat and tiered settings.
12. Do you sit or stand while conducting.
- A. I always stand.
 - B. I always sit.
 - C. I both, sit and stand while conducting.
13. Do you use a podium during rehearsals?
- A. Yes
 - B. No

Conducting Pain:

14. Have you experienced any pain **while** conducting your ensemble?
- A. Never
 - B. Rarely
 - C. Occasional
 - D. Often
15. Do you change aspects of your conducting when you experience pain?
- A. Yes
 - B. No
16. If you answered yes to changing aspects of your conducting when you experience pain please describe _____
17. Have you experienced any pain **after** conducting your ensemble?

- A. Never
- B. Rarely
- C. Occasional
- D. Often

18. If you experience pain, please describe. Be specific with location or body part.

Preventative Measures:

19. Do you stretch prior to conducting?

- A. Never
- B. Rarely
- C. Occasional
- D. Often

20. Do you have an exercise regimen that you follow (for example: gym workout, yoga, Alexander Technique)?

- a. Yes
- b. No

21. Have you ever consulted medical professional regarding your conducting related health issue?

- A. Yes
- B. No

22. Would you like to be contacted to assist with further research?

- A. Yes
- B. No

23. Please provide your email address if you would like to be contacted for further research:

Bibliography:

Ackermann, Bronwen, Driscoll, Tim, & Kenny, Dianna T. (2012). Musculoskeletal pain and injury in professional orchestral musicians in Australia. *Medical Problems of Performing Artists*, 27(4), 181-187.

Summary: Purpose: To survey 8 Australian symphonic and pit orchestras by using a questionnaire and physical examination. The survey focused on the on performance related issues of musculoskeletal disorders. Traditionally there is very little or no health education to assist musicians. Results: About 84% had experienced pain or injuries that interfered with their performances and rehearsals. 50% reported that they were having pain at the time of the survey. 28% had said they needed to take at least one day off because of their injury. The most frequent injuries were to the trunk or back, the right upper limb and neck, the left upper limb and neck, and just the neck alone. Injury location varied according to instrument they played. Implications: For the future, based on this study, preventative measures need to be considered for these injuries. For example, repertoire selection, scheduling, and conductor approaches to rehearsal could assist with preventing injury. Scheduled breaks and a well-structured rehearsal plan, will accommodate musicians to help avoid overuse injuries and exertion.

Brandfonbrener, Alice G. (2002). Joint laxity and arm pain in a large clinical sample of musicians. *Medical Problems of Performing Artists*, 17(3), 113-115.

Summary: “The author reviewed the records of 2,387 instrumentalists seen at the Medical Program for Performing Artists from 1985 to March 2002. Out of 1,300 patients with lower-arm, wrist, and hand pain, 57% were females and 43% were males” (p. 113). The author reviewed the records of musicians with joint laxity and arm pain. This was one of the largest studies to date focusing on arm pain. This study could make a significant difference in terms of prevention and pedagogy. Contributing factors to these injuries can be from overuse, technique, difficulty of repertoire, and practice intensity. Purpose: To study the occurrence and significance of joint laxity. The second focus was on the prevalence of lower-arm pain for musicians playing specific instruments and gender related issues. Results: A majority of the musicians experiencing pain specifically lower arm pain were females. Implications: This study is important to teaching both educators and musicians proper playing techniques for all instruments that can help prevent injuries.

Burkholder, K. R., & Brandfonbrener, A. G. (2004). Performance-related injuries among student musicians at a specialty clinic. *Medical Problems of Performing Artists*, 19(3), 116-122.

Summary: Purpose: To determine the frequency of performance-related injuries in patients 18 and younger who went to a performing arts clinic. The information collected was, the complaint of injury, the location of the injury, and the diagnosis. The most common injury was to the upper extremity. Other frequent problems were musculoskeletal issues and muscle tension. The common reason why students were experiencing these issues could have been from poor technique and lack of conditioning. Implications: This study could help teachers understand what students need to do to avoid injuries in the future. For example: physical activity or conditioning, relaxation methods, technique corrections, and guidance during instrument selection could help prevent future injuries.

Chan, C., & Ackermann, B. (2014). Evidence-informed physical therapy management of performance-related musculoskeletal disorders in musicians. *Frontiers in Psychology, 5*, 706.

Summary: Musicians at a professional level sometimes will experience performance-related musculoskeletal disorders (p. 1). Injuries could be a result of long practice hours due to the difficulty of the music. Injuries seem to be a result of repetitive use and the demands of practicing their instrument. Unlike athletes who train for the physical use of their body for their performance, musicians tend to practice less and do not train with different exercises to support the physical demands of their job. Physical therapists can assist in treating these issues but there is very little evidence to guide musicians on how to manage their own injuries. Once “Sound Practice” for orchestral musicians was put into place and physical therapy interventions were applied, the outcome for the musicians’ health was favorable. Formative and process evaluation was used to create a program alongside physical therapy professionals to create interventions to treat musicians. Chan and Ackermann stated, “The purpose of this review is to inform physical therapists of evidence-based management strategies for PRMDs in the musician population that can be readily implemented in the clinic environment and introduced into music institutions and organizations” (p.3). This article gave an in-depth look on the literature and research based on the following topics, private practice scheduling (workload vs. break time), rest and relative rest after injury, nutrition and hydration, general fitness (participation in cardiovascular activities and resistance training), early injury identification and management, specialized onsite injury and recovery services, cross-training exercise regimes, performance posture analysis, music performance biomechanics feedback, and recommendations for effective physical therapy management of performance-related musculoskeletal disorders in musicians. Implications: With proper conditioning and management injuries can be prevented and maintained.

Chan, C., Driscoll, T., & Ackermann, B. (2013). The usefulness of on-site physical therapy-led triage services for professional orchestral musicians- a national cohort study. *BMC Musculoskeletal Disorders, 14*(1), 98.

Summary: Purpose: To conduct a nationwide study in Australia based on a triage clinic that was provided to symphony orchestras. The study focused on the, demographics and characteristics of musicians and injuries, intervention uptake, intervention satisfaction and feedback, other factors that influenced attendance, and the strengths and limitations of the clinic (p. 1). Providing accessible healthcare would assist in preventing and treating musician injuries. Results: Musicians felt that the triage clinic was a useful resource. The most common injuries were located in the neck, shoulder, and upper spinal region. Implications: With professional advice from physical therapists, most of the musculoskeletal issues that musicians are experiencing can be managed and prevented. Additional research should be conducted based on a longer length of this program to see if it will decrease the number of PRMDs.

Clark, T., & Lisboa, T. (2013). Training for sustained performance: Moving toward long-term musician development. *Medical Problems of Performing Artists, 28*(3), 159-168.

Summary: Musicians are considered musical athletes. Researchers found that athletes have “long-term athlete development plans” that focused on sustaining a healthy performance career (p. 159). Currently there is no development plan for musicians even though they experience some of the same physical and mental demands that athletes do. Musicians are left to figure out techniques to cope with the demands of their profession on their own. Purpose: This paper focused on key concepts that could be implemented into a “long-term musician development plan” and highlighting the need for the program. It is important to have continued education and activity development to work towards healthy and long-term careers. The authors stated, “. . . . Models are based around stages of physical and mental development and windows of optimal trainability in children and youth” (p. 160). This article included all stages of musical development from the very early stages to the dedicated musicians. Implications: With “implementation Science” this could open up opportunities to develop a LTAD system for musicians. With the implementation of a musician LTAD, musicians can have a healthy and lengthier performance career.

Culf, N. (1998). *Musician's injuries: A guide to their understanding and prevention*. Guildford: Parapress.

Summary: Musicians have injuries to their hands and arms but there is very little information on how to cope or work through their injuries. This book can be a guide to musicians who are already experiencing pain or who would like to prevent pain and injury especially in regard to over-use. A majority of the book focused on the mechanics or how to use the muscles and better use the body so musicians can play with ease. The book is not a personal viewpoint, it is a collection of already well-established disciplines printed in one place. The only personal application is in regard to playing the guitar. Musicians should not have to suffer from pain and injury. They should be able to enjoy a life with music that is free from pain. The author feels that overuse is based on time spent performing/practicing, the amount of effort used to practice, and based on individual fitness (p. 19). Some healthy habits suggestions include, warm ups/stretching, taking breaks, actually resting during breaks, and a gradual increase to practice time after taking an extended break. The author includes topics such as, what is ‘overuse’ injury, causes of overuse injury, ways of preventing overuse injury, what instrumentalists are affected, and healing a chronic overuse injury. This book can be used as a point of reference on how others define overuse. It is recommended that musicians see a medical professional before implementing the disciplines in this book.

Fjellman-Wiklund, A., Brulin, C., & Sundelin, G. (2003). Physical and psychosocial work related risk factors associated with neck-shoulder discomfort in male and female music teachers. *Medical Problems of Performing Artists*, 18(1), 33.

Summary: Researchers have found that musicians experience musculoskeletal problems in the upper shoulder and neck region. These issues can be from poor posture and technique. Teachers should teach proper playing technique and posture in order to maintain a musician’s playing career. Long hours of playing can cause fatigue and musculoskeletal problems to the upper shoulder and neck region. Researchers that focused on musician injuries also discovered that music teachers find aspects of their jobs to be very demanding as well. Work related musculoskeletal injuries are the most common work-related injury (p.33). Playing position, poor posture, and overuse seem to be the reoccurring reasons for discomfort. Purpose: The authors stated, “The aim of this cross-sectional study was to investigate the relationship between individual, physical, and psychosocial aspects of the work environment and musculoskeletal discomfort in the neck-shoulder region, in male and female music teachers” (p. 33). Research for

this study was conducted using a survey/questionnaire. Results: 82% had reported experiencing discomfort in the last 12 months, with female teachers reporting more neck and upper back symptoms. Both physical and psychosocial reasons were contributing to teacher neck-shoulder discomfort as well (p.40). Implications: Results indicated the need to evaluate playing technique and posture to help prevent neck and shoulder pain. It is also important to assess the work environment to figure out a means of creating and organizing a healthy work load and atmosphere for teachers.

Guptill, C. A. (2011). The lived experience of professional musicians with playing-related injuries: A phenomenological inquiry. *Medical Problems of Performing Artists*, 26(2), 84.

Summary: Musicians that sustain injuries find it difficult to identify a healthcare provider that specializes in diagnosing, preventing, and recovering from an injury. It is also difficult to find a healthcare provider that understands that performance is their livelihood and that most cannot take time off because they do not get sick pay or leave. Purpose: 10 professional musicians were interviewed to gain an understanding of their experience living and playing with an injury. Results: The author showed how these musicians survived playing with injuries within the healthcare system and society. This research provides a look at what the injured musician experiences when looking for a healthcare provider focused on performing arts. Implications: Based on this research, adjustments need to be made to healthcare systems so a more meaningful experience can be provided to injured musicians.

Horvath, J. (2002). *Playing (less) hurt: An injury prevention guide for musicians*. Minneapolis, MN: J. Horvath.

Summary: This book contains a note of caution at the beginning stating, that this is a handbook and should not replace actual medical attention, the author is not a doctor, the stretches included are a guide, and consultation with a physician should take place before implementing the suggestions in the book (p. 7). The author explained why injuries occur, how to prevent them, and how to rehabilitate an injury. The book is divided into three major areas (1) Overview of injuries and how they arise, (2) medical explanation of injuries that most musicians have, and (3) ways to prevent injury (p. 13). The author says, "Body size and build can greatly impact us at the intersection of our musical and physical lives, conditioning, muscle imbalances, fatigue, and extrinsic contributing factors" (pp. 38 & 39). This book can be used as a point reference and to understand how this author defines overuse. The author's suggestions for practice were to, "Warm up, take breaks, vary your repertoire, increase your practice load gradually, and reduce your practice intensity prior to performance" (p. 228). Prior to implementing the suggestions in this book, readers should see a medical professional first.

Norris, R. (1993). *The musician's survival manual: A guide to preventing and treating injuries in instrumentalists*. Place of publication not identified]: International Conference of Symphony and Opera Musicians.

Summary: The author of this book is a doctor who has taken an interest in performing arts medicine. Norris stated, "This manual is not intended to be a scholastic work. It is a collection of monographs intended to assist musicians in understanding some of the medical problems that can occur and some of the principles of prevention" (p. v). This book repeats itself on purpose as to accommodate readers who may only read this book for a chapter or two. The author defined overuse issues as either being "acute or chronic" (p. 1). 12 factors that the author felt contributed

to overuse were, “1. Inadequate physical conditioning, 2. Sudden increase in the amount of playing time, 3. Errors in practice habits, 4. Errors of technique, 5. Change in instrument, 6. Inadequate rehabilitation of previous injuries, 7. Improper body mechanics and posture, 8. Stressful nonmusical activities, 9. Anatomical variations, 10. Gender, 11. Quality of instrument, and 12. Environmental factors” (pp. 1-6). At the end of each chapter there is a list of resources for additional readings based on the topics in that chapter. Overall, even though this book is written by a doctor, it is still important to see a medical professional to get advice based on personal injury. This book is a great resource to learn about different musician injuries from a medical professional.

Paull, B., & Harrison, Christine. (1997). *The athletic musician: A guide to playing without pain*. Lanham, Md.: Scarecrow Press.

Summary: The preface is written by a medical professional in support of the book. The medical professional says that this book is “like a maintenance manual” (p. xi). The book is broken up into three main parts, (1) The Problem, (2) Anatomy and Applied Anatomy for Musicians, and (3) The Musician as Athlete. The most helpful chapter in this book is the anatomy chapter. This chapter contains sketches and information that is easy to understand that other books or articles do not address. For example, the illustrations provide an internal picture of poor posture and playing position. Examples of proper back support are provided with pictures that demonstrate how to sit in a car and how to properly pick up heavy objects. The chapter, “Musician as Athletes” focuses on the “Ergonomic and the musician” or the environment that affects musicians. The final part of the book contains a description of a survival guide for getting through rehearsals and performances. Overall, this book is useful and brings a different perspective of musician injuries that other books and research do not address. Prior to using the advice in this book, it is suggested that all readers see a medical professional first.

Rietveld, A. (2013). Dancers’ and musicians’ injuries. *Clinical Rheumatology*, 32(4), 425-434.

Summary: This article is based on the author’s 30 years of experience in performing arts medicine and as an orthopedic surgeon. He dedicated most of his life to the prevention, diagnosis, and rehabilitation of both dancers and musicians (p. 425). The second half of the article gave an overview of musician injuries. The author suggested, that in order to give a proper diagnosis, it is best to assess the musician while playing. Some of the common issues that musicians experienced is to the neck and shoulder and caused by their posture. After neck/shoulder injuries, the wrist is the second most common injury for musicians. Musicians can benefit from accurate advice from a medical professional in regard to their injury. Rietveld stated, “The vast majority of musicians’ injuries are caused by an imbalance between load and load-bearing capacity, by too much (overuse), or in the wrong way (misuse), music making” (p. 431). The author discussed, the causes of injuries in musicians, general principles of treatment, and specific orthopedic musician’s medicine. Implications: It is important to be diagnosed by a medical professional so proper treatment can be prescribed.

Simons, H. (1986). Health and the choral conductor. *Medical Problems of Performing Artists*, 1(2).

Summary: This short article is based on a questionnaire that focused on the health concerns and issues of choral conductors. A survey was randomly sent to 250 conductors of ACDA, with 157 responses returned. The results in this article can be directly related to instrumental conductor as well. The following items were discussed, hearing and vision, bursitis, demographic

characteristics, musculoskeletal pain, and diet and life-style. Bursitis is considered the “conductor’s disease” as it is a direct correlation of incorrect posture or technique while standing (p. 56). Results: 64% of the participants felt that their musculoskeletal issues were not from conducting even though 27% said they were experiencing back pain to the point that it affected their conducting. 76% of the participants said they exercised regularly. A majority said that they see a chiropractor. Implications: The high response rate to the survey indicates that there is an interest in the topic area. Some participants suggested to continue research based on the findings of this study. Other participants suggested to do a study on mental stress as well as other conductor related health issues. Overall, the more information we collect in regard to conductor injuries, the greater the chances are to finding solutions or preventative measures for them. Finding solutions and preventative measures can help extend and create healthy conducting careers.

Stanhope, J., Grimmer, K., & Milanese, S. (2014). University woodwind students' experiences with playing-related injuries and their management: A pilot study. *Journal of Pain Research*, 7, 133-148.

Summary: Purpose: To determine performance-related issues of classical woodwind musicians enrolled at a single university in vocational education training or undergraduate courses. A survey was sent to participants asking questions in regard to demographics, injury, impact of injury, and management strategies (p. 133). This was the first study used to examine the consequences of musician injuries. Results: 62% of the students were experiencing performance-related injuries in the wrist/finger/hand, lower back, and neck. As a result of their injuries, most students could not attend performances and had to reduce their practice time to about half. A variety of management strategies were used to cope with their injuries but rest seemed to be the most successful. Results: The results of this survey were only from participants at one university. A nationwide survey could be sent to colleges and universities to see if other students are experiencing the same issues as the participants in this study. 62% of the musicians experienced performance-related issues, with 31% of the students experiencing them for at least 3 months. The length of time in which a student suffers from an injury could have a negative effect on their education and performance opportunities. Another significant result showed that most of the injuries were on the right side of the body, which could be a direct relation that most woodwind instruments are supported by the right thumb. Implications: Further research should be conducted to find the reasons why students chose certain types of management for their injuries over others.