

Examining music therapists' singing and playing-related injuries: A collective case study

By Brianna Larsen, MT-BC

A Thesis Submitted in Partial  
Fulfillment of the Requirement  
for the Master of Arts Degree

Master of Arts in Music Therapy Program  
in the Departments of Graduate Studies  
and Music and Theatre  
Saint Mary-of-the-Woods College  
Saint Mary-of-the-Woods, Indiana

August, 2020

## ABSTRACT

Many music therapists experience a musculoskeletal injury and/or vocal injury over the course of their careers. There is a lot of research conducted in this area with orchestral musicians and professional singers but minimal research done with music therapists or music therapy students. The purpose of this collective case study was to explore the occurrence of musculoskeletal and/or vocal injuries that music therapists sustain in the work place and what they did to ameliorate their injuries. Five female music therapists agreed to participate via video chat, providing a narrative of their physical and/or vocal injuries. All five participants experienced either a vocal injury, a musculoskeletal injury, or both. Two therapists required to take time off due to their injuries. The researcher concluded that music therapists are experiencing physical and vocal issues and seeking medical treatment. In addition, treatment was helpful in healing their injuries. More research is needed in order to examine the full scope of injuries and what can be done to prevent them.

## **ACKNOWLEDGEMENTS**

I wish to express my sincere appreciation to my supervisor, Dr. Tracy Richardson. She has helped support and guide me through this thesis process during the COVID-19 pandemic. And a thank you to professor Annette Whitehead-Pleaux. Annette, I frequently kept your positive mantras in my head while researching and writing. A heartfelt thank you goes to Sharon Boyle, MM, MT-BC and Dr. Christopher Josko for their fantastic support in reviewing my thesis. I would like to express my gratitude to my family for being a consistent positive force. Lastly, a special thanks to the participants who participated in the study as well as my work-colleagues for their discussions of their personal journeys as music therapists.

## TABLE OF CONTENTS

ABSTRACT .....	ii
ACKNOWLEDGMENTS .....	iii
 CHAPTERS	
I.    INTRODUCTION .....	1
Purpose Statement .....	2
Definitions .....	3
II.   REVIEW OF THE LITERATURE .....	4
Musculoskeletal Injuries .....	4
Vocal Injuries .....	14
Music Therapy .....	17
Summary .....	22
III.  METHODS .....	24
Design .....	24
Participants .....	24
Materials .....	25
Procedure .....	25
Ethical considerations .....	26
IV.   RESULTS .....	27
V.   DISCUSSION.....	37
REFERENCES .....	42
APPENDICES .....	50
A.  Letter of Consent .....	50
B.  Questions .....	53

## LIST OF TABLES AND FIGURES

Table 1: Participant Vocal Injuries.....	38
--	----

## Introduction

Very few researchers have examined the musculoskeletal and vocal issues related to music therapists. Music therapists work in unique environments that carry special demands of their bodies. Only three studies exist where researchers explored the potential for vocal injuries that exist for music therapists (Boyle & Engen, 2008; Gooding, 2018; Walton & Isetti, 2018). One survey attempted to identify the prevalence of musculoskeletal injury among music therapists but the sample size is quite small (Yovich, 1992). There is also little curriculum within the music therapy profession that addresses the risks music therapists encounter in the field (American Music Therapy Association [AMTA], 2019c). Most musicians around the world experience pain or an injury at some point in their careers. Results from surveys suggest that up to 93% of instrumental musicians experience either an acute or chronic musculoskeletal injury of some sort. In addition, approximately 40% of vocalists experience an injury (Bird, 2013; Chan & Ackermann, 2014; Kok, Huisstede, Voorn, Schoones, & Nelissen, 2016; Fry, 1988; Vilkman, 2000; Zaza, 1998). Music therapists are no exception. Music therapists (MT-BCs) play guitar, piano, and sing for several hours each day (AMTA, 2018). Many MT-BCs also experience stress, which increases one's risk for injury (Kaur & Singh, 2012; Schoeb & Zosso, 2012; Zaza, 1998).

Injuries among musicians, particularly those of professional orchestras, have been greatly studied around the world (Bird, 2013; Cruder et al, 2017; Fisher, 2003; Fry, 1998; Kaur & Singh, 2016; Kok, Huisstede, Voorn, Schoones & Nelissen, 2016; Liu & Hayden, 2002; Malyuk, 2018; Maric, Stojic, Maric, Susnjevic, Radosevic & Knezi, 2019; Matei, Borad, Goldbart & Ginsborg, 2018; Paarup, Baelum, Holm, Manniche, & Wedderkopp, 2011; Robinson, 2017; Steinmetz, Scheffer, Esmer, & Deslank, 2015; Wilson, Doherty & McKeown, 2014; Zaza, 1998; Zaza &

Farewell, 1997). According to these researchers, string players primarily experience pain or injuries in their upper extremities and lower backs. Up to 93% of these musicians experience an injury at one point throughout their career, some of which can lead a musician to terminate their career (Bird, 2013; Chan & Ackermann, 2014; Kok, Huisstede, Voorn, Schoones, & Nelissen, 2016; Fry, 1988; Zaza, 1998). Guitarists and pianists also suffer unique injuries due to playing their instrument (Bosi, 2018; Savvidou, Willis, Li, & Skubic, 2017). Some researchers have examined vocal issues, chiefly among occupations that frequently use their voice such as singers and school teachers (Behlau, Zambon & Madazio, 2014; Franco & Andrus, 2007; Morwaska & Niedbudek-Bogusz, 2017; Rocha & Souza, 2013; Rocha, Moraes, & Belhau, 2012; Roy, Merrill, Gray, & Smith, 2005; Pestana, Vaz-Freitas, & Manso, 2017; Phyland, 2014). In one survey, up to 40% of respondents indicate experiencing vocal disorders (Pestana, Vaz-Freitas, & Manso, 2017).

Although there is a significant amount of research examining vocal and musculoskeletal injuries among musicians in general, there is little research on music therapists who encounter these difficulties (Behlau, Zambon & Madazio, 2014; Bird, 2013; Boyle & Engen, 2008; Chan & Ackermann, 2014; Franco & Andrus, 2007; Fry, 1988; Gooding, 2018; Kok, Huisstede, Voorn, Schoones, & Nelissen, 2016; Morwaska & Niedbudek-Bogusz, 2017; Pestana, Vaz-Freitas, & Manso, 2017; Phyland, 2014; Rocha & Souza, 2013; Rocha, Moraes, & Belhau, 2012; Roy, Merrill, Gray, & Smith, 2005; Waldon & Isetti, 2018; Yovich, 1992; Zaza, 1998). The purpose of this collective case study is to explore the occurrence of musculoskeletal and/or vocal injuries that music therapists sustain in the workforce and what they did to ameliorate their injuries. By examining the particular injuries, diagnoses, and experiences that have occurred for music

therapists, the aim of this study is to more deeply explore the myriad of physical injuries that music therapists may acquire in their professional work.

### **Definitions**

It is necessary to have some key terms to illustrate the literature review. Terms include musculoskeletal injury, over-use injury, voice disorder, and music therapist. A *musculoskeletal injury* is any injury relating to the muscle, bone, tendons, and ligaments in the body (CCOHS, 2019). *Over-use injuries* are “excessive or unaccustomed use, are characterized by pain and loss of function in muscle units, and are manifested by weakness, loss of control and loss of agility” (Fry, 1988, p. 572; Liu & Hayden, 2002). A *voice disorder* is described as when deficits occur to an “individual’s voice that does not meet the criteria and demands set by the profession” (Vilkman, 2000, 121-122). Lastly, a *music therapist*, or MT-BC, is a board-certified professional who uses music to assess and enhance cognitive, social, emotional, physical, and well-being of individuals (AMTA, 2019b)

### **Research Question**

What physical or vocal issues have occurred during a music therapist’s career?

### **Purpose**

The purpose of this qualitative collective case study is to explore the occurrence of musculoskeletal and/or vocal injuries that music therapists sustain in the workforce and what they did to ameliorate their issues.

## **Review of Literature**

Most musicians around the world experience pain or an injury at some point in their career. Researchers suggest that up to 93% of musicians experience either an acute or chronic musculoskeletal injury during their career while 40% of vocalists experience issues in their vocal folds (Bird, 2013; Chan & Ackermann, 2014; Kok, Huisstede, Voorn, Schoones, & Nelissen, 2016; Fry, 1988; Vilkmann, 2000; Zaza, 1998). Approximately 12% of musicians have experienced an injury that have caused them to end their careers (Kaur & Singh, 2016; Parry, 2003). Musicians may experience physical and psychological stressors that increase their risk and prevalence of pain and injury (Kaur & Singh, 2012; Schoeb & Zosso, 2012; Zaza, 1998). Most literature has explored the prevalence, risk factors, and prevention strategies of physical and vocal injuries among professional musicians, but very few studies have looked specifically at the field of music therapy (Bird, 2013; Cruder et al, 2018; Fry, 1998; Jacukowicz, 2015; Kok, Huisstede, Voorn, Schoones & Nelissen, 2015; Liu & Hayden, 2002; Paarup, Baelum, Holm, Manniche, & Wedderkopp, 2011; Paull & Harrison, 1997; Schoeb & Zossa, 2012; Steinmetz, Scheffer, & Delank, 2014; Maric, Stojic, Maric, Susnjevic, Radosevic & Knezi, 2019; Zaza, 1998). Some literature on vocal issues for music therapists exists but were only exploratory studies (Boyle & Engen, 2008; Gooding, 2018; Waldon & Isetti, 2018). Only two articles investigated musculoskeletal injuries among music therapists (Gooding, 2018; Yovich, 1992).

### **Musculoskeletal Injuries**

Many people experience some sort of musculoskeletal condition at some point in their life. In the general American workforce, 50% of the population was diagnosed with a musculoskeletal condition (Lezin & Watkins-Castillo, 2016). Musicians experience musculoskeletal issues at higher rates than the general population (Kok et al, 2016; Lezin &

Watkins-Castillo, 2016). Survey suggest that up to 93% of musicians experience musculoskeletal injuries (Bird, 2013; Chan & Ackermann, 2014; Kok, Huisstede, Voorn, Schoones, & Nelissen, 2016; Fry, 1988; Zaza, 1998).

*Musculoskeletal disorders* is a umbrella term that includes any injury relating to the muscle, bone, tendons, and ligaments in the body (Canadian Centre for Occupational Health and Safety [CCOHS], 2019; Lezin & Watkins-Castillo, 2016). Musculoskeletal injuries include sprains, arthritis, scoliosis, tendinitis, and injuries to the back, and neck (Kaur & Singh, 2016; Lezin & Watkins-Castillo, 2016). These injuries can directly impact the function of nerves, muscles, and ligaments. Usually musculoskeletal disorders begin with feelings of achiness that will go away with rest. Injuries can be exacerbated with continued use and lack of prevention (CCOHS, 2019).

Musicians commonly experience *overuse syndrome*, which is another name for musculoskeletal disorders (Bird, 2013; Fry, 1988; Iranzo, Perez-Soriano, Camacho, Belloch, & Cortell-Tormo, 2009; Kaur & Singh, 2016; Liu & Hayden, 2012; Maric et al, 2019; Schoeb & Zosso, 2012; Zaza, 1998). Overuse syndrome is “caused by excessive or unaccustomed use, are characterized by pain and loss of function in muscle unites, and are manifested by weakness, loss of control and loss of agility” (Fry, 1988 p. 572; Liu & Hayden, 2002, p. 727). This older definition of overuse syndrome was used because more recent articles did not define the syndrome. Overuse syndrome is not a specific diagnosis. Rather, it is a term used to identify pain that is caused due to overuse within an occupational setting (Palmer & Cooper, 2006; Stojic, Maric, Susnjevic, Radosevic, & Knezi, 2019). Overuse syndrome is caused by the repeated movements that occur for an extended period of time each day (Schoeb & Zossa, 2012). Musicians may also experience neuromuscular injuries (Lederman, 2003). *Neuromuscular*

*disorders* occur when nerves have disrupted communication between muscles, resulting in symptoms such as spasms, twitching, and muscle atrophy (Medline Plus, 2020). In one study, 20% of musicians experienced peripheral nerve problems while 8% focal dystonia. Peripheral nerve problems include ulnar neuropathy and carpal tunnel syndrome. Most participants in that study had general musculoskeletal injuries (64%). In that study, 60% of respondents were women. (Lederman, 2003).

Due to such incidence rates, a specific musculoskeletal injury has been coined for musicians. This particular injury is referred to as *playing-related musculoskeletal disorders* [PRMDs]. PRMDs are described as numbness, pain, tingling and weakness that interferes with a musician's abilities to play their instrument (Zaza, 1998). PRMDs include physical, emotional, and social aspects of the injury that often impact the musician's daily activities of living (Shoeb & Zosso, 2012; Zaza & Farewell, 1997). These injuries are caused by the repeated movements that occur for an extended period of time each day (Schoeb & Zossa, 2012).

A review was conducted to examine overuse injuries by instrument sections (Liu & Hayde, 2002). Dermatologic, neurologic, and musculoskeletal issues were noted for string, wind, brass and other instruments. Other instruments included drums, piano, and guitar. The review noted that keyboard players experience issues in their wrists, fingers, and lumbricals. Guitarists experience focal dystonia, a condition where involuntary flexion occurs, was reported in the fingers (Liu & Hayde, 2002).

Kaur and Sing (2016) conducted a literature review of research on musculoskeletal injuries in upper extremities in professional musicians. The review suggested the high rate of injuries among musicians is due to high physical and psychosocial demands required by the profession. Pianists, guitarists, and violinist hands were most frequently affected. The review

indicated that poor posture, long hours of practice, excessive force, and static loading of instruments leads to an increased risk of musculoskeletal injuries (Kaur & Sing, 2016).

Schoeb and Zosso (2012) used a descriptive qualitative study of eleven participants to examine a musician's personal connection of overall wellness and its impact on their music (Schoeb & Zosso, 2012). Five musicians were healthy with no reported problems while the remaining six experienced physical and emotional issues such as anxiety and depression. Interviews were conducted in order to observe the potential relationship. A thematic analysis was performed on the data. The concluding data resulted in three primary themes: music as art, the health of the musicians, and learning through experience. The authors suggested musicians can improve their overall physical and mental health by practicing mindfulness (Schoeb & Zosso, 2012).

Researchers conducted a study in order to survey the presence of overuse injuries in a professional orchestra (Maric, Stojic, Maric, Susnjevic, Radosevic, & Knezi, 2019). They recruited fifty members of the orchestra in Serbia. Three instrument groups were studied: strings, winds, and keyboard. Participants were given a questionnaire inquiring about musculoskeletal issues in six areas of their body. Ninety percent of the musicians reported having acute or chronic pain and a majority of the musicians reported playing through pain (86%). Eighty-six percent of the musicians reported some sort of musculoskeletal condition, whether chronic or acute. Injuries occurred most in the upper back, neck, and shoulders. Keyboard players had similar response rates. Pain localized in the back was the most common, as over 87% of reported musicians experienced pain there. Most respondents said that the pain impacted their musical performance in some way. The musicians felt seeking medical treatment, medication, and relaxation techniques were most helpful in reducing pain related to musculoskeletal injuries. The

authors concluded that taking breaks is the most effective way to prevent injury. The authors suggest that musicians should not play longer than 45-60 minutes without a break. Resting periods of 25-30 minutes are recommended (Maric, Stojic, Maric, Susnjevic, Radosevic & Knezi, 2019).

Additional studies have been conducted in order to investigate pain in musculoskeletal disorders among musicians. Cruder et al (2017) utilized digital pain drawings to assess the location and severity of musicians' pain due to overuse. The authors sought 158 musicians to complete the QuickDASH, a questionnaire designed to assess musculoskeletal deficits and daily functioning. The drawing templates provided male and female body outlines. Specific software was utilized to analyze the drawings. The results of the study agreed with the results of previous studies in that ranges of musculoskeletal injuries range from 62-93%. The neck, shoulders, and lower back were the areas that experienced the most pain. Females reported higher occurrences of pain over men, especially in the neck, shoulders, and lower back. The study indicated that risk factors for musculoskeletal pain include an individual's physical characteristics (age, sex, body size, or physical fitness) and instrumental factors (size of instrument, hours played, posture, and the music itself; Bird, 2013). Vocalists had the highest occurrence of symptoms. Strengthening exercises to areas that experienced pain were recommended to decrease muscular stress and injury (Cruder et al., 2017). Other researchers specifically looked at gender as it relates to musculoskeletal injuries (Paarup, Baelum, Holm, Manniche, & Wedderkopp, 2011). Ninety-seven percent of women experienced some sort of PRMD compared to 83% of men. Many of those women experienced the injury for over 30 days (63% for women compared to 49% for men). PRMD issues also led to impaired sleep (49%) and impaired regular home activities (55%) (Paarup, Baelum, Holm, Manniche, & Wedderkopp, 2011). A systematic review analyzed

musculoskeletal injuries in professional musicians and music students. The researchers discussed the need for more longitudinal studies as well as research into different subgroups in order to find areas that are the most at-risk (Stanhope, Tooher, Pisaniello, & Weinstein, 2019).

Researchers have also examined PRMDs in their severity, recurrence, and risk factors among professional musicians (Steinmetz, Scheffer, Delank, & Peroz, 2014). This larger study of 480 participants answered questionnaires regarding their PRMD pain. These musicians played approximately four hours per day and 29 hours per week. The results of the study demonstrated that only 9-16% of musicians had *not* experienced pain related to PRMDs. Over 50% of musicians reported pain in over five different areas of their body. Women had more acute and chronic pain than men in each of the body areas. Pain was reported most frequently in the neck (72%), shoulder (55%), wrists (55%) and lower back (50%; Steinmetz, Scheffer, Delank, & Peroz (2014). Zaza (1998) conducted a systematic review of PRMDs occurring from 1980-1996. PRMDs occurrence ranged from 39-87% in adults and 34-62% in students.

Considering a significant percentage of musicians have experienced some sort of musculoskeletal injury, it is imperative to also examine risk factors, prevention, and treatment options. First, the awareness of risk factors is important to know whether or not a musician is more likely to experience pain due to a PRMD. There are many different intrinsic and extrinsic factors that can lead to increased risk for PRMD. Intrinsic factors include gender, a musician's anatomy, posture, and psychological health (Bird, 1998). Females are more likely to experience injury than males (Berque, 1998; Paarup, Baelum, Holm, Manniche, & Wedderkopp, 2011). This increased risk for a PRMD is potentially due to the lower muscle mass that females generally have compared to males (Berque, 1998). A person's body size, hand size, or joint hyper- or hypomobility impacts how they engage with an instrument (Bird, 2013). Pre-existing conditions

can pose an increased risk for musicians to develop an injury (Zuskin, Schachter, Kolcic, Polasek, Mustajbegovi, & Arumugam, 2005).

Jacukowicz (2015) suggested there is a strong connection between psychosocial stressors and musculoskeletal pain experienced by musicians. Psychological issues such as stress and depression are common among musicians (Chan & Ackerman, 2013; Wilson, Doherty, & McKeown, 2013). Stress and depression can increase risk for injury as the body typically has increased muscle tension which results in increased pain and injury over time (NASM & PAMA, 2020; Schoeb & Zosso, 2012). Most people don't seek help due to lack of time, financial issues or lack of health coverage which can lead to increased stress (Gooding, 2018; Schoeb & Zossa, 2012). Psychosocial stressors are an area that is under-researched and needs more attention to further understand its complex relationship with musculoskeletal pain in musicians (Jacukowicz, 2016). Researchers found that high levels of anxiety lead to higher rates of focal dystonia, a serious condition that can end a musician's career (Jabusch & Altenmuller, 2004).

Extrinsic factors that lead to injury include the length of time spent playing the instrument, the instrument a musician plays, a musician's posture, the physical environment, and other non-musical activities (Kaur & Singh, 2016; NASM & PAMA, 2020; Robinson, 2017; Zuskin, Schachter, Kolcic, Polasek, Mustajbegovi, & Arumugam, 2005). One of the more important factors believed to pose risk for injury is total time spent playing (NASM & PAMA, 2020). The risk for injury increases dramatically after 45 minutes of continuous playing (Robinson, 2017). A sudden increase in playing time can increase load on muscles (Chan & Ackerman, 2013).

The instrument itself can pose increased risk for a musician. String players, pianists, and guitarists have the highest incidence of playing-related injuries (Bosi, 2018; Kaur & Singh, 2016;

Savvidou, Kok, Huisstede, Voorn, Schoones, & Nelissen, 2016; Savvidou, Willis, Li, & Skubic, 2017). Many guitar players have pain due to poor posture (Bosi, 2018). The pressure from the guitar strap itself can also lead to shoulder impairment (Lowe, 2012). Larger and heavier instruments require extended movements of the fingers, hands, and arms, resulting in increased demands on ligaments, tendons, and muscles in their body. Poor posture and alignment can lead to increased risk for injury, especially if not corrected (Bosi, 2018; Kaur & Singh, 2016). Poor posture creates additional stress on different parts of the body or can lead to overcompensation in other areas of the body (Bosi, 2018).

The environment in which a person performs can also be a risk factor. Sometimes musicians are placed in large rooms that require them to play louder or are expected to sit on chairs that do not support proper ergonomics. Non-musical factors such as using a computer, tablet, or physically demanding activities can place increased stress on the musician's body (Fisher, 2003;). Computers or tables require high demands of the fine motor muscles in the fingers, forearms, and neck. Poor posture when engaging in technological activities such as typing can also lead to increased risk of pain. (Fisher, 2003). Some particular types of physical activity such as doing pushups or playing tennis is demanding on many of the same muscles and tendons required for instrument play. Engagement in all of these activities regularly puts increased stress on muscles and increases the risk for injury (NASM & PAMA, 2020).

Prevention of musculoskeletal injuries is key to a safe and long career in music (Bosi, 2018). There are many treatment and prevention options available. Several musicians have reported using medications such as muscle relaxants and anti-inflammatory drugs to decrease their pain (Fry, 1988). Proper nutrition, hydration, and avoiding caffeine can help (Fisher, 2003). Cardiovascular and strength training programs are recommended. Exercises such as walking,

cycling, swimming, and strengthening exercises for the back, shoulders, and legs are suggested (Chan & Ackerman, 2013). Many musicians have also found it helpful to manage the psychological aspect of their injury. Engaging in mindfulness, relaxation, meditation, and yoga can decrease tension (Fisher, 2003; Liu & Hayden, 2012; Wilson, Doherty, & McKeown, 2013).

Many studies that examine musculoskeletal injuries in musicians also provide suggestions for reducing the frequency and occurrence of issues. Several studies recommended getting adequate rest and taking breaks (Chan & Ackerman, 2013; Fisher, 2003). A minimum of five minutes of rest is recommended after 45-60 minutes of play (Chan & Ackerman, 2013; Maric et al., 2003). Ideally, 10 to 15 minutes of rest is recommended in order to allow muscles to replenish their energy and prevent physical stress (Westgaard and Winkel, 1996; Silverstein and Clark, 2004; Kennedy et al., 2010). This suggestion is contradictory to previously discussed research of Maric, Stojic, Maric, Susnjevic, Radosevic & Knezi (2019). The authors suggested resting periods of 25-30 minutes instead of 5-15. Other researchers suggest if a musician does experience an injury, it is recommended to completely rest the area from three to seven days to avoid inflammation (Chan & Ackerman, 2013; Kannus et al., 2003; Jarvien et al., 2007). After the rest period, the musician should then slowly reintroduce playing time (Chan & Ackerman, 2013).

In another study, researchers examined a singular health risk for hand drummers. That particular study (Caro, Sutherland, Mitchell, & Glazener, 1975) examined the how three young black men developed traumatic hemoglobinuria after playing congas for two and a half hours. Traumatic hemoglobinuria is described as extensive hand trauma followed by rusty or dark-colored urine (Vasudev, Bresnahan, Cohen, Hari, Hariharan, & Vasudev, 2011). Other risks and injuries associated with hand drumming is unknown.

Many treatment options also exist for musicians with musculoskeletal injuries. Seeking specialists such as massage therapists, physical therapists, physiotherapists, and primary care physicians have been helpful (Chan, Driscoll & Ackermann, 2013; Chan & Ackermann, 2014; Fisher, 2003; Fry, 1988; Lowe, 2012; Molsberger & Molsberger, 2011). Many clinics specifically providing the unique treatment for musicians now exist (Chan & Ackermann, 2013). Engaging in ergonomic awareness and training such as the Alexander and Fedenkrais method can increase a musician's body awareness (Fry, 1998). Musicians can also alter their instrument to fit their body instead of the musician adjusting to fit the instrument (Chan & Ackermann, 2013; Paull & Harrison, 1997). Instrument modifications exist such as using a smaller, lighter instrument or using smaller gaged strings (Bosi, 2018; Chan & Ackermann, 2013; Paul & Harrison, 1997).

A musician's posture can have significant positive impacts on a musician's body (Bosi, 2017, 2018). A mixture of sitting, standing, and walking is beneficial as remaining sitting for a long period of time increases stress of the lower back discs by 50% (Paul & Harrison, 1997). Poor posture can lead to increased pressure on spinal discs which leads to pain and premature degeneration. Achieving a neutral position is recommended. Neutral position is achieved when the musician follows the natural spine curvature. This can be achieved by sitting with both feet flat on the floor and a sloped down chair and using proper wrist ergonomics while typing. The knees should be slightly lower than the hips. If the chair does not slope down, a cushion or towel can help. Musicians are able to engage in movement within neutral position as to allow for optimum blood flow (Bosi, 2018). Posture should also be considered when standing. Musicians should stand tall with relaxed shoulders, lifted sternum, and weight equally distributed towards the front of the feet (Paul & Harrison, 1997). Awareness of posture when at the computer can

help in prevention as well. Maintaining feet flat on the floor, reducing mouse time, utilizing lower back support, and keeping one's thighs horizontal to the floor can provide the body necessary support (Fisher, 2003).

Adequate warming up and stretching is an important aspect of injury prevention (Bosi, 2018; Chan & Ackermann, 2013; Paul & Harrison, 1997). Suggestions for warmups include lightly moving involved muscles to increase blood flow. Such activities can include going for a walk, going up stairs, or dancing. If time is an issue, motioning like you are putting lotion on your hands. During stretching, musicians should focus on the neck, shoulder, forearms, hands, fingers, wrists, and back areas. Cool down stretches are even more important than warm up stretches and should always be performed. Cool down stretches can be the same as warm up stretches (Paul & Harrison, 1997).

### **Vocal Injuries**

Vocal disorders are another injury that musicians may experience (National Association of Schools of Music [NASM], 2020; Performing Arts Medicine Association [PAMA], 2020). The voice is considered a part of the musculoskeletal system (Gooding, 2018). The larynx, comprised of cartilage and muscle, creates sound by tightening and loosening the vocal folds. When air passes through the vocal folds, they vibrate by touching each other at very high speeds. Higher rates of vibration create higher sounds while lower rates of vibration create lower sounds. Males typically have lower rates of vibration while females have higher rates (ASHA, 2020). Articulation such as vowel sounds is achieved through the use of nearby muscles including the tongue, lips, and cheeks (NASM & PAMA, 2020).

Vocalists are considered athletes because the act of singing places increased demands on the voice beyond normal speaking (Pestana, Vas-Freitas, & Manso, 2017). Singers use their

voice for extended periods of time, which requires a significant amount of endurance on their voice and respiratory tract. Their voice also needs to remain healthy in order to meet the myriad demands of different music genres. Vocal issues and disorders are common among singers.

Vocal disorders are defined vocal deficits that occur when an “individual’s voice does not meet the criteria and demands set by the profession” (Vilkman, 2000, pp. 121-122).

Some vocal issues occur when singers frequently use their voice for extended periods of time (Phyland, 2014). Voice issues are usually categorized as either organic or functional. Organic disorders are due to physiological abnormalities or changes that occur in the physicality in the vocal structures. Functional disorders occur due to poor use or care of the vocal structures (ASHA, 2020). Symptoms of vocal issues include decreased vocal quality, raspy vocal quality, shrunken range size, pain, and the frequent urge to clear one’s throat. Vocal disorders include vocal fatigue, muscle tension dysphonia, aphonia, cysts, laryngopharyngeal reflux, or vocal fold lesions (Gooding, 2018; Franco & Andrus, 2007). Vocal disorder rates among singers is significantly higher than the general population (3-9%; ASHA, 2020).

A growing amount of research has been conducted regarding occupational voice issues. Researchers of a systematic review found that 46% of singers reported experiencing dysphonia, while nonclassical style singers had a slightly higher prevalence rate of 46.9% (Pestana, Vaz-Freitas, & Manso, 2017). Pain is a common symptom. In a study of over 1,000 participants, 84% of singers reported experiencing pain in their throat and neck (Rocha, Moraes, & Behlau, 2012).

Intrinsic and extrinsic factors can increase the risk of vocal disorders in singers. Intrinsic factors such as age and gender can increase one’s risk for vocal issues. Females have a higher risk due to their vocal folds vibrating at higher rates, resulting in more times that they are touching together throughout the day (ASHA, n.d.; NASM & PAMA, 2020). Female vocal folds

typically vibrate 50% more than their male counterparts (Vilkman, 2000). Extrinsic factors include length of time spent singing, presence of background noise, size of room, lack of adequate amplification equipment, poor posture, poor air quality, allergies, and stress (Behlau, Zambon, & Madazio, 2014; NASM & PAMA, 2020; Vilkman, 2000). Poor technique, over compensation, poor breath control, respiratory diseases, frequent talking, and poor lifestyle can also attribute to increased vocal issues (Vilkman, 2000). Vocalists can be exposed to the Lombardo Effect. When the Lombardo Effect occurs, singers feel it necessary to sing louder, increasing the force on their vocal mechanisms, in loud environments (Bottalico, Passione, Graetzer, & Hunter, 2017).

Psychosocial issues such as stress, anxiety, and depression can also play a part in one's vocal health. Some vocalists may have psychosocial issues that lead to increased vocal issues, while others may have vocal issues that lead to increased psychosocial issues (Misono, Peterson, Meredith, Banks, Bandyopadhyay, Yueh, & Frazier, 2014). Stress, in particular, can decrease the quality of one's voice by placing strain in the vocal muscles. A vicious cycle can then begin due to poor vocal quality due to stress. (Morwaska & Niedbudek-Bogusz, 2017). In another study, researchers specifically looked at the psychological issues related to vocal issues. The researchers found a connection between those experiencing voice disorders and mental illnesses such as depression and anxiety (Rocha & Souza, 2013).

Prevention and treatment are imperative in order for a singer to maintain their vocal quality and avoid damage. Prevention strategies include drinking lots of water, limiting caffeine and alcohol intake, abstaining from smoking, and not yelling. Avoiding dry environments and using humidifiers are methods that keep the vocal folds lubricated. The utilization of amplification is helpful when singing in loud or large environments as it reduces the vocal load

of the singer. If any strain is felt by the singer, it is important to rest the voice (NASM & PAMA, 2020). Adequate vocal warmups and cool downs also provide the vocal mechanism with the physical support they need (Gooding, 2018). Some singers have sought counseling to help manage stress that has negatively affected their vocal system (ASHA, 2020). If pain and symptoms persist, the singer must seek medical assistance (Gooding, 2018). They may also see a voice specialist such as an otolaryngologist (ENT) or a speech-language pathologist (SLP) (ASHA, 2020).

### **Music Therapy**

While many people experience injury due to the physical demands of their job, some occupations experience compounding physical, vocal, and emotional risk factors that lead to injuries. Music therapy is one such profession. A music therapist is a person who uses music to assess and enhance cognitive, social, emotional, physical, and well-being of individuals (American Music Therapy Association [AMTA], 2019b). Music therapists use a variety of instruments within their work. Their primary instruments of use include: voice, guitar, piano, and hand percussion (AMTA, 2019c). Musculoskeletal and vocal injuries have scarcely been examined in the field of music therapy. This lack of information can be problematic as the field is primarily female (87%), professionals work more than 34 hours per week (54%) and they often work in emotionally challenging and stressful environments (AMTA, 2018).

Very few studies have specifically examined the prevalence of musculoskeletal or vocal injuries in music therapists. Only one study exists for musculoskeletal injuries. Yovich (1992) conducted a questionnaire survey from music therapists. 121 music therapists responded and 35% reported a musculoskeletal injury. 95% of the respondents were female and most of them worked approximately 40 hours per week. Voice, piano, and guitar were identified as the most

frequently used instruments. Respondents reported averaging about 15 hours of instrument play or singing per week. Guitar and voice users reported the most frequent and severe pain. Only 40% of those experiencing an injury sought medical attention. Music therapists aged 26-35 experienced the most injury (Yovich, 1992). Researchers have also examined vocal load that music therapy students experience during training. Manternach and Schloneger (2019) used dosimeters to study the amount of vocal use for students in education, music, and music therapy. The results revealed that music therapy students have the highest vocal load of all music majors (Manternach & Schloneger, 2019).

Frequently, music therapists can experience occupational hazards besides musculoskeletal or vocal injuries. Gooding (2018) explored the occupational hazards of music therapy. Such hazards include hearing loss, psychological issues, musculoskeletal injuries, and voice issues. Prevention and treatment strategies were provided such as using a smaller instrument, using proper posture, and adapting one's playing/practice routine. Seeking medical help and resting were also suggested (Gooding, 2018). One study specifically examined the potential risk of voice issues in music therapists (Boyle & Engen, 2008). This study was conducted in comparison to teachers who are known to have high rates of voice disorders. The authors noted that music therapists carry large vocal loads and can have an increased risk of injury due to mental disorders (i.e. anxiety) or other musculoskeletal injuries. They noted that music therapists are at increased risk due to the significantly higher female population as female vocal folds "collide more frequently than those of men" (Boyle & Engen, 2008, p. 48). Another risk factor is also the variety of environments in which music therapists work such as large halls or noisy areas (Boyle & Engen, 2008). Both studies noted the impact of psychological wellbeing. Experiencing frequent stress and anxiety can decrease the quality of the voice or lead to

increased probability of developing a musculoskeletal injury (Boyle & Engen, 2008; Gooding, 2018). Waldon and Isetti (2018) conducted a survey specifically examining the prevalence and risk factors for voice issues in music therapists. There were 561 participants with 43% reporting having a voice disorder. Eighty-four percent of respondents reported to have some sort of risk factor (such as loud environments or asthma) while 4% of respondents reported never having any sort of vocal training. Fifteen percent of music therapists have risk for moderate or severe vocal disorder compared to the 4% risk for the general population. The authors suggested seeking medical attention, reducing vocal load, engaging in adequate hydration, avoiding corticosteroid inhalers, practicing voice exercises and reducing other risk factors such as caffeine, alcohol, and poor sleep hygiene.

*Functional Voice Skills for Music Therapists* (Schwartz, Boyle, & Engen, 2018) covered a wide variety of topics such as finding one's unique voice, how the voice produces sound, and posture. The overall purpose of the book is to provide practical information and strategies for music therapists and to encourage them to develop better vocal facility to address a range of clinical needs while maintaining healthy vocal production. An entire chapter about vocal health is provided. The authors frequently point out the importance of proper posture, preventive strategies to avoid injury, and increased risk areas that are relevant to clinical music therapists. They highlight that music therapists use voice (speaking or singing) in nearly all areas of their work. The frequency of social media posts regarding support for laryngitis issues is also noted. Several MT-BCs online are seeking support on how to lead groups or individual sessions when they have vocal issues. The book goes on to highlight warning signs of injury including vocal fatigue, pain, change in singing range, or frequent clearing of throat. Preventative care strategies

such as utilizing proper posture, breath support, hydration, warm ups and cool downs, and rest are also included (Schwartz, Boyle, & Engen, 2018).

Two co-authors of *Functional Voice Skills for Music Therapists* also presented at a music therapy conference about their book and a small follow-up survey they conducted. Boyle and Engen (2020) reviewed that music therapy students have significantly high vocal loads that are required of them, citing the Manternach and Schloneger (2019) study. The results of their small sample size of 23 revealed that only 53% of music therapy graduate students felt their vocal training was adequate for the clinical demands of a career in music therapy (Boyle & Engen, 2020).

There are many potential work conditions that can increase the risk of vocal and musculoskeletal injury in music therapists. Music therapists (MT-BCs) work in a myriad of environments from large, loud rooms, to working with people with hearing deficits, to working more than 35 hours per week (AMTA, 2018; Spiess, personal communication, 2019). Most MT-BCs primarily utilize voice, guitar, and piano in their work (AMTA, 2018). As previously noted, these instruments often have a higher prevalence of injury over other instruments (Kaur & Singh, 2012; Rigg, Marrinan & Thomas, 2003; Schoeb & Zosso, 2012; Zaza, 1998). Another risk factor for MT-BCs is their amount of time spent playing or singing. Some music therapy sessions are 45-60 minutes in length (Hanson-Abromeit & Colwell, 2010). Considering that most music therapists work around 40 hours per week, they can potentially be playing approximately five to seven hours of music per day (AMTA, 2018).

Many music therapy environments, situations, and interventions call for the use of incorrect posture or increased vocal load of the therapist. MT-BCs may 1) sit on the floor to increase engagement with small children (Hughes, 2019), 2) bend over onto a bed to provide

vibro-tactile stimulation for an infant (Wood, 2019), 3) sing with an increased volume when working with someone with significant hearing loss (Clair & Memmott, 2008), or 4) play guitar continuously for 30 to 45 minutes during a guided imagery exercise to promote relaxation (Hanson-Abromeit & Colwell, 2008, 2010). Many therapists working in facilities often conduct groups in large, loud environments that have poor acoustics and dry air (Boyle & Engen, 2008). Many media photos and videos exist of music therapists engaging in poor posture during their sessions in order to engage their clients and meet their therapeutic needs (Hanford, 2017; Nordoff-Robbins, 2018a, 2018b)

Some music therapists spend a significant amount of time in their car driving between client sessions. During this driving time, therapists can do many things to support their body. Drivers should slope forward, maintain an upright back seat, and pull one's head back to maintain contact with the headrest. If the car is stopped at a light, stretch the neck by looking upwards at the roof of the car (Paul & Harrison, 1997). This time in the car can serve as a positive time for vocal, physical and emotional reprieve. When traveling between patients, many therapists often have to transport heavy instrumental equipment (Spiess, personal communication, 2019). It is important for therapists to properly lift equipment as to avoid back injuries. Equipment can be transported in carts or other objects with wheels when possible (Paull & Harrison, 1997).

The physical effect that stressors have on the body is also a risk factor for music therapists (Boyle & Engen, 2008; Kaur & Singh, 2012; Gooding, 2018; Schoeb & Zosso, 2012; Zaza, 1998). Many music therapists work with high-intensity populations such as neonatal intensive care units, hospice and bereavement, forensics, ICUs, and mental health (AMTA, 2018). They may be isolated, receive low pay, or feel overworked (Clements-Cortes, 2013). All

of which can lead to increased stress, which can produce increased tension throughout the body (NASM & PAMA, 2020; Schoeb & Zosso, 2012).

Despite the various risk factors that face music therapists each day, there are many prevention and treatment strategies available. Paull and Nelson (1997) completed a book entirely devoted to promote a career devoid of pain. The book provided practicing strategies, warm up and cool down protocols, and specific stretches and exercises to promote top physical health for musicians (Paull & Nelson, 1997). Many universities are now including physical and mental health awareness in their curriculum to help students avoid pain and injury (De Paul School of Music, 2018; Matei, Broad, Goldbart & Ginsborg, 2018; NASM & PAMA, 2020). Adopting improved posture, taking adequate breaks, limiting computer use, drinking plenty of fluids, engaging in stress-reducing activities, and exercising are helpful at reducing the risk of injury for music therapists (Berque, 1998; Bosi, 2018; Boyle & Engen, 2008; Chan & Ackerman, 2013; Fisher, 2003; Gooding, 2018; Paarup, Baelum, Holm, Manniche, & Wedderkopp, 2011).

### **Summary**

Music therapists continue to work in an evolving work force. They are working with bigger caseloads, spending more time in their car covering large geographic areas, and carrying more equipment than in years past. Thus far, the breadth of research involving vocal and musculoskeletal injuries among music therapists has been descriptive. As a profession, we need a better understanding about what is occurring to better protect the therapists in the field. The purpose of this qualitative collective case study is to explore the occurrence of musculoskeletal and/or vocal injuries that music therapists sustain in the workforce and what they did to ameliorate their issues. At this stage in the research, the injuries sustained by therapists include musculoskeletal injuries (pain, overuse syndrome, carpal tunnel, and other injuries) and vocal

injuries (hoarseness, vocal polyps, laryngitis). What kinds of physical or vocal issues are music therapists having due to their workload and what are they doing to ameliorate their situation?

## Method

### Design

A collective case study was conducted in order to gain detailed, personal accounts from working therapists. Personal narratives were provided by the participants regarding their musculoskeletal and/or vocal issues. The treatment or reasoning for not seeking treatment for the issue was also explored. The primary research question was what physical or vocal issues have music therapists experienced during their career?

### Participants

Five board-certified music therapists (MT-BCs) who are currently working in the profession were recruited to be participants. The goal number of participants was five total in order to provide an array of personal experiences. The researcher first sought permission from the Facebook page *Music Therapists Unite* in order to post a recruitment post. This platform was selected in hope of a quick response rate and variety of therapists. Once permission was granted, a recruitment posting was created. The posting stated: "I am seeking volunteers to participate in my thesis study. The purpose of the study is to explore the occurrence of physical and/or vocal injuries that music therapists sustain in the workforce and what they did to fix their issues. Participants will be asked 13 questions regarding their injury. The study will be about 60 minutes and can occur on the phone or through video phone call. There is no compensation for participation in the study. Please direct message me if you have experienced a physical and/or vocal issue at some point during your career and are interested in participating."

After receiving directed messages from those interested, participants were sent an email with an attached consent form, asked how they would like to engage in the study (over the phone or video call), and what time worked best in their schedule. One participant who had expressed interest did not respond to follow-up inquiries.

## **Materials**

Study participants engaged in either an in-person or video-call narrative of their issues related to their occupation. Participants were provided an informed consent form as well as information regarding risks versus benefits. Thirteen prepared questions were available should the participant required more prompting. These questions were created by the investigator in order to provide guidance for the participants should the participant required more prompting in order to share their personal experience (see all questions in Appendix). The researcher asked participants what kind of injury the participant experienced, what population they work with, and how the injury impacted their work. The investigator took notes on the conversation within a password-protected Word document within a password-protected computer.

## **Procedure**

The researcher initially submitted and received IRB approval from Saint-Mary-of-the Woods College. Once approval was acquired, the researcher created a recruitment post on Facebook. Six people in total expressed interest in the study by submitting direct messages to the researcher. Potential participants were sent an email in order to sign the consent form for study participation. After participants signed the consent form, the participants were given choice of on the phone or video phone calls. Participants were encouraged to share their personal story about their injury in their own words. Participants were asked to discuss in detail the injuries they have experienced and what they did to fix the issue. Notes were taken during the conversation and stored in a password-protected Word file and computer. Participants' names were de-identified by replacing their names with a pseudonym. A draft of the participant's personal story was sent to them to review for accuracy. Then final edits were made as needed.

**Ethical Precautions**

Several ethical precautions were taken in order to maintain safety and to protect the information of the participants. Approval from Saint Mary-of-the-Woods Institutional Review Board (IRB) was granted on March 6th, 2020. The study was conducted over four weeks (March 13<sup>th</sup> through April 10<sup>th</sup>, 2020). Participants were required to sign the consent form available (see Appendix). All data was stored on a password-protected computer within a password-protected file. Participants were provided additional resources regarding addressing their physical or vocal injury. A suicide prevention hotline was also provided as a safety precaution due to the potentially emotionally difficult material participants may disclose.

## Results

The following stories are conversations with five separate music therapists. Conversations lasted from 15-40 minutes each. The length of conversations varied due to the variety of experiences participants had and number of injuries they had sustained. Each participant was requested to share their personal story with physical and/or vocal issues. Their names were changed to protect their identity. Here are their stories.

### **Zoe**

Zoe is a music therapist working in a variety of settings including schools, rehabilitation centers, and provides adaptive lessons. She has been board-certified for five years. She began experiencing significant pain and swelling in her wrists in January of 2019 when she was pregnant with her second child. Zoe sought medical attention for her pain where she was diagnosed with tenosynovitis, which is inflammation of the wrist. She had it in both of her hands. It was worse in her right hand, likely because she is right-handed. Her symptoms included swelling, pain, and an inability to use her thumbs. The test for tenosynovitis is to 1) flex your thumb into your palm, 2) cover your fingers over top of it, then 3) make the motion like you are hammering. If you cannot do this action without pain or complete it at all, then it is likely you are experiencing tenosynovitis.

Tenosynovitis impacted Zoe's daily work. Because the tenosynovitis affected both of her hands and thumbs, it was very difficult for her to play guitar and piano. When playing the piano, she had to modify how she used her hands. She was unable to use traditional form with fingers on the keyboard (placed on the root, third, and fifth). She didn't use her thumb at all while playing piano. Rather, she would play piano chords with her index, middle, and pinky fingers. Tenosynovitis impacted the range of motion she had in her thumb. Zoe would often adapt her

posture in order to play particular notes that she couldn't reach. When providing adaptive piano lessons, she would model correct hand use for students but then would switch to the incorrect form in order to play accompaniment. She couldn't play the flute, her primary instrument. She also adapted how she played the guitar. She utilized strumming with her pointer finger instead of her thumb. She also had assistance from interns who helped offload some of the physical requirement during music therapy sessions. She experienced anxiety when working in adult rehabilitation as some clients would ask about her wrists.

Zoe felt she could not afford to go without work that lead her to adapt to her situation. "I *have* to work. I'm not salary based. So, If I didn't work, I didn't get paid." She worked 20 direct patient hours per week with several additional hours in other capacities.

Zoe did seek medical attention for her tenosynovitis. She declined physical therapy and acupuncture. She frequently rotated between hot and cold compresses and used wrist braces. She received a steroid shot in her right hand in November 2019, ten months after her initial pains. Zoe's right wrist was much improved the following day. She experienced discoloration in her skin due to the shot. She did not receive a shot in her left wrist and it is still recovering. She felt the steroid shot was not scary and did not hurt. She was wondering why she didn't do it sooner. She felt that having an intern was a blessing. Her advice to others is that there's "nothing wrong with going acapella," to utilize a Q-chord, and that if something is hurting, something is wrong and needs to change.

### **Jessie**

Jessie is a music therapist working in a public school district. Voice is her primary instrument. She has been an MT-BC for ten years. Two years into her professional career, Jessie began frequently losing her voice. She hypothesized it may have been due to a virus she had as

well as being exposed to mold. She kept getting sick with sinus infections, strep throat, and had constant post-nasal drip. During this time, she lost her voice every few months. After a year of experiencing this, she went to see a speech language pathologist (SLP). She was diagnosed with vocal fold paresis. Vocal fold paresis was occurring because one fold was “sloppy and slow” compared to the other one. She was given some exercises and tips to save her voice such as enunciating and avoiding big spaces. With these new suggestions, which she felt weren’t functional in her reality, Jessie began to overcompensate. She was speaking in a lower voice range and was speaking more quietly than her authentic voice. She continued to lose her voice for another year. Jessie felt that she likely experienced more damage to her vocal folds due to overcompensation.

During these two years where Jessie frequently lost her voice, she became very frustrated. She often led music therapy sessions with no verbal directions. She experienced a lot of shame around losing her voice, especially because she is a classically trained singer. She experienced several other hurtful emotions such as frustration, anger, and guilt. These negative emotions changed her relationship with her clients and herself. She felt she wasn’t able to connect with others as she had or even assess them in the same way. She also took some paid sick time due to her vocal loss.

Then, in 2014, Jessie received a referral to see a different SLP at a clinic that specializes with musicians. The SLP had a degree in vocal performance. Jessie learned that she no longer had vocal fold paresis. Rather, she was experiencing vocal fatigue due to engaging in vocal fry, speaking in a lower range and speaking in a quieter voice. She didn’t know that speaking more quietly was causing her voice more damage. Jessie learned new vocal techniques to sing well, which were counter to everything she had been previously taught. She recalled that she had never

been taught how to use her voice for many hours a day. “It shouldn’t hurt, it should feel good and easy if you’re hydrating and using authentic voice.” Jessie realized she was not consistently using her authentic voice. She was trained strictly classically and her original SLP did not understand the occupational needs for her voice.

Since seeing that second SLP, Jessie has not lost her voice once in six years. She has been very mindful about using her authentic voice. She has also used this experience as an opportunity to pass on knowledge to music therapy interns. She hopes that interns have more functional training for their clinical voice use.

### **Autumn**

Autumn is a music therapist that works in pediatrics. Her primary instrument is guitar. Her issues began during her senior year of college as she was preparing for her classical guitar recital in 2016. During her preparation time, her music repertoire required increased demand for her ring and pinky finger in her left hand. Because of that, she began experiencing whole left arm numbness for a month. The following month she experienced significant pain in her left arm. Autumn experienced pain when doing anything with her left arm such as turning doorknobs, picking up groceries, and playing guitar. Stretching to reach particular notes on the guitar and piano made the pain worse. She was also engaging in physical exercises that contributed to her symptoms such as pushups. She began compensating and was using her right wrist and arm more. Soon, she began experiencing pain in her right wrist as well.

While working, Autumn felt it was difficult to play guitar and she could not play piano at all. She was really unable to do anything with her left hand and arm. She switched to primarily using ukulele at work instead of guitar. She never took time off working from her issues but

stopped making music for pleasure. She did not want to let others down at work and felt that would be accomplished “if I just do my job.”

Autumn eventually went to a musician’s clinic, which was suggested by another music therapist. She was diagnosed with ulnar neuropathy. They provided some stretches and nerve glides, but Autumn was still experiencing pain. Next, she went to her primary care physician (PCP). Her PCP took an X-ray and diagnosed her with a subluxed joint, where the bones in her arm are spaced further apart. This predisposed her to increased weakness, pain, and injuries from repetitive use. Her PCP sent her to an occupational therapist (OT). The OT fitted Autumn with a brace that she wore from her wrist to past her elbow that immobilized her arm. She slept with the brace on at night. During the rest of her time, she wore a hard brace that immobilized her wrist. She learned to adapt to play the guitar without moving her wrist at all. She tried to utilize smaller guitars and the ukulele during this time - “that sucked a lot.” Advice she received from the OT was to do as little as she could and avoiding particular exercises such as pushups.

This lack of movement and mobilization lead to overall muscle weakness and atrophy in her upper body. Because of this, she began carrying increased tension in her neck and back muscles. The increased muscle tension lead Autumn to have vocal issues. She was experiencing muscle spasms in her neck that inhibited her from swallowing. She was particularly aware of these spasms when she was singing. She felt very scared during this time.

Autumn saw several other specialists including a chiropractor, physical therapist, speech language pathologist, and neurologist. The neurologist ruled out any neurologic issues. The physical therapist recommended she increase her overall strength in order to combat the muscle spasms. The speech therapist (SLP) suggested she relax her neck muscles through proper breathing. She did not feel these suggestions had been helpful for her so far. She also saw a

psychiatrist for anxiety. The muscle weakness led her body to being more susceptible to anxiety, which in turn manifested as physical symptoms of anxiety. Autumn had been storing her anxiety in her body which lead to her neck spasms and vocal issues. She received some medications that helped calm her mind and body.

Somewhere in her process of seeking support from professionals, Autumn received a steroid shot in her wrist (she is unsure which medical professional made this recommendation). She found that very helpful and has had significantly less pain in her wrists since then. Autumn is now able to incorporate some strength training into her life that has been without issue.

### **Holly**

Holly is a music therapist who has been board-certified for twelve years. She has experienced two physical injuries and one vocal injury during her career. Her first injury began eight years ago (or four years into her career). Her initial symptoms presented as a heart attack; she was unable to sit up, was unable to walk and had chest tightness. When she sought medical attention, her doctor was unable to determine the cause of her symptoms. When her health improved slightly and she was able to walk short distances, Holly saw a physical therapist (PT) at a musician's clinic. There, the PT diagnosed her sternalis syndrome. Sternalis is having an extra muscle in your chest. Holly's extra muscle was aggravated and presented symptoms like a heart attack such as chest pain. The PT surmised Holly's sternalis syndrome was exacerbated by playing guitar. Holly brought in her guitar to her physical therapy appointment. The PT figured out exactly how her body was getting stressed and aggravated while playing. She also played piano during physical therapy sessions. While sitting at the piano, Holly's ribs were out of alignment, her collarbone was raised, and many of the muscles were pinched. She received six

months of physical therapy to develop strategies to ameliorate the stress in her sternalis muscle. All in all, it took her a year and a half to fully recover.

The clients Holly was seeing (children and adults with special needs) were also affected during that time. Holly would cancel some weeks, hope to be back the next weeks, all just to cancel again. Then the clients she was seeing were transitioned to a different therapist. Holly nor her clients were able to complete therapeutic closure. Holly eventually had to leave her job for six months. When she was able to go back to work, Holly felt it was very challenging. She was physically exhausted and weak at the end of the day. She also had to try and rebuild her caseload during that time. She eventually left that job as she was unable to rebuild her caseload. Holly experienced financial challenges during that time as well. When she initially was unable to work, her supervisor continued to pay her despite not having paid-time off (PTO). Then the supervisor changed their mind and said Holly needed to pay that money back. That required Holly to get a second job in order to make the payments.

Two years later, Holly noticed her voice was frequently hoarse and she would lose her voice by the end of the day. She initially sought advice on Facebook, creating a post asking if anyone else had experienced similar symptoms and what she should do to fix it. From that post she learned she needed to increase her water intake. Her new employer also suggested she see a SLP. The SLP did a videostroboscopy where they place a camera down into her throat to observe her vocal folds. The SLP suggested doing more vocal warm-ups and going temporarily dairy free. Her symptoms cleared up within about three months. She is unsure if she had a particular diagnosis related to her hoarseness but felt it may have been vocal fatigue.

In 2016, Holly began experiencing pain in her right wrist. She went back to her doctors who were unable to pinpoint any particular issue. They thought it might be tendonitis so Holly

started wearing a wrist brace. She saw an occupational therapist but felt it wasn't really helpful. Her symptoms grew worse as she was no longer able to use her right hand at all. She had a one-year-old baby at home that she was unable to hold. "That really, really hurt," Holly recounted. She eventually got several scans done including an MRI (magnetic resonance imaging), CT scan (computed tomography) and saw a neurologist to test her neurologic functioning. Holly was ultimately diagnosed with ulnar neuropathy.

With her diagnosis, Holly had to go on medical leave from work. She again sought treatment at her local musician's clinic where she saw the same physical therapist she had seen previously. That therapist determined that Holly was experiencing ulnar neuropathy because of her guitar and her posture. Holly's shoulders were previously hunched over a large guitar, putting pressure on her ulnar nerve, which ultimately lead to her pain and inability to use her right arm. She received new exercises, different braces to use (one hard and one soft) for reinforcement, hand putty for resistance training, and used a smaller guitar. Holly was out from work for several months again but was eventually able to return. Holly frequently shares what she has learned from her experiences with interns or students who observe her. She encourages them to listen to their body and talk to their doctor if something hurts. Holly wishes there was better education available for music therapists about injuries. She noted "I wish anyone would say 'if your body hurts, stop doing it!'"

### **June**

June has been a music therapist for sixteen years. She has experienced vocal issues and several musculoskeletal injuries during her career. Twice she has experienced chronic laryngitis triggered by illness and overuse, losing her voice for about a month each time. After experiencing laryngitis, June went to see a speech language pathologist specializing in work with musicians. The SLP provided specific techniques for June. She also learned to consistently use

vocal warmups and cool downs after singing for five hours each day. She also had some medications adjusted, was encouraged to only use pectin throat drops when sick as menthol can increase vocal irritation, increase home humidification, and to be mindful of vocal rest and safe use of voice outside of work.

Later, June also had several issues in her wrists and thumbs, first beginning around 2016. Her symptom was primarily pain. She went to a performing arts clinic and saw a physical therapist and occupational therapist specializing in therapy for musicians. She was diagnosed with carpal tunnel syndrome, de Quervian's tenosynovitis, and tendonitis. De Quervian's is caused by aggravation of the tendons in the thumbs, leading to significant pain and decreased range of motion. The therapists gave her hard wrist braces to wear at night and soft braces to wear during the day. June was also encouraged to use adaptive equipment to decrease the pain in her wrists. One equipment change included a Slinger Strap for her guitar. A Slinger Strap has a waist belt that decreases the weight of the guitar in the musician's shoulders and neck, and allows for more variability in positioning utilized to play the guitar. A second change was the use of the Pykmax picks. The Pykmax pick is a pick attached to a brace/crutch placed between the thumb and index finger which removes muscle tension in the forearm and wrist. June also got a new guitar. Her previous guitar's action was too high, causing increased stress and tension on her muscles and tendons, and was too big. June had another music therapist help her pick out a guitar that better fit her body. Once she found the right guitar, she had the guitar set up specifically for her body and lowered the guitar's action. She also switched to silk and steel strings. These strings helped decrease the tension required to play and feel like playing nylon strings but sound like a steel string.

The next issue June experienced while she was pregnant. She had increased pain in her wrists and shooting pain in her thumbs. Again, June saw an occupational therapist at the local performing arts clinic. She was diagnosed with de Quervian's tenosynovitis and tendonitis. The therapists provided ultrasound, massage, wrist mobilization, kinesiotaping, and fluidotherapy. "Fluidotherapy is a dry thermal physical agent that transfers its energy (i.e. heat) to soft tissues by forced convection," (DJO, n.d., para. 2). June was unable to work full-time for six months due to her wrist issues and pregnancy recovery. Her patients were also impacted because she was unable to work for an extended period of time.

June feels it is critical that music therapists are cognizant of their ergonomics. Music therapy is an incredibly "physical job, especially if you're playing for five hours a day." A lot of people don't realize the physical workout that music therapists do each day. She quoted her SLP, noting that singing is literally pumping iron with your vocal folds. June wishes more schools were providing additional education about proper technique for music therapists such as the importance of physical stretching, vocal warm ups and cool downs, how to properly transfer instruments and the therapist's posture while moving equipment and playing. She also wishes that more therapists would utilize preventative measures *before* injury occurs.

## Discussion

The purpose of this qualitative collective case study is to explore the occurrence of musculoskeletal and/or vocal injuries that music therapists sustain in the workforce and what they did to ameliorate their issues. A total of five people participated in the study from March 13 through April 10, 2020. One additional person initially expressed their interest, but did not respond to follow-up communications.

The researcher looked for similarities and differences in the injuries participants discussed by reading through the notes from their conversations. Each participant experienced a different injury, with the exception of two participants sharing a similar diagnosis. All participants sought medical attention for their issues. Eighty percent of participants experienced some sort of vocal issue during their career. Medical treatment was received by primary care providers, SLPs, neurologists, and psychologists. The vocal issue diagnoses include vocal fold paresis, vocal fatigue, chronic laryngitis. Two participants had undiagnosed vocal issues. One participant did not report any vocal issues. One participant reported losing work due to vocal issues.

Eighty percent of the participants experienced some sort of musculoskeletal issue. The diagnosed musculoskeletal injuries include tenosynovitis, ulnar neuropathy, subluxed joint, sternalis syndrome, carpal tunnel syndrome, de Quervian's tenosynovitis, and tendonitis. Two participants, or 40% of respondents, identified being diagnosed with ulnar neuropathy. Each participant sought medical attention for their musculoskeletal issues. Medical treatment was sought from primary care providers, PTs, and OTs. Forty percent of respondents lost work due to their physical injury. Two participants experienced their injuries during pregnancy. Sixty percent of participants experienced both a physical and vocal injury. Two participants expressed mental

health needs that coincided with their injury. One participant sought professional help for their mental health.

Three of the five participants reported psychological stressors due to their injury. Negative emotions reported include anxiety, frustration, anger, and guilt. Two participants also reported they felt the compulsion to continue working despite their injury. Three out of five participants also noted the negative impact that was experienced by their clients due to their inability to work.

**Table 1:**

**Participant Vocal Injuries**

<b>Participant</b>	<b>Vocal Injury</b>	<b>Loss of Work</b>	<b>Physical Injury</b>	<b>Loss of Work</b>
<b>Zoe</b>	none	No	tenosynovitis	No
<b>Jessie</b>	vocal fold paresis; vocal fatigue	No	none	No
<b>Autumn</b>	undiagnosed spasms	No	ulnar neuropathy; subluxed joint	No
<b>Holly</b>	undiagnosed vocal fatigue	No	sternalis syndrome; ulnar neuropathy	Yes
<b>June</b>	chronic laryngitis	Yes	carpal tunnel syndrome, de Quervian's tenosynovitis, tendonitis	Yes

## **Limitations**

This study was informed by a small sample size. It did not have any male participants, resulting in an inability to further agree or disagree with previous research. This study did not include number of direct hours the music therapist was singing or playing instruments such as guitar, piano, or percussion. This study also did not have any student participants. Previous literature indicates that music therapy students are particularly at risk for vocal injuries. There is no research regarding music therapy students and musculoskeletal injuries.

## **Research Recommendations**

Overall, it is clear that music therapists are experiencing physical and vocal injuries. Some of these injuries are leading them to miss work. All of the music therapists in this study sought out medical attention from a variety of professionals. There is little research regarding range and severity of vocal and musculoskeletal injuries in music therapists. There is increasing research being done with vocal health, but this issue still needs to be explored more. All of the music therapists in this study were working full-time during their injuries. Further research is needed in this area. Future researchers could investigate whether there are differences between full-time and part-time music therapists as previous researchers noted differences in musculoskeletal injuries in relation to total time playing instruments. Also, more males and peoples of various gender identities should be included as none were represented in this study. Another area that could be investigated is the total cost of injuries for music therapists. The cost would include wages lost and cost for doctor visits, therapies, braces, adaptive equipment and other expenditures. Medical costs could potentially increase emotional stress on music therapists. The psychological impact of injuries could also be explored to determine its impact on music therapists. Future research should include studies with bigger sample sizes in order to

evaluate differences from the general population. Another area of study may be the potential increased risk for injuries for pregnant music therapists as two participants experienced injuries while they were pregnant.

### **Reflection**

This study confirmed to the investigator that physical and vocal issues are prevalent among music therapists. This result, in itself, was validating as the investigator had experienced their own vocal and musculoskeletal injuries that had resulting in them taking time off from work. The IRB process proved to be the most tedious part, requiring several revisions. The recruitment of participants went smoothly, with many participants inquiring within a day or so and following through with their participation. Utilizing social media for recruitment proved to be a simple way to reach a potential pool of participants. Some of the results surprised the author, particularly the occurrence of injuries during pregnancy. The investigator learned that it is incredibly important to seek medical attention in order to prevent significant damage.

In the future, the investigator would like to examine the issue more carefully. First, more initial descriptive research is necessary. Then, quantitative research should be done in order to examine the issue more deeply. The investigator hopes to take this learned information and provide sessions at upcoming conferences in order to increase awareness among the music therapy profession.

### **Conclusion**

The purpose of this study was to examine the vocal and physical issues music therapists were experiencing and what they were doing to ameliorate their situation. Each of the five participants had experienced between one and four injuries during their careers. It is promising that each individual sought medical attention and have experienced improvement in their

symptoms. Thankfully none of these injuries forced therapists to quit their jobs due to their injuries. Since this was a small study, however, there may be others out there whose stories ended differently. More research is needed in order to realize the prevalence of injuries within the music therapy profession and to increase the awareness of the issue.

We know that music therapists are an essential piece of the healthcare puzzle. Music therapists serve premature infants, military veterans, people with mental health issues, intellectual disabilities, adults with neurologic impairments and many others. We need to make sure they are caring for themselves as much as they are caring for others. Being able to care for the therapist's whole self, including their physical and mental health, enables music therapists to continue to provide this necessary service.

## References

- American Music Therapy Association. (2019a). *How to find a music therapist*. American Music Therapy Association. Retrieved from <https://www.musictherapy.org/about/find/>
- American Music Therapy Association. (2019b). *Who are music therapists?* American Music Therapy Association. Retrieved from <https://www.musictherapy.org/about/therapists/>
- American Music Therapy Association. (2019c). *Professional competencies*. American Music Therapy Association. Retrieved from <https://www.musictherapy.org/about/competencies/>
- American Music Therapy Association. (2018). *2018 AMTA member survey and workforce analysis*. American Music Therapy Association. Retrieved from <https://www.musictherapy.org/assets/1/7/18WorkforceAnalysis.pdf>
- American Speech-Language-Hearing Association. (2020). *Voice disorders*. American Speech-Language-Hearing Association. Retrieved from <https://www.asha.org/Practice-Portal/Clinical-Topics/Voice-Disorders/>
- Berque, P. (1998). Musculoskeletal disorders affecting musicians and considerations for prevention. [PowerPoint]. Retrieved from <http://www.musicianshealth.co.uk/musiciansmusculoskeletaldisorders.pdf>
- Bird, H. (2013). Overuse syndrome in musicians. *Clinical Rheumatology*, 32(4), 375-379.
- Bosi, B. (2017). Building an effective right-hand guitar technique around injury prevention methods. *Revista Musica Hodie*, 17(2), 121-133.
- Bosi, B. (2018). Classical guitarists and posture: What should we teach? *Music Teachers National Association e-Journal*. [https://www.mtna.org/MTNA/Stay\\_Informed/MTNA\\_e-Journal/MTNA\\_e-Journal\\_Archives/February\\_2018.aspx](https://www.mtna.org/MTNA/Stay_Informed/MTNA_e-Journal/MTNA_e-Journal_Archives/February_2018.aspx)

- Bottalico, P., Passione, I., Graetzer, S., & Hunter, E. (2017). Evaluation of the starting point of the Lombard effect. *The Journal of European Acoustics Association*, 103(1), 169-172.
- Clements-Cortes, A. (2013). Burnout in music therapists: Work, individual, and social factors. *Music Therapy Perspectives* 31(2), 166-174.
- Behlau, M., Zambon, F., & Madazio, G. (2014). Managing dysphonia in occupational voice users. *Speech and Rehabilitation*, 22(3), 188-194.
- Boyle, S., & Engen, R. (2020, March 6). From classical to practical: Applying vocal talent in clinical practice [Conference Presentation]. Great Lakes Regional Music Therapy Conference, Schaumburg, Illinois.
- Boyle, S., & Engen, R. (2008). Are music therapists at risk for voice problems? Raising awareness of vocal health issues in music therapy. *Music Therapy Perspectives*, 26(1), 46-50.
- Caro, X., Sutherland, P., Mitchell, D., & Glazener, F. (1975). Traumatic hemoglobinuria associated with conga drumming. *The Western Journal of Medicine*, 123; 141-144.
- Chan, C., Driscoll, T., & Ackermann, B. (2013). Exercise DVD effect on musculoskeletal disorders in professional orchestra musicians. *Occupational Medicine*, 64, 23-30.
- Clair, A., & Memmot, J. (2008). *Therapeutic uses of music with older adults*. Silver Spring, MD: American Music Therapy Association.
- Cruder, C., Falla, D., Mangili, F., Azzimonti, L., Araujo, L., Williamon, A., & Barbero, M. (2017). Profiling the location and extent of musicians' pain using digital pain drawings. *Pain Practice*, 18(1), 53-66.

- De Paul School of Music. (2018). Healthy musicians: Taking care of your mind and body. *DePaul School of Music*. Retrieved from <https://music.depaul.edu/resources/career-services/Documents/The%20Healthy%20Musician.pdf>
- DJO (n.d.). *Fluidotherapy standard single extremity united*. Retrieved from <https://www.djoglobal.com/products/chattanooga/fluidotherapy-standard-single-extremity-unit-0>
- Fisher, J. (2003). Stressing out: Don't let repetitive stress injuries stop you from making music. *Electronic Musician*, 78-85.
- Franco, R., & Andrus, J. (2007). Common diagnoses and treatments in professional voice users. *Otolaryngology Clinics of North American*, 40(5), 1025-1061
- Frantz, D. (n.d.) Piano technique. *Key-notes*. Retrieved from <https://www.key-notes.com/blog/piano-technique>
- Fry, H. (1988). The treatment of overuse syndrome in musicians. *Journal of the Royal Society of Medicine*, 81(10), 572-575
- Gooding, L. (2018). Occupational health and well-being: hazards, treatment options, and prevention strategies for music therapists. *Music Therapy Perspectives*, 36(2), 207-214
- Hanson-Abromeit, D., & Colwell, C. (2010). *Medical music therapy for adults in hospital settings*. Silver Spring, MD: AMTA. (pp. 258-332)
- Hanford, G. [Vibe Music Therapy]. (2017, February). *Debbie in music therapy part 1* [video file]. Retrieved from <https://www.youtube.com/watch?v=YBKA5ZoN9Cs>
- Jabusch, H., & Altemuller, E. (2004). Anxiety as an aggravating factor during onset of focal dystonia in musicians. *Medical Problems of Performing Artists*, 19(2), 75.

- Jacukowicz, A. (2016). Psychosocial work aspects, stress and musculoskeletal pain among musicians. A systematic review in search of correlates and predictors of playing-related pain. *Work*, 54(3), 657-668.
- Kaur, J., & Singh, S. (2016). Neuromusculoskeletal problems of upper extremities in musicians: A literature review. *International Journal of Therapies in Rehabilitation and Research*, 5(2), 14-18.
- Kok, L., Huisstede, B., Voorn, V., Schoones, J., & Nelissen, R. (2016). The occurrence of musculoskeletal complaints among professional musicians: a systematic review. *International Archives of Occupational and Environmental Health*, 87, 373-396
- Lederman, R. (2003). Neuromuscular and musculoskeletal problems in instrumental musicians. *Muscle and Nerve*, 27(5), 549-561.
- Lezin, N., & Watkins-Castillo, S. (2016). *The impact of musculoskeletal disorders on Americans: Opportunities for action*. Bone and Joint Initiative USA. Retrieved from <https://www.boneandjointburden.org/docs/BMUSExecutiveSummary2016.pdf>
- Liu, S., & Hayden, G. (2002). Maladies in musicians. *Southern Medical Journal*, 95(7), 727-734.
- Lowe, W. (2012). Fretting over musicians' injuries? *Massage and Bodywork*, 100-106.
- Manternach, J., & Schloneger, M. (2019, November 15). Vocal dose of preservice music therapists, preservice music teachers, and other undergraduate students. *Journal of Voice* [Online]. <https://doi.org/10.1016/j.jvoice.2019.09.008>
- Malyuk, H. (2018). Empowering musicians: Teaching, performing, living. *American Music Teacher*, (68)2, 34-35.

- Maric, D., Stojic, M., Maric, D., Susnjevic, S., Radosevic, D., & Knezi, N. (2019). A painful symphony: The presence of overuse syndrome in professional classical musicians. *International Journal of Morphology*, 37(3), 1118-1122.
- Matei, M., Broad, S., Goldbart, J., & Ginsborg, J. (2018). Health education for musicians. *Frontiers in Psychology*. Retrieved from <https://www.frontiersin.org/articles/10.3389/fpsyg.2018.01137/full>
- MedlinePlus, (2020). *Neuromuscular disorders*. U.S. National Library of Medicine. Retrieved from <https://medlineplus.gov/neuromusculardisorders.html>
- Middlesworth, M. (n.d.) *The definition and causes of musculoskeletal disorders (MDS)*. Ergo Plus. Retrieved from <https://ergo-plus.com/musculoskeletal-disorders-msd/>
- Misono, S., Peterson, C., Meredith, L., Banks, K., Bandyopadhyay, D., Yueh, B., & Frazier, P. (2014). Psychosocial distress in patients presenting with voice concerns. *Journal of Voice*, 28(6), 753–761. <https://doi.org/10.1016/j.jvoice.2014.02.010>
- Morwaska, J., & Niedbudek-Bogusz, E. (2017). Risk factors and prevalence of voice disorders in different occupational groups: A review of literature. *Otorinolaryngologia*, 16(3), 94-102.
- National Association of Schools of Music, Performing Arts Medicine Association. (2020). “*Musician Health and Safety*.” University of Maryland School of Music. Retrieved from [https://www.cn.edu/libraries/tiny\\_mce/tiny\\_mce/plugins/filemanager/files/Music\\_PDF/NeuroMusculoskelital/Neuromusculoskeletal\\_and\\_Vocal\\_Health\\_Information.pdf](https://www.cn.edu/libraries/tiny_mce/tiny_mce/plugins/filemanager/files/Music_PDF/NeuroMusculoskelital/Neuromusculoskeletal_and_Vocal_Health_Information.pdf)

- Nordoff Robbins. (2018a, October 23). *This Charity Tuesday listen to Betsy and her music therapist, Oli, singing the happiest rendition of 'Que Sera, Sera.'* [Video]. Retrieved from <https://www.facebook.com/NordoffRobbins/videos/497295714014008>
- Nordoff Robbins. (2018b, October 26). *Music therapy and Alzheimer's Disease.* [Video] Retrieved from <https://www.facebook.com/NordoffRobbins/videos/333250644117696/>
- Ohlendorf, D., Maurer, C., Bolender, E., Kocis, V., Song, M., & Groneberg, D. (2018). Influence of ergonomic layout of musician chairs on posture and seat pressure in musicians of different playing levels. *PLoS ONE*, *13*(12), 1-14.
- Paarup, H., Baelum, J., Holm, J., Manniche, C., & Wedderkopp, N. (2011). Prevalence and consequences of musculoskeletal symptoms in symphony orchestra musicians vary by gender: a cross-sectional study. *BioMed Central Musculoskeletal Disorders*, *12*(1), 1-14.
- Palmer, K., & Cooper, C. (2006). Work-related disorders of the upper limb. *Arthritis Res. Campaign*, 1-7.
- Parry, C. (2003). Prevention of musician's hand problems. *Hand Clinic*, *19*, 619-631
- Robinson, R. (2017). *The majority of professional musicians experience chronic pain.* MedPage Today. Retrieved from <https://www.medpagetoday.com/resource-centers/pain-management/majority-professional-musicians-experience-chronic-pain/812>
- Rocha, L., & Souza, L. (2013). Voice handicap index associated with common mental disorders in elementary school teachers. *Journal of Voice*, *5*, 595-602.
- Rocha, C., Moraes, M., & Behlau, M. (2012). Pain in popular singers. *Journal de Sociedade Brasileira de Fonoaudiologia*, *24*(4), 374-380.
- Roy, N., Merrill, R., Gray, S., & Smith, E. (2005). Voice disorders in the general population: Prevalence, risk factors, and occupational impact. *Laryngoscope*, *115*(11). 1988-1995.

- Pestana, P., Vaz-Freitas, S., & Manso, M. (2017). Prevalence of voice disorders in singers: Systematic review and meta-analysis. *Journal of Voice, 31*(6), 722-727.
- Phyland, D. (2014). The impact of vocal load on the vocal function of professional musical theatre singers (Doctoral thesis/Monash University, Victoria, Australia). Retrieved from [https://monash.figshare.com/articles/The\\_impact\\_of\\_vocal\\_load\\_on\\_the\\_vocal\\_function\\_of\\_professional\\_music\\_theatre\\_singers/4711924](https://monash.figshare.com/articles/The_impact_of_vocal_load_on_the_vocal_function_of_professional_music_theatre_singers/4711924)
- Savvidou, P., Willis, B., Li, M., & Skubic, M. (2017). Assessing injury risk in pianists: Using objective measures to promote self-awareness. *Music Teachers National Association e-Journal, 2*, 2-16.
- Schoeb, V., & Zosso, A. (2012). You cannot perform music without taking care of your body: A qualitative study on musicians' representation of body and health. *Medical Problems of Performing Artists, 27*(3), 129-136
- Stanhope, J., Tooher, R., Pisaniello, D., & Weinstein, P. (2019). Have musicians' musculoskeletal symptoms been thoroughly addressed? A systematic mapping review. *International Journal of Occupational Medicine and Environmental Health, 32*(3), 291-331.
- Steinmetz, A., Scheffer, I., Esmer, E., & Deslank, K. (2015). Frequency, severity and predictors of playing-related musculoskeletal pain in professional orchestral musicians in Germany. *Journal of Clinical Rheumatology, 34*, 965-973.
- Vasudev, M., Bresnahan, B. A., Cohen, E. P., Hari, P. N., Hariharan, S., & Vasudev, B. S. (2011). Percussion hemoglobinuria - A novel term for hand trauma-induced mechanical hemolysis: a case report. *Journal of Medical Case Reports, 5*, 508.  
<https://doi.org/10.1186/1752-1947-5-508>

- Waldon, E., & Isetti, D. (2018). Voice disorders and related risk factors among music therapists: Survey findings and strategies for voice care. *Music Therapy Perspectives*, 37(1), 37-44.
- Wilson, I., Doherty, L., & McKeown, L. (2014). Perceptions of playing-related musculoskeletal disorders in Irish traditional musicians: A focus group study. *Work*, 49(4), 679-688.
- Yovich, A. (1992). *The occurrence of performance-related injury in music therapists* [Master's Thesis]. Texas Woman's University.
- Zaza, C. (1998). Playing-related musculoskeletal disorders in musicians: a systematic review of incidence and prevalence. *Canadian Medical Association Journal*, 158(8), 1019-1025.
- Zaza, C., & Farewell, V. (1997). Musicians' playing-related musculoskeletal disorders: an examination of risk factors. *American Journal of Medicine*, 32(3), 292-300.
- Zuskin, E., Schachter, E., Kolcic, I., Polasek, O., Mustajbegovi, J., & Arumugam, U. (2005). Health problems in musicians: A review. *Acta Dermatovenerol Croat*, 13(4), 247-251.

## APPENDIX A

### Saint Mary-of-the-Woods College

### CONSENT TO PARTICIPATE IN RESEARCH

Title of the Research Study: Examining music therapist's singing- and playing-related injuries: a collective case study

Principal Investigator: Tracy Richardson, Ph.D., MT-BC, Saint Mary-of-the-Woods College

Co-investigator: Brianna Larsen, MT-BC, Saint Mary-of-the-Woods College

You are being asked to participate in a research study about physical and vocal injuries that music therapists experience. Key information for you to consider is provided below. Please carefully consider this key information and read this entire form to obtain more detailed information about this research study. Please feel free to ask questions about any of the information before deciding whether to participate in this research project. Participating in this research project is voluntary.

#### Key Information

- Purpose of the researcher study: This purpose is to explore the occurrence of physical and/or vocal injuries that music therapists sustain in the workforce and what they did to fix their issues.
- Procedure and Duration: You will be asked to describe your injury and what you did to ameliorate your situation. This will take approximately 60 minutes.
- Risks and discomfort: Risks or discomforts from this research study include describing an event that was potentially painful to recall.
- Potential benefits: Benefits that may be expected from this research study include gaining insight into the injury.
- Participation is voluntary.

#### Purpose of the Research

The purpose of the research study is to explore the occurrence of physical and/or vocal injuries that music therapists sustain in the workforce and what they did to fix their issues.

You are being asked to participate because you have experienced a physical or vocal issue during your time as a music therapist.

#### Procedures

This study will either occur in-person or via online video call system. Participants will be asked to describe the injury that they experienced. 13 pre-composed questions are available in order to elicit in-depth information regarding their experience.

The expected duration of participation is 60 minutes.

#### Risks or Discomforts

Risk for participation in this study is low. There is potential discomfort for the participant by recalling a potentially painful experience. **If you are requiring immediate support from a mental health professional, please call the National Suicide Prevention Hotline 1-800-273-8255 or text the Crisis Textline: HOME to 741741**

The researcher will minimize discomfort by having available resources for medical support. The investigator will tell each participant to seek medical attention from their primary healthcare provider if they are still experiencing any physical or vocal injury issues. Additional resources are as follows:

- Klickstein, G. (2009). *The musician's way: A guide to practice, performance, and wellness*. New York, NY: Oxford University Press.
- Watson, D. (2009). *The Biology of Musical Performance and Performance-Related Injury*. Lanham, MD: Scarecrow Press.
- Horvath, J. (2010). *Playing (Less) Hurt: An Injury Prevention Guide for Musicians*. Milwaukee, WI: Hal Leonard Press.
- Jahn, A. (2013). *The Singer's Guide to Complete Health*. New York, NY: Oxford University Press.
- Schwawrtz, Boyle, & Engen (2019). *Functional Voice Skills for Music Therapists*. Barcelona Publishers
- The Musicians Health Collective:  
<http://www.musicianshealthcollective.com/resources>
- Podcast: Harmonious Bodies.  
<http://www.musicianshealthcollective.com/resources>
- Blog: Connecting up the Dots with the Alexander Technique.  
<http://www.musicianshealthcollective.com/resources>
- Athletes at the Arts. <http://www.musicianshealthcollective.com/resources>
- Performing Arts Medicine Association. <http://www.artsmed.org>

### **Potential Benefits**

Participants can potentially gain insight into their injury. Others might benefit from this study by increasing their awareness of their risk for injury and seek medical attention when necessary.

### **Confidentiality**

Any of your information that can directly identify you will be stored separately from the data that will be maintained for a period of three years in a password-protected electronic storage. Names will be changed to a different letter (i.e. "Sarah" changed to "L") in written report.

### **Voluntary Participation**

It is entirely voluntary to participate in this research study. You can decline participation in the study by not signing the consent form. You can withdraw from the study at any time without penalty by contacting the co-investigator, Brianna Larsen at [brianna.larsen@smwc.edu](mailto:brianna.larsen@smwc.edu) even if you decide to be part of the study now.

### **Use of Data for Future Study**

Data that does not contain information directly identifying you could be used for future research studies or distributed to another investigator for future research studies without additional informed consent.

If you have questions about this research study, please contact the principal investigator or co-investigator.

Principal Investigator

Tracy Richardson, Ph.D., MT-BC  
1 St Mary of Woods Coll, St Mary-Of-The-Woods, IN 47876  
richardson@smwc.edu  
812-535-5154

Co-investigator

Brianna Larsen, MT-BC, NMT  
7290 Clayton Ave Inver Grove Heights, MN 55076  
Brianna.larsen@smwc.edu  
605-214-0771

This study was approved by the Saint Mary-of-the-Woods College Human Subjects Institutional Review Board on 3/6/2020. If you have questions or concerns about your rights as a research participant, you may contact the chair of the Human Subjects Institutional Review Board.

Chair, IRB

Dr. Lamprini Pantazi, Chair, Human Subjects Institutional Review Board  
Saint Mary-of-the-Woods College  
Saint Mary of the Woods, IN 47876  
(812) 535-5232  
[lpantazi@smwc.edu](mailto:lpantazi@smwc.edu)

My signature below indicates that I am 18 years of age or older, I have been informed about this study, I consent to participate, and I have received a copy of this consent form.

---

Signature

---

Date

*Note: If participant is under the age of 18, participant's parent or guardian must sign the consent form and the participant must sign an assent form.*

**Updated 01/14/2019**

**APPENDIX B**

## Questions

1. What kind of injury(ies) have you experienced?
2. What were your symptoms?
3. How long did they last?
4. Did you seek medical attention and if so, what were their recommendations?
5. How has your injury impacted your daily work?
6. Did you lose work time due to your injury?
7. Were you limited in the types of music therapy interventions you could use due to the injury?
8. How did your limitation(s) impact on your sessions?
9. How did your limitation(s) impact on your client(s)?
10. How did your limitation(s) impact on your job?
11. How did your limitation(s) impact on you personally?
12. What instrument do you primarily use for work?
13. In which population do you work?