



**LIVED EXPERIENCES OF CHINESE TERTIARY STUDENT PIANISTS
WITH PLAYING-RELATED MUSCULOSKELETAL DISORDER IN
CHENGDU, CHINA**

By

MIAO XIAOYU

**Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia,
in Fulfilment of the Requirements for the Degree of Doctor of Philosophy**

September 2024

FEM 2024 9

All material contained within the thesis, including without limitation text, logos, icons, photographs and all other artwork, is copyright material of Universiti Putra Malaysia unless otherwise stated. Use may be made of any material contained within the thesis for non-commercial purposes from the copyright holder. Commercial use of material may only be made with the express, prior, written permission of Universiti Putra Malaysia.

Copyright © Universiti Putra Malaysia



Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfilment
of the requirement for the degree of Doctor of Philosophy

**LIVED EXPERIENCES OF CHINESE TERTIARY STUDENT PIANISTS
WITH PLAYING-RELATED MUSCULOSKELETAL DISORDER IN
CHENGDU, CHINA**

By

MIAO XIAOYU

September 2024

Chairman : Ahmad Faudzi bin Hj Musib, PhD
Faculty : Human Ecology

Playing-related Musculoskeletal Disorder (PRMD) is highly prevalent among tertiary student pianists. Investigating the lived experiences of tertiary student pianists who have suffered from PRMD can help identify the personal and social factors leading to their injuries. Moreover, it can also enable educators, healthcare providers, and other stakeholders to understand their experiences, needs, and thoughts, thereby providing them with more appropriate help and treatment for themselves. At present, PRMD has not received sufficient attention in China. The purpose of the present study is to investigate the lived experiences of tertiary student pianists who suffer from PRMD. Based on their lived experiences, this study aims to understand their risk factors for PRMD, their coping strategies with PRMD, and their subjective experiences, thoughts, perspectives, and feelings after injury. In addition, the issue of how their PRMD-related experiences influenced them is inspected in detail. The study uses the qualitative research method to explore this lived experience, using data from one-on-one interviews and focus group discussions with twenty-five student pianists at seven

higher education institutions in Chengdu, China. Eighteen themes related to the research questions emerged from the results.

The results of this study emphasise that tertiary student pianists should develop high self-efficacy and good self-regulation abilities to cope with the consequences of PRMD. At the same time, a reliable social support system should be established so that the injured student pianists can get help and support from social relations. This study's results can assist educators and healthcare providers in empirically understanding PRMD among tertiary student pianists, enabling them to provide appropriate education and treatment. The value of this study is that it differs from the outcomes presented by previous quantitative studies that apply to most musicians. Instead, this study investigated tertiary student pianists' thoughts, feelings, behaviours, and perspectives after suffering from PRMD, as well as the influence of personal, social, and environmental factors on them, thereby developing a deeper understanding of the pianists' PRMD-related lived experiences and filling in the gaps in the existing literature.

Keywords: Coping Strategies, Lived Experiences, Playing-related Musculoskeletal Disorders (PRMD), Risk Factors, Tertiary Student Pianists

SDG: GOAL 3: Good Health and Well-being

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk ijazah Doktor Falsafah

**PENGALAMAN HIDUP PELAJAR PIANO DI INSTITUISI TERTIARI
YANG MENGHIDAP GANGGUAN MUSKULOSKELETAL BERKAITAN
BERMAIN DI CHENGDU, CHINA**

Oleh

MIAO XIAOYU

September 2024

Pengerusi : Ahmad Faudzi bin Hj Musib, PhD
Fakulti : Ekologi Manusia

Gangguan Muskuloskeletal Berkaitan Bermain (PRMD) adalah gangguan lazim dalam kalangan pelajar piano institusi tertiar. Oleh itu, mendalami pengalaman hidup pelajar piano di institusi tertiar yang mengalami PRMD boleh membantu mengenal pasti faktor peribadi, tingkah laku dan sosial yang membawa kepada kecederaan mereka. Selain itu, ia dapat membantu pendidik, petugas kesihatan dan pihak berkepentingan lain memahami pengalaman, keperluan dan pemikiran pelajar-pelajar ini bagi memastikan mereka mendapat bantuan dan rawatan yang lebih sesuai. Pada masa ini, PRMD masih tidak mendapat perhatian yang mencukupi di China. Oleh itu, kajian bertujuan untuk mendalami pengalaman hidup pelajar piano penghidap PRMD di institusi tertiar China. Berdasarkan pengalaman hidup mereka, kajian ini memahami faktor risiko PRMD dalam kalangan pelajar ini, strategi menangani PRMD, dan pengalaman subjektif, pemikiran, perspektif dan perasaan mereka selepas mengalami kecederaan. Di samping itu, kajian ini meneliti bagaimana pengalaman berkaitan PRMD mempengaruhi pelajar ini. Kajian ini menggunakan kaedah penyelidikan

kualitatif untuk meneroka pengalaman hidup pelajar terbabit. Data dikumpul daripada temu bual individu secara bersemuka dan perbincangan kumpulan fokus dengan dua puluh lima pelajar piano dari tujuh institusi pengajian tinggi di Chengdu, China dan lapan belas tema yang berkaitan dengan persoalan kajian telah dikenal pasti.

Hasil kajian ini menekankan bahawa pemain piano di institusi tertiar perlu membina efikasi sendiri yang tinggi, pengawalan sendiri yang baik, dan dapat melindungi diri dalam menghadapi kesan PRMD. Pada masa yang sama, sistem sokongan sosial yang boleh dipercayai harus diwujudkan bagi memastikan pelajar piano yang cedera mendapat bantuan dan sokongan melalui hubungan sosial. Dapatan kajian dapat membantu pendidik dan petugas kesihatan dalam memahami PRMD dalam kalangan pemain piano pelajar tertiar secara empirikal bagi membolehkan mereka memberikan pendidikan dan rawatan yang sesuai. Dapatan kajian berbeza daripada dapatan kajian kuantitatif terdahulu yang melibatkan pemuzik. Kajian ini meneliti pemikiran, perasaan, tingkah laku dan perspektif pelajar piano di institusi tertiar yang menghidap PRMD, serta pengaruh faktor peribadi, sosial dan persekitaran terhadap mereka. Kajian ini dapat membawa kepada pemahaman yang lebih mendalam tentang PRMD dalam kalangan pemain piano berdasarkan pengalaman hidup mereka dan mengisi jurang literatur sedia ada.

Kata kunci: Faktor Risiko, Gangguan Muskuloskeletal Berkaitan Bermain (PRMD), Pelajar piano institusi tertiar, Pengalaman hidup, Strategi Menghadapi

SDG: MATLAMAT 3: Kesihatan dan Kesejahteraan yang Baik

ACKNOWLEDGEMENTS

First and foremost, I would like to express my gratitude to my supervisor, Dr. Faudzi. He has always provided me with spiritual encouragement and support, as well as academic direction and guidance. Because of him, the challenging and difficult doctoral stage has been fulfilling and lucky for me. His profound knowledge and stable temperament have infected me at every moment, making me more capable of facing future scientific research work and life.

Then, I want to thank my 25 participants. As an injured pianist like them, I can understand how painful and torturous the experience related to PRMD can be. My participants were willing to open up and share this experience with me. They even encouraged me and told me that my research was meaningful. This was the motivation for me to complete the thesis. This thesis is not only a rigorous academic study but also a story about their struggle for piano playing.

I also want to express my gratitude to my parents. During the four years of my doctoral study, they provided me with spiritual and financial support, enabling me to conduct my research without any worries. It is difficult for me to fully express my gratitude to them in words. I can only do my best to repay them for the rest of my life. Thank you to my boyfriend. He always catches me and accompanies me when I am on the verge of emotional breakdown and encounter setbacks. When I am striving for my studies, he helps me take care of my home and pets, making me feel that I am not facing these difficulties alone. Thanks to my two dogs and one cat. They have given me tremendous

emotional support and made me constantly feel the simplicity and beauty of the essence of life.

Finally, I want to thank myself and give myself one of my favorite sayings: "Do not listen to anyone. You are already great."



This thesis was submitted to the Senate of Universiti Putra Malaysia and has been accepted as fulfilment of the requirement for the degree of Doctor of Philosophy. The members of the Supervisory Committee were as follows:

Ahmad Faudzi bin Hj Musib

Associate Professor
Faculty of Human Ecology
Universiti Putra Malaysia
(Chairman)

Indra a/p Selvarajah

Senior Lecturer
Faculty of Human Ecology
Universiti Putra Malaysia
(Member)

ZALILAH MOHD SHARIFF, PhD

Professor and Dean
School of Graduate Studies
Universiti Putra Malaysia

Date: 12 December 2024

TABLE OF CONTENTS

	Page
ABSTRACT	i
ABSTRAK	iii
ACKNOWLEDGEMENTS	v
APPROVAL	vii
DECLARATION	ix
LIST OF TABLES	xiv
LIST OF FIGURES	xv
LIST OF ABBREVIATIONS	xvi
 CHAPTER	
 1 INTRODUCTION	 1
1.1 Background of the Study	1
1.2 Statement of the Problem	5
1.3 Objectives of the Study	11
1.4 Research questions	12
1.5 Significance of the Study	12
1.6 Limitations of the Study	14
1.7 Definitions and Terms Used	16
1.8 Organization of Thesis	19
 2 LITERATURE REVIEW	 21
2.1 Background of Play-related Musculoskeletal Disorder (PRMD)	21
2.1.1 History of Performing Arts Medicine	21
2.1.2 Development and Definition of Playing-related Musculoskeletal Disorder (PRMD)	22
2.2 Risk Factors for Musicians' PRMD	24
2.2.1 Demographic Factors	25
2.2.2 Environmental Factors	27
2.2.3 Instrumental Music Playing and Personal Factors	29
2.2.4 Music Education and Lack of Health Risk Awareness	30
2.2.5 Psychological Factors	31
2.2.6 Risk Factors Specific to Pianists	34
2.3 PRMD Coping Strategies	41
2.3.1 Physical Therapy	41
2.3.2 Physical Exercise	42
2.3.3 Medical Treatment	44
2.3.4 Music Education and Health Education	45
2.3.5 Develop Healthy Playing Habits	47
2.3.6 Psychotherapy	48
2.3.7 Coping Strategies Specific to Pianists	49

2.4	Musicians' Lived Experiences with PRMD	51
2.4.1	Musicians' Experiences with PRMD	52
2.4.2	Tertiary Student Pianists' Experiences with PRMD	54
2.4.3	Experiences Related to Risk Factors and Coping Strategies For PRMD	57
2.4.4	Chinese Pianists Growing Experiences	60
2.5	Theoretical Underpinning of the Study	63
2.5.1	Social Cognitive Theory (SCT)	63
2.5.2	Conceptual Framework	68
3	METHODOLOGY	70
3.1	Qualitative Research Method	70
3.2	Research Setting	72
3.3	Role of the Researcher	74
3.4	Participants and Sampling Criteria	76
3.4.1	Demographic Information of Participants	77
3.4.2	Informed Consent	85
3.5	Data Collection	86
3.5.1	Data Collection Protocol and Guide	87
3.5.2	Data Collection Procedure	88
3.6	Pilot Study	91
3.7	Trustworthiness	94
3.8	Data Analysis	96
3.9	Ethical Considerations	101
4	RESULT AND DISCUSSION	103
4.1	Presentation of Research Themes	103
4.1.1	Risk Factors for Injury	104
4.1.2	PRMD Coping Strategies	121
4.1.3	Subjective Experiences and Thoughts	139
4.1.4	Influences and Meanings	154
4.2	Discussion	166
4.2.1	Personal Factors	167
4.2.2	Behaviour Factors	173
4.2.3	Environment Factors	176
4.2.4	Unique Experiences of Chinese Tertiary Student Pianists	179
4.2.5	Comparison of Two Focus Groups	182
5	CONCLUSION	186
5.1	Summary of the Study	186
5.2	Conclusion	188
5.3	Implications of the Study	195
5.3.1	Methodology and Theoretical Implications	195
5.3.2	Implications for Higher Education Institutions in China	197
5.3.3	Practical Implication	198
5.4	Recommendations for Future Studies	202

REFERENCES	207
APPENDICES	227
BIODATA OF STUDENT	291
LIST OF PUBLICATIONS	292



LIST OF TABLES

Table	Page
3.1 Distribution of participants	71
3.2 Number of staffs according to participation in different activities	85
5.1 Summary of the Study	187



LIST OF FIGURES

Figure	Page
2.1 The process of Social Cognitive Theory (SCT)	68
2.2 The process of Social Cognitive Theory (SCT)	69
3.1 Methodology steps of this study	71
3.2 Example of partial nodes in Nvivo	99
3.3 Data analysis procedure	101
4.1 Research themes	103
4.2 Emotional responses and changes of pianists	144
4.3 Word frequencies analysed by Nvivo	167

LIST OF ABBREVIATIONS

BMI	Body Mass Index
COREQ	Consolidated Criteria for Reporting Qualitative Research
MPA	Musical Performance Anxiety
MPPA	Medical Problems of Performing Artists
PAMA	Performing Arts Medicine Association
PRMD	Playing-related Musculoskeletal Disorders
SCT	Social Cognitive Theory
TCM	Traditional Chinese Medicine

CHAPTER 1

INTRODUCTION

1.1 Background of the Study

Musicians are a group displaying relatively high rates of career satisfaction. They typically enjoy happiness brought about by creating and playing music, but they also run the risk of injury (Rose et al., 2024). Although there are historical records of musicians being injured while working going back as early as 1713, musicians' playing-related disorders were for the most part ignored by the medical community for a long time (Armocida, 2019). Learning to play instrumental music and becoming a musician are generally perceived as risk-free, and even musicians themselves often struggle to understand that playing the instrument can cause physical harm, leading to a less developed field of performing arts medicine compared to sports medicine (Yang et al., 2021; Shanoff et al., 2019). In 1986, the first journal related to performing arts medicine, Medical Problems of Performing Artists (MPPA), was created, enabling musicians and the public to begin to access more information about playing-related musculoskeletal disorders (PRMD) (Pappa, 2019). In 1998, Zaza defined PRMD as "any pain, weakness, lack of control, numbness, tingling, or other symptoms that interfere with musicians' ability to play the piano at the level they are accustomed to without taking into account very mild symptoms" (Zaza, 1998). Subsequently, people started to pay attention to the health problems of musicians, leading to the emergence of numerous studies on the subject (Kok et al., 2016).

According to Ling (2014), musicians across all instrumental categories, work types, and age groups are susceptible to PRMD. However, the majority of existing literature research focuses on musicians who play a variety of instruments, with orchestra musicians receiving the most attention. Conversely, there is relatively little literature on musicians who specialise in a single instrumental genre—and even less on pianists (Shanoff, 2020; Portnoy et al., 2022; Yoshimura, 2009). In addition, most current studies do not distinguish between musicians' age groups. Nonetheless, there are differences among musicians of different ages who suffer from PRMD, and some literature also suggests that younger musicians are more susceptible to the disorder (Détári & Nilssen, 2022; Matei & Ginsborg, 2022). Depending on the age of the musicians and the kind of instrumental music they play, the body parts vulnerable to injury, risk factors, coping strategies, and even lived experiences associated with PRMD may vary (Bragge et al., 2006; Ling et al., 2018). Therefore, it is necessary to study musicians of a similar age and those who play the same instruments to obtain more in-depth and representative results.

Past literature has shown that most pianists (even professional players) do not understand that playing an instrument may cause harm to the body (Rousseau et al., 2021; Cruder et al., 2019). However, over-practice, highly repetitive playing movements, incorrect playing posture, poor playing techniques, lack of rest, performance anxiety, and other related factors can all contribute to pianists suffering from PRMD (Macdonald et al., 2018; Rousseau et al., 2021; Davies, 2020). Allsop (2007) proposed that the piano can accommodate extremely difficult and complex music, often requiring the use of ten fingers simultaneously. These difficult tasks can lead to breaking points in the body, putting extreme strain on the musculoskeletal

system. Therefore, pianists are prone to musculoskeletal disorders (Takamizawa & Kenway, 2023).

Currently, no studies in China involve the term "playing-related musculoskeletal disorder (PRMD)", and researchers call diseases related to instrumental music performance "musicians' occupational diseases." Due to the different living environments, cultural beliefs, educational backgrounds, physical conditions, and living habits of people in each country, the population characteristics of musicians who suffer from PRMD are also different, so the research results of other countries cannot be directly applied to Chinese musicians before verification (Roset-Llobet et al., 2000). Furthermore, no research has been conducted on the lived experiences of Chinese musicians with PRMD, indicating a lack of investigation into the thoughts, perspectives, and feelings of musicians who have suffered from PRMD in China and a lack of public awareness and understanding of their experiences.

According to historical records, Chengdu is the "ancient capital of Oriental music" (Guo, 2023; Ge et al., 2014). Currently, Chengdu stands as one of the four Chinese cities with a national music industry base, referred to as the "Music City" (Wang, 2022). In 2017, the Chengdu Music Culture Industry Fund, with a budget of five billion yuan, was officially established, which is the first fund specifically supporting the music industry in China (Li, 2017; Lu, 2022). According to the statistics from www.people.com.cn (one of China's authoritative news websites) on August 1, 2023, Chengdu has more than 3,500 music enterprises, 19 higher education institutions offering music majors, 76 music performance venues, and four music industry clusters, holding an average of about 2,000 music festivals every year (Li, 2017). The output

value of the music industry is about 50.3 billion yuan in 2022. All these factors indicate that Chengdu is a veritable music city, and everything related to music is growing at a significant rate. In the field of music education, the piano is the preferred instrument for Chinese instrumental learners, and the proportion of piano students is the largest, even exceeding the number of Chinese traditional instrument learners (Luo, 2022; Bai, 2021; Yong et al., 2019). The number of piano learners in the Sichuan-Chongqing region exceeds that of other provinces in China, and some world-famous Chinese Sichuan-born pianists such as Li Yundi, Shen Wenyu, Wu Chi, and Zhang Qinqun have also emerged (Luo, 2018; Li, 2018). Almost all amateur music education institutions in Chengdu offer piano-playing courses, and all higher education institutions with music departments offer piano-playing courses or have piano majors. Famous piano educators such as Dan Zhaoyi, Li Xiumei, and Li Xiaoling are prominent in Chengdu, and the piano departments of the Sichuan Conservatory of Music and other colleges and universities have trained numerous professional pianists, including the most renowned Chinese woman pianist Chensa (Yong et al., 2019). In this context, the population at risk of developing PRMD due to playing the piano is likely to be larger. This study has chosen Chengdu as the research site, as it has a certain degree of representativeness.

The present study focuses on tertiary student pianists in Chengdu, China, and studies their lived experiences related to PRMD. The term "lived experience" steers this study toward a qualitative research approach (Howard, 2002). The value of this approach in this study is that it differs from the cold data collected in quantitative studies and medical records and instead shows student pianists' experiences, behaviours, perspectives, thoughts, and feelings related to PRMD, as well as demonstrating the

deeper reasons and details of why they suffer and how they cope with the disorder. This study aims to strengthen existing research and offer a perspective for young tertiary student pianists in the field of performing arts medicine.

1.2 Statement of the Problem

Most musicians experienced transient or permanent playing-related disease during their careers, and more than 84% of musicians suffered from PRMD (Shanoff et al., 2019; Zięba et al., 2019). The prevalence of PRMD among classical musicians ranges from 39% to 87% (Ngor, 2018), and among pianists about 26% to 93% (Rotter et al., 2020; Ryan et al., 2021). Prevalence among professional conservatory students ranged from 43% to 63%, which included pianists (Gembris et al., 2020; Stanhope et al., 2019; Portnoy et al., 2022). Salonen (2018) suggested that 75% of student musicians had been affected by PRMD, and Brandfonbrener (2009) found that the prevalence of PRMD among first-year music students was as high as 85%. Some students were even affected by PRMD before they entered college. These data indicate that the occurrence of PRMD among tertiary student pianists is common and should be paid attention to.

Although tertiary student pianists are not yet professional pianists, they are being trained professionally to play the piano. They require the same amount of long-term practice as professional pianists, and they are under greater pressure compared to amateur pianists (Yoshimura, 2009). Some studies found that tertiary student pianists are more susceptible to PRMD than other pianists due to the lack of mature playing experience, the lack of injury coping strategies, the lack of attention to health problems, and a tendency to be more prone to excessive practice (Cruder et al., 2019; Davies,

2020; Svendsen, 2022; Yoshimura, 2009). Some studies also found that tertiary student pianists often play difficult pieces that are beyond their musculoskeletal capacity, and playing challenging and unsuitable pieces can cause them to have musculoskeletal overload, which leads to the emergence of early PRMD (Pappa, 2019; Kok et al., 2018). Current studies on PRMD among pianists primarily focus on professional pianists, with insufficient research conducted on tertiary student pianists (Wood, 2014; Kok et al., 2016). As a result, the injuries and experiences of tertiary student pianists are seldom publicised, and they have become an easily overlooked group (Détári & Nilssen, 2022; Matei & Ginsborg, 2022). In addition, most of the past studies related to PRMD risk factors were based on questionnaires with large sample sizes, and while the findings are applicable to most musicians, they tend to overlook some of the personal, social, and environmental factors that lead musicians to suffer from PRMD (Cruder et al., 2020; Queiroz et al., 2017). Therefore, it is necessary to conduct in-depth research on the above factors from the perspective of tertiary student pianists, in line with Austen's (2020) statement that musicians' reflections on their experiences can help them discover the deeper reasons for suffering from PRMD.

When compared to other performers, musicians' PRMD is arguably the most difficult to detect and treat because injuries in actors, athletes, or dancers are typically acute and recognisable (Austen, 2020). However, musicians' injuries are often long-term and chronic; they rarely suffer sudden musculoskeletal injuries, so they are difficult to identify and are easily overlooked (Wagner, 2023). In addition, many musicians who suffer from PRMD tend to self-treat instead of seeking professional medical help due to factors such as a lack of trust in healthcare providers, fear of the injury becoming public knowledge, and fear of facing a career crisis or financial difficulties (Porter &

Wilson, 2018; Guptill, 2011). This "culture of silence" can cause musicians to suffer further injuries due to the lack of professional treatment and hinder the development of music-related performing arts medicine (Lima et al., 2020; Adom et al., 2020). Many musicians who have received professional treatment also report that the treatment results are often disappointing due to healthcare personnel's lack of music profession knowledge and experience in treating music performers (Guptill, 2011). Hence, musicians do not actively seek medical treatment, and healthcare providers' lack of experience in treating music performers creates a vicious cycle in the long run.

The situation appears to be deteriorating in China. However, there are specialised clinics for occupational diseases in China: general doctors, physiotherapists, acupuncturists, massage therapists, and others can also provide interventions and treatments for musicians (Shanoff, 2020; Ling et al., 2016). However, there are no professional performing arts medical organisations similar to the Performing Arts Medicine Association (United States) or Australian Society for Performing Arts Healthcare (Australian) in China; most doctors and therapists lack knowledge of musicians and clinical experience in treating musicians; they can only diagnose and treat musicians' PRMD according to their clinical conditions, and some treatment programmes may not be applicable to musicians (Tang, 2010; Li, 2006). Even individual musicians who were injured ended their careers due to improper advice or treatment from doctors. Investigating how musicians cope with PRMD based on their lived experiences can reveal what coping strategies, in addition to medical treatment, are often used by individual musicians. It can also assist musicians in understanding the social aspects, such as social relationships, and the experiences and thoughts they

encounter when coping with PRMD. This serves as a valuable resource for musicians themselves and their stakeholders (Salonen, 2018).

Barton (2004) emphasises the importance of understanding a musician's lived experiences and the nature of those experiences for clinicians treating musicians. However, studying the experiences, thoughts, feelings, and perspectives of musicians with PRMD holds additional significance. The literature mentions that musicians with PRMD often continue to work in psychological environments exemplified by stigma, low self-efficacy, low social support, and questioning (Howard, 1994; Austen, 2020). Therefore, a survey of their experiences could provide musicians themselves with an opportunity to share their stories and others with an opportunity to learn about them, thus providing a more supportive work environment for them. In addition, since most healthcare professionals who treat PRMD are not musicians, and there is a lack of awareness of the professional needs and current situation of musicians, understanding their experiences related to PRMD can help healthcare workers provide more appropriate interventions and treatments (Salonen, 2018).

Many studies found that suffering from PRMD has impacts on the physical and mental health of tertiary student pianists, which leads to low learning efficiency, slow learning progress, and even giving up the piano playing career (Kok et al., 2016; Steemers et al., 2020; Narducci, 2020). In addition to affecting learning outcomes and career prospects, PRMD-related experiences may have other unavoidable effects on student pianists. Beyond the negative influences, these experiences may also lead to potential positive outcomes. It is essential to consider how a student pianist's life changes after suffering from PRMD. Judging from the existing research literature, there are still

many gaps. In China's case, the PRMD of tertiary student pianists in Chengdu has not received adequate attention; the experience related to PRMD has not been systematically investigated; and no higher education institutions have provided injury education for music students. Higher education institutions in other regions of China are similar to those in the Chengdu region in that they have not provided students with health education, have neglected their health issues, and have not conducted sufficient research on the health problems of music students (Qiu, 2013). The differences become more evident when compared with other nations and regions globally. One of the aims of this study is to attempt to narrow these gaps.

Most professional pianists and piano teachers are former tertiary student pianists. Therefore, adequate attention and investigation of tertiary student pianists' PRMD-related problems can provide them with a supportive learning environment at the beginning of their piano playing career, which is more conducive to their physical health, mental health, and professional development. In the long run, it will also benefit the future development of the field of piano performance (Austen, 2020). In addition, the group of tertiary student pianists is very large, with different regional, historical, and cultural backgrounds. The risk factors, coping strategies, and lived experiences of PRMD also vary among related groups. This study selects tertiary student pianists in Chengdu as the research objects, hoping to provide a sample with a different regional, historical, and cultural background compared to those of other researchers.

Most of the current literature on PRMD is quantitative research. Although quantitative research can provide objective data based on a large volume of data, it cannot capture the details and subtle minutia of the PRMD-related experiences of tertiary student

pianists (Queiroz et al., 2017; Cruder et al., 2020). In addition, quantitative studies have excluded and simplified some conclusions while drawing standard, precise, and objective conclusions related to musician PRMD (Ramona, 2011). For example, when investigating the risk factors and coping strategies of PRMD, quantitative studies typically conduct questionnaires on large sample sizes of participants, ignoring literature factors not included in the scale and disregarding personal differences in musicians' coping with PRMD. Therefore, quantitative and qualitative studies are equally important in the research field of musicians' health problems (Zosso, 2012). Qualitative research is needed to supplement quantitative data to make research results more rich and diverse (Bragge et al., 2006; Salonen, 2018). Qualitative research methods were used in this study. Past literature has shown that qualitative research has been effectively used to help clinicians make treatment plans (Rousseau et al., 2021; Yang et al., 2021). Guptill & Golem (2008) point out that "perhaps the most valuable contributions from the literature on musicians' playing-related injuries are the anecdotes from seasoned practitioners about how to approach effective care" (p. 310), thus affirming the value of qualitative approaches. Zosso (2012) also mentioned that the experiences of musicians related to PRMD are of enormous significance for exploring the risk factors and prevention and treatment methods of PRMD.

In summary, this study focusses on tertiary student pianists in Chengdu, China, filling the gaps in previous research by comprehensively examining the lived experiences associated with PRMD among a homogenous population of pianists. This study aims to facilitate public awareness of the lived experiences of tertiary student pianists afflicted by PRMD, fostering more understanding and support for the suffering students. This study also aims to provide a platform for tertiary student pianists to

share their experiences connected to PRMD. Informing pianists that injury is not a cause of shame and that they should not keep silent would empower them to manage PRMD and confront PRMD-related complications with a more optimistic perspective.

1.3 Objectives of the Study

The core purpose of this study is to investigate the lived experiences of tertiary student pianists with PRMD. Based on this, the following research objectives have been determined:

1. Based on the lived experiences of Chinese tertiary student pianists with PRMD, the aim is to understand the risk factors for PRMD from a personal, behavioural, and environmental perspective.
2. Based on the lived experiences of Chinese tertiary student pianists with PRMD, the goal is to understand the strategies they take to cope with PRMD and their experiences of receiving treatment from personal and social perspectives.
3. The purpose is to describe the in-depth subjective experiences, thoughts, viewpoints, and feelings of Chinese tertiary student pianists after suffering from PRMD.
4. The target is to investigate the in-depth influences and meanings that PRMD-related experiences bring to Chinese tertiary student pianists.

1.4 Research questions

The central question of this study is, "What is the lived experience of tertiary student pianists with PRMD?" On this basis, four research questions are formed:

1. What are the personal, behavioural, and environmental factors that cause Chinese tertiary student pianists to suffer from PRMD?
2. What strategies do Chinese tertiary student pianists employ to cope with PRMD, both personally and from a societal perspective? What medical treatment do they receive?
3. What are the subjective experiences, thoughts, perspectives, and feelings of Chinese tertiary student pianists who have suffered from PRMD?
4. What influences and meanings have PRMD-related experiences brought to Chinese tertiary student pianists?

1.5 Significance of the Study

First, this study employs the qualitative method to explore the risk factors of tertiary student pianists suffering from PRMD, drawing from their personal lived experiences; this represents a novel approach in the field of performing arts medicine. Nearly all literature on PRMD risk factors relies on quantitative studies, using large-scale samples to examine risk factors that can be applied to a wider range of musicians; this approach has yielded rich and reliable research results. However, the risk factors investigated in quantitative studies only represent the general risk factors that cause

pianists to suffer from PRMD and cannot point to other specific and low-prevalence risk factors, as well as personal and social factors. This study tries to explore deeply how known risk factors specifically caused pianist injury and attempts to identify unreported risk factors to enhance the existing literature on PRMD risk factors.

Second, this study aims to explore tertiary student pianists' strategies for coping with PRMD through their descriptions of their experiences in preventing, alleviating, and treating the disorder. The past literature has explored PRMD coping strategies from the perspectives of various disciplines (medicine, physics, biomechanics, psychology, etc.) and has achieved rich results. This study attempts to explore feasible coping strategies used by tertiary student pianists based on their PRMD-related experiences and is not exclusively limited to a single discipline method. Such exploration is conducive to discovering coping strategies that have been neglected in previous research, thereby providing more directions and possibilities to explore the countermeasures of PRMD in the future. In addition, this study investigated how tertiary student pianists cope with PRMD. This information can assist healthcare personnel, educators, and other relevant professionals in understanding the true encounters, thoughts, and needs of tertiary student pianists, enabling them to provide more appropriate and effective support and treatment.

Third, this study delves into the in-depth subjective thoughts, emotional changes, and inner feelings of tertiary student pianists who are affected by PRMD; it also examines their behaviours, choices, and changes that result from physical injuries, as well as their perceptions of PRMD-related phenomena. These are highly valuable documents that can aid the public in comprehending their experiences and situations, thereby

providing them with greater understanding and support. This study also delved into the impacts and transformations of PRMD-related experiences across various domains, such as piano playing and the daily lives of tertiary student pianists, thereby providing a broader perspective on PRMD-related phenomena. In addition, this study is the first to investigate the lived experiences of Chinese musicians related to PRMD, thus filling a gap in the field.

1.6 Limitations of the Study

First, the inherent limitations of participant sampling are acknowledged. This study recruited 25 tertiary student pianists in Chengdu, China, to participate in one-on-one interviews and focus group discussions. The study aimed to investigate the experiences associated with PRMD in a specific population sample, not to draw evidence-based conclusions from a large sample size. As a qualitative study, the number of participants involved is sufficiently large enough to provide rich data, and the results are credible (Creswell & Poth, 2016; Merriam & Tisdell, 2016). However, due to the limitations of the study location and the number of participants, the results cannot represent the PRMD-related experiences of tertiary student pianists in other regions. Therefore, the study can serve only as a preliminary examination to encourage other tertiary student pianists with similar experiences to address their health problems and to raise awareness about the experiences of injured pianists.

Second, this study acknowledges limitations in its research methods. This study is qualitative research and focuses on tertiary student pianists' experiences related to PRMD, so participants' personal experiences, thoughts, perspectives, and feelings are

vitality important. However, as a qualitative study, it is very difficult to avoid individual subjectivity affecting the understanding and judgement of the phenomena. The researcher can only try her best to bracket herself from the phenomenon and avoid excessive uses of intuition and preconceptions in data analysis. In addition, participants' descriptions usually include a review of their past experiences. Although the researcher repeatedly emphasised the importance of participants' honest answers and confirmed the interview contents with them many times after transcribing the interview records, this study could not wholly circumvent participants' memory bias or deliberate avoidance during the interview.

Finally, there are limitations in professional knowledge. This study attempts to strengthen and enrich existing research by investigating the risk factors and injury coping strategies of participants suffering from PRMD through qualitative research. As the researcher and participants were not healthcare professionals, participants' injuries cannot be sufficiently confirmed by the factors they mentioned. This study is also unable to assess the validity of the methods mentioned or determine the feasibility of the pianists' ideas and needs within the healthcare system. Therefore, the findings of this study on risk factors (especially those not mentioned in the previous literature) will require more quantitative studies with large sample sizes in the future to confirm whether they can be generalised to a larger population of pianists. The coping strategies mentioned by the participants require multiple attempts by other musicians or further clinical studies by medical professionals to determine their efficacy for a larger population of pianists. The wishes and thoughts that participants mentioned related to the treatment must also be assessed by their healthcare providers to determine if these are feasible.

1.7 Definitions and Terms Used

This section introduces the technical terms used in the study and the medical terms mentioned by participants:

Playing-related musculoskeletal disorders (PRMD): any pain, weakness, lack of control, numbness, tingling, or other symptoms that interfere with a musician's ability to play the instrument at the level they are accustomed to, without taking into account very mild symptoms (Zaza, 1998).

Performing arts medicine: performing arts medicine is an outgrowth of occupational medicine and physical medicine, involving medical complaints from musicians, dancers, actors, and other performing artists. Medical problems range from pain in performance, to neuromuscular dysfunction, or psychological problems related to performance. The awkward postures and repetitive movements commonly required by performing artists can lead to these and other problems (Susan, 1992; Dictionary, 2011).

Lived experience: in qualitative research, lived experience refers to the representation of a given person's experiences and choices and the knowledge they gain from these experiences and choices. It is a category of qualitative research, that focuses on society, culture, language and communication. In addition, lived experience is not about reflecting on an experience while living through it but is recollective, with a given experience being reflected on after it has passed or been lived through (Given, 2008; Marshall & Rossman, 2014; Lindseth & Norberg, 2004).

Risk factor: in epidemiology, risk factors are variables associated with an increased risk of disease or infection, and are primarily used in medicine and public health (Parritz & Troy, 2013). In this study, risk factors represent all the factors that could potentially cause tertiary student pianists to suffer from PRMD.

Coping strategies: there are two types of coping strategies: problem-focused coping strategies and emotional-focused coping strategies. Problem-focused coping strategies include doing something to alleviate the pain people face, while emotion-focused coping strategies include reducing emotional pain and regulating emotional stress (Harris-Dale, 2020; Sittichai & Smith, 2018). In this study, coping strategies refer to all strategies used by tertiary student pianists to cope with PRMD and a series of negative effects brought by PRMD.

Tertiary student pianists: tertiary education, also called post-secondary education, is any level of education pursued beyond high school, including undergraduate and graduate credentials. These credentials encompass certificates, diplomas or academic degrees (World Bank, 2017). In this study, tertiary student pianists and student pianists represent both undergraduate and graduate piano major students in Chinese higher education institutions.

Traditional Chinese medicine (TCM): traditional Chinese medicine (TCM) is a kind of traditional medicine that originated from the Han nationality and has a history of thousands of years. When compared with modern medicine, it is often classified as traditional medicine. TCM includes a range of sometimes competing health and

healing practices, folk beliefs, literati theory and Confucian philosophy, herbs, food, diet, sports, medical specialities, and schools of thought (Eigenschink et al., 2020; Andrews, 2014).

Musical performance anxiety (MPA): musical performance anxiety (MPA) is defined as a persistent, distressing experience of fear and/or a real prejudice against the ability to perform in a public setting, the extent of which is independent of an individual's musical talent and level of readiness (Dobos et al., 2019).

Tenosynovitis: tenosynovitis is a broad term describing the inflammation of the fluid-filled synovium within the tendon sheath. Depending on the aetiology, it commonly manifests as pain, swelling, and contractures (Blood et al., 2016).

Osteoarthritis: another name is degenerative arthritis. It is a type of arthritis with damage to the articular cartilage or subarticular bones. The typical symptom is joint pain or stiffness. The first onset is usually only after exercise, but the episodes increase with time. Other symptoms include swelling of the joints, reduced range of motion, and weakness or numbness in the limbs if the back is invaded (Madry et al., 2016).

Periarthritis of shoulder: periarthritis of the shoulder is a type of arthritis that causes pain and stiffness in a single joint. The condition most often affects the shoulders but can affect any joints. Symptoms occur when calcium crystals build up around the joint, resulting in inflammation (Lloyd-Roberts et al., 1959).

Ankylosing spondylitis: ankylosing spondylitis is a type of arthritis that causes inflammation in the joints and ligaments of the spine. This reduces spinal flexibility and may result in a bowed posture. If your ribs are affected, it may be difficult to breathe deeply. Signs and symptoms usually begin in young adulthood (Khan, 2009).

Lumbar (lower back) muscle strain: lumbar (lower back) muscle strains and sprains are the most common cause of lower back pain. Lower back muscle strains and sprains are common because they support the weight of the upper body and are involved in movement, twisting, and bending. Psoas strain is caused by abnormal stretching or tearing of muscle fibres. A lumbar sprain is caused by a tear in a ligament (the hard band of tissue that holds bones together) from the attachment. Both conditions can result from a sudden injury or gradual overuse. A strain or sprain of the lumbar spine can be debilitating (Isidro et al., 2022; Dunn et al., 2006).

Lumbar disc protrusion: lumbar disc disease occurs when the discs in the lower back of the spine protrude or protrude from between the bone regions of the spine. Lumbar disc disease can cause lower back pain, leg pain, and weakness, which can be aggravated by movement and activity. (Tarcău et al., 2022).

1.8 Organization of Thesis

This study is divided into five chapters:

Chapter 1 is the introduction. This chapter describes the research background and problem statement, identifies the research objectives and questions, and then points

out the significance and limitations of this research. This chapter also explains the terms used in this study and, briefly explains the thesis's organisation.

Chapter 2 is the literature review. This chapter reviews the literature related to PRMD. Includes the history and development of PRMD, risk factors for injury, PRMD coping strategies, and musicians' experiences with PRMD. This chapter also introduces the theoretical underpinning of this study and proposes a conceptual framework.

Chapter 3 is the methodology. This chapter describes the research methods and tools used in this study. This chapter also describes the criteria and results of participant recruitment, selection of study sites, ethical considerations and specific methods and procedures for data collection and analysis. The pilot study results and the scheme to test the trustworthiness are also presented.

Chapter 4 is the result and discussion. This chapter uses the qualitative research method to identify eighteen themes related to the research questions based on the research data. Then, discusses the research results in depth based on the previous literature and theoretical underpinning and compares the results of two focus groups.

Chapter 5 is the conclusion. This chapter summarises the research results and outcomes of this study, discusses the implications of this study, and makes suggestions for future research.

REFERENCES

- Ashworth, P. (1996). Presuppose nothing! The suspension of assumptions in phenomenological psychological methodology. *Journal of phenomenological psychology*, 27(1), i-25.
- Amadio, P. C. (2003). Management of nerve compression syndrome in musicians. *Hand clinics*, 19(2), 279-286.
- Andrewes, J. (2005). Santiaba: Hierarchy and the Performing Body. In *Bodywork: Dress as Cultural Tool* (pp. 147-184). Brill.
- Akel, S., & Düger, T. (2007). Psychosocial risk factors of musicians in Turkey: use of the job content questionnaire. *Medical Problems of Performing Artists*, 22(4), 147-152.
- Allsop, L. L. (2007). *Investigating the prevalence of playing-related musculoskeletal disorders in relation to piano players' playing-techniques and practising strategies* (Master' thesis). University of Western Australia, Australia.
- Altenmuller, E. (2010). Focal dystonia in musicians: phenomenology, pathophysiology, triggering factors, and treatment. *Medical problems of performing artists*, 25(1), 3-9.
- Allsop, L., & Ackland, T. (2010). The prevalence of playing - related musculoskeletal disorders in relation to piano players' playing techniques and practising strategies. *Music Performance Research*, 3(1), 61-88.
- Ajidahun, A. T. (2011). *Guidelines in designing a warm up program for the prevention of playing related musculoskeletal disorder among instrumentalists* (Master's thesis). University of the Western Cape, Bellville.
- Ajidahun, A. T., & Phillips, J. (2013). Prevalence of musculoskeletal disorders among instrumental musicians at a center for performing arts in South Africa. *Medical problems of performing artists*, 28(2), 96-99.
- Ackermann, B. J., Kenny, D. T., O'Brien, I., & Driscoll, T. R. (2014). Sound Practice—improving occupational health and safety for professional orchestral musicians in Australia. *Frontiers in Psychology*, 5, 973.
- Andrews, B. (2014). *The making of modern Chinese medicine, 1850-1960*. ubc Press.
- Ackermann, B. J., Adams, R. D., & Marshall, E. S. (2015). The experiences of pianists with playing-related musculoskeletal disorders (PRMDs): A phenomenological investigation. *Psychology of Music*, 43(4), 480-495.
- Aguinis, H., & Solarino, A. M. (2019). Transparency and replicability in qualitative research: The case of interviews with elite informants. *Strategic Management Journal*, 40(8), 1291-1315.

- Armour, M., Smith, C. A., Wang, L. Q., Naidoo, D., Yang, G. Y., MacPherson, H., ... & Hay, P. (2019). Acupuncture for depression: a systematic review and meta-analysis. *Journal of clinical medicine*, 8(8), 1140.
- Altenmüller, S. I., Wiesendanger, M., & Jabusch, H. C. (2019). Playing-related musculoskeletal disorders in young musicians: The influence of training factors. *European Journal of Physical and Rehabilitation Medicine*, 55(6), 795-800.
- Ajidahun, A. T., Myezwa, H., Mudzi, W., & Wood, W. A. (2019). A scoping review of exercise intervention for playing-related musculoskeletal disorders (PRMDS) among musicians. *Muziki*, 16(1), 7-30.
- Austen, C. (2020). *'I'm not injured, this is just my life': an exploration of the experiences of conservatoire students with chronic playing-related musculoskeletal disorders* (Doctoral dissertation). Royal College of Music, London.
- Araújo, L. S., Wasley, D., Redding, E., Atkins, L., Perkins, R., Ginsborg, J., & Williamon, A. (2020). Fit to perform: a profile of higher education music students' physical fitness. *Frontiers in psychology*, 11, 298.
- Ajidahun, A. T., Myezwa, H., Mudzi, W., & Wood, W. A. (2020). Development of an Exercise Program for the Prevention of Playing-Related Musculoskeletal Problems Among Violinists. *Perspectives in Performing Arts Medicine Practice: A Multidisciplinary Approach*, 73-100.
- Adom, D., Daitey, S. T., Yarney, L., & Fening, P. A. (2020). Breaking the Culture-specific Silence of Women Glass Bead Makers in Ghana: Towards Empowerment. *Safety and health at work*, 11(4), 450-457.
- Azar, N. R. (2021). Injury prevention education provided during formal drum kit training is associated with lower frequency reporting of playing-related musculoskeletal disorders. *Journal of Popular Music Education*, 5(2), 187-210.
- Atanasova, Z. G. (2021). *One-Handed Piano Compositions and Injury Awareness: History, Study of Selected Works, and Mindful Practice*. Rowman & Littlefield.
- Amarandei, T. (2022). Piano Concerto and Jazz Music in the Second Half of the 20th Century. New Approaches to the Stylistic Fusion Concept. *Artes. Journal of musicology*, (25-26), 222-234.
- Bonneville-Roussy, A., Hruska, E., & Trower, H. (2020). Teaching music to support students: how autonomy-supportive music teachers increase students' well-being. *Journal of Research in Music Education*, 68(1), 97-119.
- Barton, R. (2004). The aging musician. *WORK: A Journal of Prevention, Assessment and Rehabilitation*, 22(2), 131-138.

- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative research in psychology*, 3(2), 77-101.
- Braun, V., & Clarke, V. (2012). *Thematic analysis*. American Psychological Association.
- Bai, B. (2021). Piano learning in the context of schooling during China's 'Piano craze' and beyond: Motivations and pathways. *Music Education Research*, 23(4), 512-526.
- Baeyens, J. P., Flix Díez, L., Serrien, B., Goossens, M., Veekmans, K., Baeyens, R., ... & Clijsen, R. (2022). Effects of rehearsal time and repertoire speed on upper trapezius activity in conservatory piano students. *Medical Problems of Performing Artists*, 37(1), 1-12.
- Bragge, P., Bialocerkowski, A., & McMeeken, J. (2006). A systematic review of prevalence and risk factors associated with playing-related musculoskeletal disorders in pianists. *Occupational Medicine*, 56(1), 28-38.
- Braun, V., Clarke, V., & Weate, P. (2016). Using thematic analysis in sport and exercise research. In *Routledge handbook of qualitative research in sport and exercise* (pp. 213-227). Routledge.
- Bober, C. C. (2019). *The experience of music performance anxiety for popular musicians: A transcendental-phenomenological investigation* (Doctoral dissertation). Michigan School of Psychology, Michigan.
- Braun, V., & Clarke, V. (2021). One size fits all? What counts as quality practice in (reflexive) thematic analysis?. *Qualitative research in psychology*, 18(3), 328-352.
- Burgoyne, B. M. (2022). *How college music majors experience perfectionism within their scholastic concentration* (Doctoral dissertation). Michigan School of Psychology, Michigan.
- Bragge, P., Bialocerkowski, A., & McMeeken, J. (2006). Understanding playing-related musculoskeletal disorders in elite pianists: a grounded theory study. *Medical Problems of Performing Artists*, 21(2), 71-79.
- Booth, A., Hannes, K., Harden, A., Noyes, J., Harris, J., & Tong, A. (2014). COREQ (consolidated criteria for reporting qualitative studies). *Guidelines for reporting health research: a user's manual*, 214-226.
- Buus, N., & Perron, A. (2020). The quality of quality criteria: Replicating the development of the Consolidated Criteria for Reporting Qualitative Research (COREQ). *International journal of nursing studies*, 102, 103452.
- Boddy, C. R. (2016). Sample size for qualitative research. *Qualitative Market Research: An International Journal*, 19(4), 426-432.

- Bandong, T. R., & Sprague, B. L. (2017). Experiences of music students with playing-related musculoskeletal disorders in the United States: A qualitative study. *Medical Problems of Performing Artists*, 32(2), 72-79.
- Blood, T. D., Morrell, N. T., & Weiss, A. P. C. (2016). Tenosynovitis of the hand and wrist: a critical analysis review. *JBJS reviews*, 4(3), e7.
- Berque, P., Gray, H., & McFadyen, A. (2014). Development and psychometric evaluation of the Musculoskeletal Pain Intensity and Interference Questionnaire for professional orchestra Musicians. *Manual therapy*, 19(6), 575-588.
- Berque, P., Gray, H., & McFadyen, A. (2016). Playing-related musculoskeletal problems among professional orchestra musicians in Scotland. *Med Probl Perform Artist*, 31, 78-86.
- Borger, T., Nel, E. J., Kok, L. M., Marinelli, F. E., & Woldendorp, K. H. (2021). Risk Factors for Musculoskeletal Complaints in Female Musicians: A Systematic Review and Exploration for Future Studies. *Medical Problems of Performing Artists*, 36(4), 279-296.
- Bandura, A. (1986). Social foundations of thought and action. *Englewood Cliffs, NJ*, 1986(23-28).
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: Freeman.
- Bandura, A. (1998). Health promotion from the perspective of social cognitive theory. *Psychology & Health*, 13(4), 623-649.
- Bandura, A. (2001). Social cognitive theory: An agentic perspective. *Annual Review of Psychology*, 52, 1-26.
- Bandura, A., & Locke, E. A. (2003). Negative self-efficacy and goal effects revisited. *Journal of Applied Psychology*, 88(1), 87-99.
- Bandura, A. (2004). Health promotion by social cognitive means. *Health Education & Behavior*, 31(2), 143-164.
- Bao, H, Q.(2004). Qintong jiazhang shiji [Ten taboo for parents of piano children]. *Ertong yinyue*, 3, 52-53.
- Boyington, J. E., Carter-Edwards, L., Piehl, M., Hutson, J., Langdon, D., & McManus, S. (2008). Cultural attitudes toward weight, diet, and physical activity among overweight African American girls. *Preventing chronic disease*, 5(2).
- Brusky, P. (2009). High prevalence of performance-related musculoskeletal disorders in bassoon players. *Medical Problems of Performing Artists*, 24(2), 81-87.

- Barrett, A. H. U. (2022). *Upper-String Instrumentalists as Micro-Athletes: A Framework for Integrating a Cognitive and Physical Strength and Endurance Regimen in (and out of) the Practice Room* (Doctoral dissertation). University of Washington, Washington.
- Bie. G, R., & Chen., C. P. (2023). Pujihua beijing xia kuanshengyu gaodeng jiaoyu qianfada pianqu wenti jiqi jie jue celue [Under the background of popularization, the problem of less developed areas of cross-provincial higher education and its solution strategy]. *Daxue jiaoyu kexue*, 04, 15-22.
- Coyle, J. (2002). Spirituality and health: towards a framework for exploring the relationship between spirituality and health. *Journal of advanced nursing*, 37(6), 589-597.
- Chen. X. (2006). Zhenhan shijie gangqinjie de zhongguo tiancai Shen Wenyu [Shen Wenyu, the Chinese genius who shocked the world piano world]. *Rencai kaifa*, 03, 48-50.
- Chipunza, C., & Gwarinda, S. A. (2010). Transformational leadership in merging higher education institutions: A case study. *SA Journal of Human Resource Management*, 8(1), 1-10.
- Cooper, S. C., Hamann, D. L., & Frost, R. (2012). The effects of stretching exercises during rehearsals on string students' self-reported perceptions of discomfort. *Update: Applications of Research in Music Education*, 30(2), 71-76.
- Chan, C., Driscoll, T., & Ackermann, B. (2013). Development of a specific exercise programme for professional orchestral musicians. *Injury Prevention*, 19(4), 257-263.
- Chan, C., & Ackermann, B. (2014). Evidence-informed physical therapy management of performance-related musculoskeletal disorders in musicians. *Frontiers in psychology*, 5, 706.
- Creswell, J. W., & Poth, C. N. (2016). *Qualitative inquiry and research design: Choosing among five approaches*. Sage publications.
- Chen, Y, Y. (2016). Music appreciation and reflection of The Shepherd Boy Piccolo. *Popular literature and art*, 22, 147.
- Cohen, J. D., Li, L., Wang, Y., Thoburn, C., Afsari, B., Danilova, L., ... & Papadopoulos, N. (2018). Detection and localization of surgically resectable cancers with a multi-analyte blood test. *Science*, 359(6378), 926-930.
- Collins, A., & Thompson, A. R. (2020). Musicians with playing-related musculoskeletal disorders: A cross-genre examination of risk factors, symptomatology, and diagnosis. *Medical Problems of Performing Artists*, 35(3), 139-150.

- Cheung, F., Lun, V. M. C., Ngo, H. Y., & Fong, E. (2020). Seeking harmony in Chinese families: A dyadic analysis on Chinese parent–child relations. *Asian Journal of Social Psychology*, 23(1), 82-90.
- Chirico, A., Maiorano, P., Indovina, P., Milanese, C., Giordano, G. G., Alivernini, F., & Giordano, A. (2020). Virtual reality and music therapy as distraction interventions to alleviate anxiety and improve mood states in breast cancer patients during chemotherapy. *Journal of cellular physiology*, 235(6), 5353-5362.
- Couth, S., Prendergast, G., Guest, H., Munro, K. J., Moore, D. R., Plack, C. J., ... & Dawes, P. (2020). Investigating the effects of noise exposure on self-report, behavioral and electrophysiological indices of hearing damage in musicians with normal audiometric thresholds. *Hearing research*, 395, 108021.
- Chi, J. Y., Halaki, M., & Ackermann, B. J. (2020). Ergonomics in violin and piano playing: A systematic review. *Applied Ergonomics*, 88, 103143.
- Casey, E. (2020). *Exploring the perceived impact of extensive training in the Alexander technique on the day-to-day lives of professional musicians* (Doctoral dissertation). Royal College of Music, London.
- Cruder, C., Barbero, M., Koufaki, P., Soldini, E., & Gleeson, N. (2020). Prevalence and associated factors of playing-related musculoskeletal disorders among music students in Europe. Baseline findings from the Risk of Music Students (RISMUS) longitudinal multicentre study. *PloS one*, 15(12), e0242660.
- Caneiro, J. P., Bunzli, S., & O'Sullivan, P. (2021). Beliefs about the body and pain: the critical role in musculoskeletal pain management. *Brazilian Journal of Physical Therapy*, 25(1), 17-29.
- Cruder, C., Soldini, E., Gleeson, N., & Barbero, M. (2023). Factors associated with increased risk of playing-related disorders among classical music students within the risk of music students (RISMUS) longitudinal study. *Scientific Reports*, 13(1), 22939.
- Dunning, J. (1981). When a pianist's fingers fail to obey. *New York Times*, 14, 1.
- Dillinger, N. J. (1997). Experiences of professional orchestral musicians with chronic conditions. *Medical Problems of Performing Artists*, 12, 122-125.
- Daykin, N. (2005). Disruption, dissonance and embodiment: creativity, health and risk in music narratives. *Health*, 9(1), 67-87.
- Dunn, I. F., Proctor, M. R., & Day, A. L. (2006). Lumbar spine injuries in athletes. *Neurosurgical focus*, 21(4), 1-5.
- Doerksen, S. E., & McAuley, E. (2014). Social cognitive determinants of dietary behavior change in university employees. *Frontiers in public health*, 2, 23.

- Damino, C. (2014). *The Experience of Religious Rejection Based on a Minority Attractional Orientation A Phenomenological Investigation*. Michigan School of Professional Psychology.
- de Sousa, C. M. G. (2017). *Occupational diseases among professional orchestra musicians from the North of Portugal-Treatment with tuina techniques* (Doctoral dissertation). Universidade do Porto, Portugal.
- Dobos, B., Piko, B. F., & Kenny, D. T. (2019). Music performance anxiety and its relationship with social phobia and dimensions of perfectionism. *Research Studies in Music Education*, 41(3), 310-326.
- Davies, J. (2020). Alexander Technique classes for tertiary music students: Student and teacher evaluations of pre-and post-test audiovisual recordings. *International Journal of Music Education*, 38(2), 194-207.
- Davis, M., Williams, S., & Davidson, J. (2021). The impact of playing-related musculoskeletal disorders on musicians' identity: A qualitative study. *Psychology of Music*, 49(2), 167-183.
- Détári, A., & Nilssen, T. M. (2022). Exploring the impact of the somatic method 'Timani'on performance quality, performance-related pain and injury, and self-efficacy in music students in Norway: an intervention study. *Frontiers in Psychology*, 13, 834012.
- Elam, T., Mowen, S., & Jonas, C. (2022). Occupational injuries in musicians: a literature review. *Military medicine*, 187(5-6), e619-e623.
- Eigenschink, M., Dearing, L., Dablander, T. E., Maier, J., & Sitte, H. H. (2020). A critical examination of the main premises of Traditional Chinese Medicine. *Wiener Klinische Wochenschrift*, 132, 260-273.
- Ericsson, K., Naber, A., & Laursen, A. (2022). Exploring the Impact of Occupational Adaptation-Focused Interventions on Music Student Health. *OTJR: Occupational Therapy Journal of Research*, 15394492221142593.
- Fry, H. J. (1986). Overuse syndrome of the upper limb in musicians. *Medical Journal of Australia*, 144(4), 182-185.
- Fry, H. J. (1986). Overuse syndrome in musicians—100 years ago: An historical review. *Medical journal of Australia*, 145(11-12), 620-625.
- Fjellman-Wiklund, A., & Chesky, K. (2006). Musculoskeletal and general health problems of acoustic guitar, electric guitar, electric bass, and banjo players. *Medical problems of performing artists*, 21(4), 169-176.
- Furuya, S., Osu, R., & Kinoshita, H. (2009). Effective utilization of gravity during arm downswing in keystrokes by expert pianists. *Neuroscience*, 164(2), 822-831.

- Furuya, S., Nakahara, H., Aoki, T., & Kinoshita, H. (2006). Prevalence and causal factors of playing-related musculoskeletal disorders of the upper extremity and trunk among Japanese pianists and piano students. *Medical Problems of Performing Artists*, 21(3), 112-117.
- Fiske, S. T., & Taylor, S. E. (2013). *Social cognition: From brains to culture*. Sage.
- Fine, P. A., Wise, K. J., Goldemberg, R., & Bravo, A. (2015). Performing musicians' understanding of the terms "mental practice" and "score analysis". *Psychomusicology: Music, Mind, and Brain*, 25(1), 69.
- Graffman, G. (1986). Doctor, can you lend an ear. *Med Probl Perform Art*, 1(1), 3-6.
- Granata, K. P., & Wilson, S. E. (2001). Trunk posture and spinal stability. *Clinical biomechanics*, 16(8), 650-659.
- Given, L. M. (Ed.). (2008). *The Sage encyclopedia of qualitative research methods*. Sage publications.
- Guptill, C., & Golem, M. B. (2008). Case study: musicians' playing-related injuries. *Work*, 30(3), 307-310.
- Guptill, C. A. (2011). The lived experience of professional musicians with playing-related injuries: a phenomenological inquiry. *Medical problems of performing artists*, 26(2), 84-95.
- Gilman, D. J. (2014). *Cairo pop: Youth music in contemporary Egypt*. U of Minnesota Press.
- Green, E. J., & Baadjies, C. J. (2018). The experiences of music students with playing-related musculoskeletal disorders in South Africa. *Medical Problems of Performing Artists*, 33(3), 152-159.
- Gembris, H., Menze, J., Heye, A., & Bullerjahn, C. (2020). High-performing young musicians' playing-related pain. Results of a large-scale study. *Frontiers in Psychology*, 11, 564736.
- Guo, S, G.(2023). Contemporary Picture of Chinese Music Creation -- Review of the 2022 Chinese Contemporary Music Creation (Chengdu) Symposium. *Music of the People*, (01),14-17.
- Heidegger, M. (1962). Being and time (J. Macquarrie & E. Robinson, trans.).
- Howard, M. A. (2004). When players can't play: Musicians' experience of playing-related injury. *National Library of Canada, Ottawa*.
- Huang, Y. T., Tsai, P. L., & Chu, C. N. (2009). Incidence and risk factors of playing-related injuries for Chinese traditional instrumentalists in Taiwan. *International Journal of Rehabilitation Research*, 32, S11.

- Horvath, N. (2009). The "Theatre of the Ear": Analyzing Berio's Musical Documentary A-Ronne. *Musicological Explorations*, 10, 73-103.
- Harvie, A., Steel, A., & Wardle, J. (2019). Traditional Chinese medicine self-care and lifestyle medicine outside of Asia: A systematic literature review. *The Journal of Alternative and Complementary Medicine*, 25(8), 789-808.
- Hale, G. (2019). *Playing with Pain: Injury Prevention Strategies for Music Schools in the United States* (Doctoral dissertation). American University, Washington.
- Harris-Dale, G. (2020). *Constructs of Coping for Adult Victims of Bullying* (Doctoral dissertation). Walden University, Minneapolis.
- Huai, J. J. (2021). Zhongguo gaoxiao "shuangyiliu" zhengce lianghua fenxi [Quantitative analysis of "double first-class" policy in Chinese universities] (Master's thesis, Yanshan daxue)
- Hillegass, E. (2022). *Essentials of Cardiopulmonary Physical Therapy-E-Book*. Elsevier Health Sciences.
- He, Z, W & Zhu, Y, H. (2023). "zhongguo gangqin jiaoyu" wenxian zongshu yu xueke fazhan yanjiu [Literature review and subject development research on "Chinese Piano Education"]. *Yinyue shenghuo*, 08, 79-81.
- Isidro, T., Gregory, E., Lachman, L., Isidro, S., & Cortez, A. N. (2022). Lumbar spine and lower extremity overuse injuries. *Physical Medicine and Rehabilitation Clinics*, 33(1), 201-214.
- James, C. E., Schmid, A., Nguyen-Danse, D. A., & Bruyneel, A. V. (2023). Identifying physical and psychological risk factors for musculoskeletal pain in student musicians to tailor the curriculum: a cross-sectional study protocol. *BMJ open*, 13(8), e073294.
- Kawachi, I., & Berkman, L. F. (2001). Social ties and mental health. *Journal of Urban health*, 78(3), 458-467.
- Kessler, D., & Kubler-Ross, E. (2005). *On grief and grieving*. Scribner.
- Kübler-Ross, E., & Kessler, D. (2005). *On grief and grieving: Finding the meaning of grief through the five stages of loss*. Simon and Schuster.
- Klibert, J. J., Langhinrichsen-Rohling, J., & Saito, M. (2005). Adaptive and maladaptive aspects of self-oriented versus socially prescribed perfectionism. *Journal of College Student Development*, 46(2), 141-156.
- Kenny, D. T., & Ackermann, B. (2009). Optimizing physical and psychological health in performing musicians. *The Oxford handbook of music psychology*, 390-400.
- Khan, M. A. (2009). *Ankylosing spondylitis*. Oxford University Press.

- Kava, K. S., Larson, C. A., Stiller, C. H., & Maher, S. F. (2010). Trunk endurance exercise and the effect on instrumental performance: a preliminary study comparing Pilates exercise and a trunk and proximal upper extremity endurance exercise program. *Music Performance Research*, 3(1), 1-30.
- Kaufman-Cohen, Y., & Ratzon, N. Z. (2011). Correlation between risk factors and musculoskeletal disorders among classical musicians. *Occupational Medicine*, 61(2), 90-95.
- Kuo, F. L. (2012). *Holistic Health and the Prevention of Performance-Related Musculoskeletal Disorders in Orchestral String Musicians*. University of Toronto (Canada).
- Keller, P. E. (2012). Mental imagery in music performance: underlying mechanisms and potential benefits. *Annals of the New York Academy of Sciences*, 1252(1), 206-213.
- Kenny, D., & Ackermann, B. (2015). Performance-related musculoskeletal pain, depression and music performance anxiety in professional orchestral musicians: a population study. *Psychology of Music*, 43(1), 43-60.
- Klenke, K. (2016). Qualitative research as method. In *Qualitative research in the study of leadership* (pp. 31-55). Emerald Group Publishing Limited.
- Kok, L. M., Huisstede, B. M., Voorn, V. M., Schoones, J. W., & Nelissen, R. G. (2016). The occurrence of musculoskeletal complaints among professional musicians: a systematic review. *International archives of occupational and environmental health*, 89, 373-396.
- Kosteli, M. C., Williams, S. E., & Cumming, J. (2016). Investigating the psychosocial determinants of physical activity in older adults: A qualitative approach. *Psychology & health*, 31(6), 730-749.
- Kamo, K. L., & Singer, M. L. (2016). Music students' experiences of playing-related musculoskeletal disorders requiring surgery: A qualitative study. *Medical Problems of Performing Artists*, 31(1), 28-36.
- Kok, L. M., Groenewegen, K. A., Huisstede, B. M., Nelissen, R. G., Rietveld, A. B. M., & Haitjema, S. (2018). The high prevalence of playing-related musculoskeletal disorders (PRMDs) and its associated factors in amateur musicians playing in student orchestras: A cross-sectional study. *PloS one*, 13(2), e0191772.
- Kessler, D. (2019). *Finding meaning: The sixth stage of grief*. Simon and Schuster.
- Kang, L. (2009). The development of Chinese piano music. *Asian Culture and History*, 1(2), 18.
- Lloyd-Roberts, G. C., & French, P. R. (1959). Periarthritis of the shoulder. *British Medical Journal*, 1(5137), 1569.

- Lent, R. W., Brown, S. D., & Hackett, G. (2002). Social cognitive career theory. *Career choice and development*, 4(1), 255-311.
- Lopez, K. A., & Willis, D. G. (2004). Descriptive versus interpretive phenomenology: Their Contributions to nursing knowledge. *Qualitative Health Research*, 14(5), 726-735.
- Lindseth, A., & Norberg, A. (2004). A phenomenological hermeneutical method for researching lived experience. *Scandinavian journal of caring sciences*, 18(2), 145-153.
- Li, S, Y.(2006). Causes and solutions of some occupational diseases in violin performance. *Journal of Xinghai Conservatory of Music*, 2, 107-108.
- Lang, L. (2008). *Qianli zhixing: wode gushi [A Thousand Miles: My Story]*. Guangxi: Guangxi shifan daxue chubanshe.
- Luo, T. X. (2010). Dongfang wenxue guibao yu xifang qiyue zhiwang de xiehou -- lun zhongguo gushici gequ de gangqin banzou [The encounter between the Oriental literary treasure and the Western instrumental music King -- on the piano accompaniment of ancient Chinese poetry songs]. *Dazhong wenyi*, (15), 107-108.
- Ling, C. Y. (2014). *Playing-related Musculoskeletal Disorders Among Classical Piano Students of Tertiary Institutions in Kuala Lumpur and Selangor, Malaysia* (Master' thesis), Universiti Putra Malaysia, Kuala Lumpur.
- Liu, S, L. (2016). Yishi er duli zhizhuo er chimi -- Fang qingnian gangqinjia Shen Wenyu [An interview with young pianist Shen Wenyu]. *Qintong*, 03, 53-57.
- Li, X. D. (2017). Chengdu: Yinyue zhidu zenme jian [How to build a music city]. *Guangming Ribao*, 005.
- Li, X. D. (2017). Chengdu: How to build a Music City. *Guangming Daily*, 005.
- Ling, C. Y., Loo, F. C., & Hamedon, T. R. (2018). Playing-related musculoskeletal disorders among classical piano students at tertiary institutions in Malaysia: proportion and associated risk factors. *Medical problems of performing artists*, 33(2), 82-89.
- Li, Y, S. (2018). Qingnian gangqinjia shenwenyu de yanzou fengge fenxi [Analysis on the playing style of young pianist Shen Wenyu]. *Yishu Pinjian*, 29, 123-125.
- Luo, Y. (2018). Chuanyu diqu gaoxiao gangqin jiaoyu de xianzhaung ji cuoshi fenxi [Analysis of the present situation and measures of piano education in universities in Sichuan and Chongqing area]. *Yishu Jiaoyu*, 17, 60-61.
- Leaver, R., Harris, K., & Osborne, A. (2019). The psychological experience of injury in professional musicians who develop playing-related musculoskeletal disorders. *Psychology of Music*, 47(4), 551-565.

- Lizarraga, K. J., Al-Shorafat, D., & Fox, S. (2019). Update on current and emerging therapies for dystonia. *Neurodegenerative Disease Management*, 9(3), 135-147.
- Lima, C., Roriz, A., Leite, A., Colim, A., & Carneiro, P. (2020). Exposure to musculoskeletal risk of piano teachers. *Occupational and Environmental Safety and Health II*, 419-426.
- Li, X., & Liu, Q. (2020). Parent–grandparent coparenting relationship, marital conflict and parent–child relationship in Chinese parent–grandparent coparenting families. *Children and Youth Services Review*, 109, 104733.
- Liu, N. (2021). Gangqin yinyue jiaoyu de fazhan xianzhuang yu sikao [Development status and thinking of piano music education]. *Yinyue tiandi*, 08, 9-12.
- Luo, W., & Ning, B. (2022). Toward piano teaching evaluation based on neural network. *Scientific Programming*, 2022, 1-9.
- Li, M, L., & Li, Y, Y. (2023). 21 shiji yilai woguo gaoxiao feilei yanjiu jinzhan -- jiyu CSSCI qikan lunwen de keshihua fenxi [Progress of classification research in Chinese universities since the 21st century: A visual analysis based on CSSCI journal papers]. *Shenyang shifan daxue xuebao (jiaoyu kexue ban)*, 05, 34-42.
- Moran, D. (2002). *Introduction to phenomenology*. Routledge.
- Macdonald, H. M., Lavigne, S. K., Reineberg, A. E., & Thaut, M. H. (2022). Playing-Related Musculoskeletal Disorders, Risk Factors, and Treatment Efficacy in a Large Sample of Oboists. *Frontiers in Psychology*, 12, 772357.
- McClelland, M., Geldhof, J., Morrison, F., Gestsdóttir, S., Cameron, C., Bowers, E., ... & Grammer, J. (2018). Self-regulation. *Handbook of life course health development*, 275-298.
- Mariyam, F. S. F. (2021). Effect of Finger and Hand Exercises among Amateur Pianist. *Indian Journal of Forensic Medicine & Toxicology*, 15(1).
- Majabadi, H. A., Solhi, M., Montazeri, A., Shojaeizadeh, D., Nejat, S., Farahani, F. K., & Djazayeri, A. (2016). Factors influencing fast-food consumption among adolescents in Tehran: A qualitative study. *Iranian Red Crescent Medical Journal*, 18(3).
- Marshall, C., & Rossman, G. B. (2014). *Designing qualitative research*. Sage publications.
- Mertens, D. M. (2015). Philosophical assumptions and program evaluation. *Enrico Guglielminetti Luciana Regina*, 75, 75-85.
- Madry, H., Kon, E., Condello, V., Peretti, G. M., Steinwachs, M., Seil, R., ... & Angele, P. (2016). Early osteoarthritis of the knee. *Knee Surgery, Sports Traumatology, Arthroscopy*, 24, 1753-1762.

- Milanovic, T. (2014). *Learning and teaching healthy piano technique: Training as an instructor in the Taubman approach*. Scholars' Press.
- Martin, C., & Dubé, F. (2012). Descriptive Gaps of Piano Teachers Representations about Healthy Postural Attitudes. *Educating Professional Musicians in a Global Context*, 80.
- Möller, D., Ballenberger, N., & Zalpour, C. (2018). The German version of the musculoskeletal pain intensity and interference questionnaire for musicians (MPIIQM-G): Translation and validation in professional orchestral musicians. *Musculoskeletal Science and Practice*, 37, 1-7.
- Miksza, P., & Hime, L. (2015). Undergraduate music program alumni's career path, retrospective institutional satisfaction, and financial status. *Arts Education Policy Review*, 116(4), 1-13.
- Maisto, S. A., Carey, K. B., & Bradizza, C. M. (1999). Social learning theory.
- Merriam, S. B. (2009). Qualitative case study research. *Qualitative research: A guide to design and implementation*, 39-54.
- Myers, M. (2000). Qualitative research and the generalizability question: Standing firm with Proteus. *The Qualitative Report*, 4(3), 1-14.
- McCready, S., & Reid, D. (2007). The experience of occupational disruption among student musicians. *Medical Problems of Performing Artists*, 22(4), 140-146.
- Matei, R., & Ginsborg, J. (2020). Physical activity, sedentary behavior, anxiety, and pain among musicians in the United Kingdom. *Frontiers in psychology*, 11, 560026.
- Nurius, P. S. (1993). Human memory: A basis for better understanding the elusive self-concept. *Social Service Review*, 67(2), 261-278.
- Ngor, A. S. (2018). *The Influence of Dry Cupping Therapy on Musicians with Chronic Neck Pain: An Initial Case Series* (Doctoral dissertation). Ohio University, Ohio.
- Narducci, D. M. (2020). Musculoskeletal and associated conditions in the instrumental musician. *Perspectives in Performing Arts Medicine Practice: A Multidisciplinary Approach*, 197-239.
- Nichols, J. A. (2022). Exploring the Impact of Performance-Related Injuries in Collegiate Instrumental Musicians and Occupational Engagement.
- Ohlendorf, D., Maurer, C., Bolender, E., Kocis, V., Song, M., & Groneberg, D. A. (2018). Influence of ergonomic layout of musician chairs on posture and seat pressure in musicians of different playing levels. *PloS one*, 13(12), e0208758.

- Olson Moser, J. H. (2021). *Living with Focal Task-Specific Dystonia: The Musician's Perspective* (Doctoral dissertation). St. Catherine University, Minnesota.
- Poore, G. V. (1887). Clinical lecture on certain conditions of the hand and arm which interfere with the performance of professional acts, especially piano-playing. *British medical journal*, 1(1365), 441.
- Parry, C. W. (2003). Prevention of musicians' hand problems. *Hand clinics*, 19(2), 317-324.
- Parry, C. W. (2004). Managing the physical demands of musical performance. *Musical excellence: Strategies and techniques to enhance performance*, 41-60.
- Park, A., Guptill, C., & Sumsion, T. (2007). Why music majors pursue music despite the risk of playing-related injuries. *Medical Problems of Performing Artists*, 22(3), 89-96.
- Painter, J. E., Borba, C. P., Hynes, M., Mays, D., & Glanz, K. (2008). The use of theory in health behavior research from 2000 to 2005: a systematic review. *Annals of behavioral medicine*, 35(3), 358-362.
- Pomerantz, E. M., & Wang, Q. (2009). The role of parental control in children's development in Western and East Asian countries. *Current Directions in Psychological Science*, 18(5), 285-289.
- Parritz, R. H., & Troy, M. F. (2013). *Disorders of childhood: Development and psychopathology*. Cengage learning.
- Patton, M. Q. (2015). *Qualitative research & evaluation: Evaluation methods* (4th ed.). Thousand Oaks, CA: Sage.
- Perkins, R., Reid, H., Araújo, L., & Clark, T. (2018). Playing-related musculoskeletal disorders in professional musicians: A phenomenological approach. *Psychology of Music*, 46(1), 107-124.
- Porter, M., & Wilson, I. M. (2018). Extent of playing-related musculoskeletal problems in the Irish traditional music community: a survey. *Medical problems of performing artists*, 33(1), 47-55.
- Pappa, E. (2019). *The importance of proper upper-body posture in the prevention and treatment of playing-related musculoskeletal disorders (PRMDs) in pianists* (Master's thesis). University of Thessaly, Thessaly.
- Philippe, R. A., Schiavio, A., & Biasutti, M. (2020). Adaptation and destabilization of interpersonal relationships in sport and music during the Covid-19 lockdown. *Heliyon*, 6(10), e05212.

- Pentikäinen, E., Pitkäniemi, A., Siponkoski, S. T., Jansson, M., Louhivuori, J., Johnson, J. K., ... & Särkämö, T. (2021). Beneficial effects of choir singing on cognition and well-being of older adults: Evidence from a cross-sectional study. *PloS one*, 16(2), e0245666.
- Pamies, S. (2021). Deconstructing modal jazz piano techniques: The relation between Debussy's piano works and the innovations of post-bop pianists. *Jazz Education in Research and Practice*, 2(1), 76-105.
- Panebianco, C. (2021). Prevalence of playing-related musculoskeletal problems among professional orchestra musicians in South Africa: a study using the Musculoskeletal Pain Intensity and Interference Questionnaire for Musicians (MPIIQM). *Medical Problems of Performing Artists*, 36(4), 238-244.
- Portnoy, S., Cohen, S., & Ratzon, N. Z. (2022). Correlations between body postures and musculoskeletal pain in guitar players. *PloS one*, 17(1), e0262207.
- Qiu, M. (2013). *Sampling survey and Research on Piano Teaching in Music Education Majors in Sichuan Universities* (Master's Thesis). Sichuan Normal University, Chengdu.
- Quyam, S., & Abumehdi, M. (2022). An Interpretive Phenomenological Analysis of paediatric cardiology trainee experiences during COVID-19. *Medical Education*, 56(5), 527-534.
- Ramazzini, B. (1964). Diseases of Workers (1713). *Republished by Hafner Publishing Co, New York and London*, 158-167.
- Ramona, S. E. (2011). Advantages and disadvantages of quantitative and qualitative information risk approaches. *Chinese Business Review*, 10(12).
- Ravitch, S. M., & Carl, N. M. (2016). *Qualitative Research: Bridging the Conceptual, Theoretical, and Methodological* (1st ed.). Thousand Oaks, CA: SAGE.
- Ryken, E., McPherson, K. M., & Hebert, J. J. (2017). "Like an invisible injury": A qualitative study of the experiences of individuals with upper extremity musculoskeletal disorders. *Journal of Hand Therapy*, 30(1), 52-58.
- Rodrigues, A., Souza, G. C., & Godoy, R. G. (2020). Musicians with musculoskeletal disorders: a qualitative study. *International Archives of Medicine*, 13(1), 1-12.
- Rotter, G., Noeres, K., Fernholz, I., Willich, S. N., Schmidt, A., & Berghöfer, A. (2020). Musculoskeletal disorders and complaints in professional musicians: a systematic review of prevalence, risk factors, and clinical treatment effects. *International archives of occupational and environmental health*, 93, 149-187.

- Rousseau, C., Barton, G., Garden, P., & Baltzopoulos, V. (2021). Development of an injury prevention model for playing-related musculoskeletal disorders in orchestra musicians based on predisposing risk factors. *International Journal of Industrial Ergonomics*, 81, 103026.
- Ryan, C., Boucher, H., & Ryan, G. (2021). Performance preparation, anxiety, and the teacher. Experiences of adolescent pianists. *Revue musicale OICRM*, 8(1), 38-62.
- Ramjattan, D. M. (2022). *Music Performance Anxiety on the Classical Guitar: Expert Strategies in Psychology and Pedagogy* (Doctoral dissertation). University of Toronto, Canada.
- Rader, N. C. (2023). *Body mapping-informed pedagogy in the beginning string classroom: a quantitative investigation* (Doctoral dissertation). Boston University, Boston.
- Rodríguez-Gude, C., Taboada-Iglesias, Y., & Pino-Juste, M. (2023). Musculoskeletal pain in musicians: prevalence and risk factors—a systematic review. *International Journal of Occupational Safety and Ergonomics*, 29(2), 883-901.
- Rose, D., Burland, K., Blackstone, K., & Alessandri, E. (2024). Investigating the health and wellbeing of music students: Perspectives from schools of music in Switzerland and the UK. *International Journal of Music Education*, 02557614241262798.
- Sakai, N. (2002). Hand pain attributed to overuse among professional pianists: a study of 200 cases. *Medical problems of performing artists*, 17(4), 178-180.
- Shek, D. T. (2005). Perceived parental control processes, parent—child relational qualities, and psychological well-being in Chinese adolescents with and without economic disadvantage. *The Journal of Genetic Psychology*, 166(2), 171-188.
- Sakai, N., Liu, M. C., Su, F. C., Bishop, A. T., & An, K. N. (2006). Hand span and digital motion on the keyboard: concerns of overuse syndrome in musicians. *The Journal of hand surgery*, 31(5), 830-835.
- Seidman, I. (2006). *Interviewing as qualitative research: A guide for researchers in education and the social sciences*. Teachers college press.
- Sung, H. Y. (2010). The influence of culture on parenting practices of East Asian families and emotional intelligence of older adolescents: A qualitative study. *School Psychology International*, 31(2), 199-214.
- Scully, D. (2011). The prevalence of playing-related musculoskeletal disorders to the upper limb in student guitar players. *Research document, University of Limerick*.

- Savvidou, P., Willis, B., Li, M., & Skubic, M. (2015). Assessing injury risk in pianist: Using objective measures to promote self-awareness. *MTNA E-Journal*, 7(2), 2-16.
- Sousa, C. M., Coimbra, D., Machado, J., & Greten, H. J. (2015). Effects of self-administered exercises based on Tuina techniques on musculoskeletal disorders of professional orchestra musicians: a randomized controlled trial. *Journal of integrative medicine*, 13(5), 314-318.
- Salonen, B. L. (2018). *Tertiary music students' experiences of an occupational health course incorporating the body mapping approach* (Doctoral dissertation). University of the Free State, South Africa.
- Sittichai, R., & Smith, P. (2018). Bullying and cyberbullying in Thailand: Coping strategies and relation to age, gender, religion and victim status. *Journal of New Approaches in Educational Research*, 7, 24-30.
- Swain, J. (2018). *A Hybrid Approach to Thematic Analysis in Qualitative Research: Using a Practical Example*. Sage research methods.
- 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.
- Santos, A. F., & Queirós, P. (2019). Playing-related musculoskeletal disorders in Portuguese music students: a qualitative study. *Journal of Occupational Health Psychology*, 24(1), 1-13.
- Shanoff, C., Kyurim, K., Gupitill, C., & Thaut, M. (2019). Playing-related injuries and posture among saxophonists. *Medical problems of performing artists*, 34(4), 215-221.
- Shanoff, C. (2020). *Playing-related injuries and posture among saxophonists*. Faculty of Music University of Toronto.
- Steeners, S., van Rijn, R. M., van Middelkoop, M., Bierma-Zeinstra, S., & Stubbe, J. H. (2020). Health problems in conservatoire students: a retrospective study focusing on playing-related musculoskeletal disorders and mental health. *Medical problems of performing artists*, 35(4), 214-220.
- Su, X. T., Wang, L., Ma, S. M., Cao, Y., Yang, N. N., Lin, L. L., ... & Liu, C. Z. (2020). Mechanisms of acupuncture in the regulation of oxidative stress in treating ischemic stroke. *Oxidative medicine and cellular longevity*, 2020(1), 7875396.
- Sorensen, M. C., Andersen, L. L., Kjeldsen, L. J., & Sundstrup, E. (2021). "Playing through pain": A phenomenological study of musicians' experiences of playing-related musculoskeletal disorders. *Medical Problems of Performing Artists*, 36(1), 19-30.

- Svendsen, S. E. (2022). *Understanding Organist Occupational Injury: An Epidemiological Study of Canadian Organists* (Doctoral dissertation, University of Toronto (Canada)).
- Stanhope, J., Pisaniello, D., & Weinstein, P. (2022). What do musicians think caused their musculoskeletal symptoms?. *International Journal of Occupational Safety and Ergonomics*, 28(3), 1543-1551.
- Santoro, S. (2022). *Understanding the Muscles of the Shoulders, Back, and Core: Injury Prevention for Pianists* (Doctoral dissertation). The University of Alabama, Tuscaloosa.
- Thomas, S. P., & Pollio, H. R. (2002). *Listening to patients: A phenomenological approach to nursing research and practice*. Springer Publishing Company.
- Taylor, A., & Wasley, D. (2004). Physical fitness. *Musical excellence: Strategies and techniques to enhance performance*, 163-178.
- Tong, A., Sainsbury, P., & Craig, J. (2007). Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *International journal for quality in health care*, 19(6), 349-357.
- Tang, X, Y.(2010). Occupational diseases susceptible to teachers and piano players. *Chinese Journal of Ethnic and Folk Medicine*, 5, 73-74.
- Teague, A., & Smith, G. D. (2015). Portfolio careers and work-life balance among musicians: An initial study into implications for higher music education. *British Journal of Music Education*, 32(2), 177-193.
- Ting, A., & Rucker, J. (2019). Evaluation and treatment of musicians from a holistic perspective. *The Open Journal of Occupational Therapy*, 7(4), 1-10.
- Turner, C., Visentin, P., & Shan, G. (2021). Wrist internal loading and tempo-dependent, effort-reducing motor behaviour strategies for two elite pianists. *Medical Problems of Performing Artists*, 36(3), 141-149.
- Tarcău, E., Ianc, D., Sirbu, E., Ciobanu, D., Boca, I. C., & Marcu, F. (2022). Effects of Complex Rehabilitation Program on Reducing Pain and Disability in Patients with Lumbar Disc Protrusion—Is Early Intervention the Best Recommendation?. *Journal of Personalized Medicine*, 12(5), 741.
- Takamizawa, R., & Kenway, L. (2023). An analysis of musculoskeletal disorder risk factors associated with common pedagogical principles of the Lhevinne and Taubman piano schools: A literature review. *Research Studies in Music Education*, 1321103X231200195.
- Wrysten, B. (2000). Avoiding Piano-related Injury: a proposed theoretical procedure avoiding piano-related injury: a proposed theoretical procedure for biomechanical analysis of piano technique techniques. *Faculty Publications: School of Music*, 6, 55-64.

- Warrington, J., Winspur, I., & Steinwede, D. (2002). Upper-extremity problems in musicians related to age. *Medical Problems of Performing Artists*, 17(3), 131-134.
- Winspur, I. (2003a). Controversies surrounding "misuse," "overuse", and "repetition" in musicians. *Hand Clinics*, 19, 325-329.
- Wood, G. C. (2014). Prevalence, risk factors, and effects of performance-related medical disorders (PRMD) among tertiary-trained jazz pianists in Australia and the United States. *Medical Problems of Performing Artists*, 29(1), 37-45.
- Wilson, I. M., Doherty, L., & McKeown, L. (2014). Perceptions of Playing-Related Musculoskeletal Disorders (PRMDs) in Irish traditional musicians: a focus group study. *Work*, 49(4), 679-688.
- World Bank. (2017). *Pakistan Tertiary Education: SABER Country Report 2017*. World Bank.
- Wong, P. T. (2020). Existential positive psychology and integrative meaning therapy. *International Review of Psychiatry*, 32(7-8), 565-578.
- Waters, M. (2020). The perceived influence of the one-on-one instrumental learning environment on tertiary string students' perceptions of their own playing-related discomfort/pain. *British Journal of Music Education*, 37(3), 221-233.
- Wang, Y. (2021). "Shuangyiliu" jianshe beijing xia zhongguo gaoxiao fenlei yanjiu [Research on classification of Chinese universities under the background of "double first-class" construction] (Master degree, Shanxi daxue).
- Wang, J. (2022). Lizheng youke nianjun zengzhang 12 % yinyue changye nianchanzhi poqianyi [Strive for an average annual increase of 12% in tourists. The annual output value of the music industry exceeds 100 billion], *Cheng Du Ri Bao*, 004.
- Wagner, C. (2023). *Injuries in Professional Orchestral Musicians-An Overview of Current Data and Trends* (Doctoral dissertation, Rice University).
- Yoshimura, E., & Chesky, K. (2009). The application of an ergonomically modified keyboard. *MTNA e-journal*, 2-13.
- Yoshimura, E. (2009). *Risk factors for piano-related pain among college students and piano teachers: Possible solutions for reducing pain by using the ergonomically modified keyboard* (Doctoral dissertation). University of North Texas, Denton.
- Yin, T, R. (2016). Yinyue zhiliaozai daxuesheng xinli jiankang jiaoyu zhong de yunyong [The application of music therapy in the mental health education of contemporary college students]. *Yishu keji*, 04, 342.
- Yardley, L. (2017). Demonstrating the validity of qualitative research. *The journal of positive psychology*, 12(3), 295-296.

- Yust, J. (2021). Periodicity-Based Descriptions of Rhythms and Steve Reich's Rhythmic Style. *Journal of Music Theory*, 65(2), 325-374.
- Yang, N., Fufa, D. T., & Wolff, A. L. (2021). A musician-centered approach to management of performance-related upper musculoskeletal injuries. *Journal of Hand Therapy*, 34(2), 208-216.
- Zaza, C., & Farewell, V. T. (1997). Musicians' playing-related musculoskeletal disorders: An examination of risk factors. *American journal of industrial medicine*, 32(3), 292-300.
- Zaza, C. (1998). Playing-related musculoskeletal disorders in musicians: a systematic review of incidence and prevalence. *Cmaj*, 158(8), 1019-1025.
- Zaza, C., Charles, C., & Muszynski, A. (1998). The meaning of playing-related musculoskeletal disorders to classical musicians. *Social science & medicine*, 47(12), 2013-2023.
- Zeng, X, M.(2007). On the psychological adjustment of piano children, teachers and parents. *Science and education Literature Collection (mid-day periodical)*. 3, 33-34.
- 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.
- Zhang, Y. (2017). *Ertong gangqin jiaoyu zhongde jiazhang juese yanjiu [Study on the roles of parents in children piano education]*. Fujian shifan daxue.
- Zhu, W. (2018). Study on the problems existing in Chinese piano education and improvement measures. *Kuram ve Uygulamada Egitim Bilimleri*, 18(6), 2775-2781.
- Zięba, E., Zieliński, G., & Ginszt, M. (2019). Etiology and epidemiology of playing-related musculoskeletal disorders—a systematic review. *Journal of Education, Health and Sport*, 9(7), 115-135.
- Zhou, J. M. (2020). Zhongguo ertong gangqin qimeng jiaoyu de xianzhaung yu celue yanjiu [Research on the present situation and strategy of Chinese children's piano enlightenment education]. *Yishu jiaoyu*, (11), 39-42.
- Zakin, E., & Simpson, D. M. (2021). Botulinum toxin therapy in writer's cramp and musician's dystonia. *Toxins*, 13(12), 899.
- Zhou, G. L. (2023). Lun gaoxiao fenlei de zhongguo luoji [On the Chinese logic of university classification]. *Beijing daxue jiaoyu pinglun*, 02, 10-18.