The Collaborative Pianist and Body Mapping:

A Guide to Healthy Body Use for Pianists and Their Musical Partners

by

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ABSTRACT

Musicians endure injuries at an alarming rate, largely due to the misuse of their bodies. Musicians move their bodies for a living and therefore should understand how to move them in a healthy way. This paper presents Body Mapping as an injury prevention technique specifically directed toward collaborative pianists. A body map is the self-representation in one's brain that includes information on the structure, function, and size of one's body; Body Mapping is the process of refining one's body map to produce coordinated movement. In addition to preventing injury, Body Mapping provides a means to achieve greater musical artistry through the training of movement, attention, and the senses. With the main function of collaborating with one or more musical partners, a collaborative pianist will have the opportunity to share the knowledge of Body Mapping with many fellow musicians.

This study demonstrates the author's credentials as a Body Mapping instructor, the current status of the field of collaborative piano, and the recommendation for increased body awareness. Information on the nature and abundance of injuries and Body Mapping concepts are also analyzed. The study culminates in a course syllabus entitled *An Introduction to Collaborative Piano and Body Mapping* with the objective of imparting fundamental collaborative piano skills integrated with proper body use. The author hopes to inform educators of the benefits of prioritizing health among their students and to provide a Body Mapping foundation upon which their students can build technique.

DEDICATION

To Lisa Marsh, my great mentor. If it were not for you, I would not be here today. You have donated countless hours to the wellness of all your students and touched many lives. May this be a token of my appreciation for your generosity, leadership, healing, and friendship.

ACKNOWLEDGMENTS

First and foremost, Tommy Strawser deserves a whole page of thank yous. I never would have gotten through this document or my degree without his constant encouragement and reassurance. He has dried many tears and been a tireless cheerleader. Thank you, from the bottom of my heart.

Many thanks to my family, friends, and colleagues for giving me the strength to do what needed to be done. If they were not offering pep talks, their stern words did the trick (the stern words were mostly from my mother). Luis Rodriguez and I exchanged many, "We can do this!" texts.

I do not believe I would have learned the trust and confidence necessary for such an endeavor without my Dahn Yoga practice. Meditation and the community at the center have been my saving graces. A special thanks to Master John Lee for his guidance.

I owe a debt of gratitude to such a wonderful committee. I have learned much from each of them during my time at ASU, and they have been supportive advocates. Dr. Andrew Campbell, my committee chair and teacher, has been gracious throughout my entire DMA. Heaven knows I have tested his patience on many occasions. Everything I know about being a successful collaborative pianist, I learned from him.

I am grateful for the fine teachers with whom I have had the privilege of working over the years—they shaped my philosophies and inspired me to become a teacher myself. Thanks to Brook Larson for his thorough editing and attention to detail. And lastly, it would not have been possible for me to become a licensed Andover Educator without assistance from a Travel Grant based on a 2012 Discovery Scholarship Proposal

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INTRODUCTION

Personal Background

Musicians have a long, distinguished history of hiding injuries or avoiding the reality of an injury. It was not until I felt shooting pain down my arm while turning a door knob that it finally occurred to me that I had an injury. By the time the doctor informed me that I had tendonitis, I experienced pain from my fingers to my shoulders in both arms that persisted even after playing. I had always assumed in the weeks and months approaching my diagnosis in November 2008 that my arms simply hurt as a result of a rigorous practice session at the piano and that it signified an effective muscle workout. Later, I learned that perfectionism and the "no pain, no gain" mentality are typical qualities among a majority of injured musicians.[1]

The "no pain, no gain" mentality is referenced time and again among musicians, and the belief that pain is a normal part of playing was given as a reason for not seeking help in a 1998 study.[2] Thirty participants (twenty-seven musicians and three health care professionals) were interviewed in an attempt to obtain a playing-related musculoskeletal disorder (PMRD) "definition that reflected musicians' perspectives."[3] Interview

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[1]For the personal stories of authors Janet Horvath and David Vining involving perfectionism and "no pain, no gain," see Janet Horvath, *Playing (Less) Hurt: An Injury Prevention Guide for Musicians* (New York: Hal Leonard Books, 2010), 3-5, and David Vining, *What Every Trombonist Needs to Know about the Body* (Flagstaff, AZ: Mountain Peak Music, 2010), 131-132.

[2]Christine Zaza, Cathy Charles, and Alicja Muszynski, "The Meaning of Playing-Related Musculoskeletal Disorders to Classical Musicians," *Social Science and Medicine* 47, no. 12 (December 1998), http://www.sciencedirect.com.ezproxy1.lib.asu.edu (accessed Mar. 1, 2013).

[3]Ibid.

responses revealed fear (of a "tarnished reputation" and eventual job loss), personal perception (musicians judged an injury based on whether it affected their ability to play), control/lack of control (technique versus occupational hazards), and social support (colleagues influence a feeling of either "validation" or "devastation" for an injured musician) as common "themes."[4]

Being injured was a demoralizing and isolating experience because it affected all aspects of my life. I lost my teaching assistantship as a collaborative pianist due to my inability to play while recovering, which meant that I was not able to complete my master's degree at the institution I was attending. Guilt and shame invaded my thoughts when my teachers and colleagues had to take on my workload that I could no longer manage. My entire income collapsed due to the fact that each of my part-time jobs was playing-related, and, worst of all, I became depressed over losing my capacity to connect with my instrument. "Although a PRMD [playing-related musculoskeletal disorder] is not a medically serious or life-threatening illness, it is devastating to musicians physically, emotionally, socially, and financially."[5]

Fortunately, I was attending a university in a progressive city and had access to many alternative therapies including acupuncture, Rolfing, frequent massages, and counseling. In addition, I was able to participate in private Alexander Technique and Body Mapping lessons at my school.[6] Before working with the Body Mapping teacher, I

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[4]Ibid.

[5]Ibid.

[6]See Chapter 5 for explanations of the somatic disciplines of the Alexander Technique and Body Mapping.

had planned on returning to my former lifestyle once I had recuperated. But she encouraged me to retrain my movements at the piano in lieu of resorting to the unhealthy playing habits that led to my injury. I understood that continuing to play in a harmful manner would only precipitate another injury, and consequently spent a month in Portland, Oregon studying with Lisa Marsh, Body Mapping expert in piano. That summer, I took two private lessons per week with Marsh and attended her Wellness for Musicians course at Portland State University. At the suggestion of my dear friend and colleague, Gary Skye, I moved to Portland permanently a few months later to continue my studies.

My tendonitis had taken months or years of poor body use to develop,[7] and I was prepared for the equally lengthy process of healing. Tendons receive very little blood flow, and as a result, convalescence from tendonitis takes time.[8]

> Musicians experience musculoskeletal disorders such as tendinitis, carpal tunnel syndrome, and other nerve entrapment syndromes. These conditions most typically affect the upper extremities, neck, back, and facial musculature of the musician, and last on average, from two to five years.[9]

Undoing seventeen years of piano habits was a daunting work. My complete rehabilitation took over two years, especially for the new habits to become reliable during performance. "A habit is an action that through repetition becomes part of your

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[7]Horvath, 27.

[8]Thomas Mark, *What Every Pianist Needs to Know about the Body* (Chicago: GIA Publications, Inc., 2003), 142.

[9]Christine Zaza, Cathy Charles, and Alicja Muszynski, 1998.

subconscious."[10] Each day since I began working with Marsh in June 2009 has been a constant process of refining my movements.

Because I have endured an injury, I now have sympathy and wisdom to share with others. Ted Gioia explains in his book *Healing Songs* that "the shaman is both healer and victim, often discovering a personal vocation for healing through illness and infliction."[11] I know the challenge of overcoming an injury, and for this reason I became committed to spreading injury prevention awareness to my fellow musicians. Body Mapping helped me not only to play again, but with greater ease and fluidity than I ever had before. Thus, I decided to become certified in Body Mapping and began the process of becoming a licensed Andover Educator.

Licensure Process through Andover Educators

> Andover Educators is defined as a:
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> not-for-profit organization of music educators committed to saving, securing, and enhancing musical careers by providing accurate information about the body in movement. Andover Educators use an innovative and specific technique called Body Mapping to enhance musicians' abilities and to help those in pain or discomfort.[12]

An Andover Educators Trainee must meet rigorous standards before becoming licensed to present the course *What Every Musican Needs to Know about the Body*. One must be at least twenty-one years of age to submit an application for consideration of becoming a Trainee. Once approved, the Trainee must complete fifteen to twenty-five private or

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[10]Stephen Caplan, *Oboemotions: What Every Oboe Player Needs to Know about the Body* (Chicago: GIA Publications, Inc., 2009), 136.

[11]Ted Gioia, *Healing Songs* (Durham and London: Duke University Press, 2006), 71.

[12]Andover Educators, www.bodymap.org (accessed Mar. 1, 2013).

group lessons with a licensed Andover Educator (who either has three or more years of experience presenting the course or who is a member of the Andover Educators Training Committee). Materials with which the trainee must be familiar are:

- *Move Well, Avoid Injury* (DVD) by Barbara Conable and Amy Likar
- *How to Learn the Alexander Technique: A Manual for Students* by Barbara Conable and William Conable
- *What Every Musician Needs to Know about the Body* by Barbara Conable
- *The Structures and Movement of Breathing: A Primer for Choirs and Choruses* by Barbara Conable
- *What Every Singer Needs to Know About the Body* by Melissa Malde, MaryJean Allen, and Kurt-Alexander Zeller
- *What Every Pianist Needs to Know About the Body* by Thomas Mark
- *What Every Violinist Needs to Know About the Body* by Jennifer Johnson
- *Body Mapping for Flutists: What Every Flute Teacher Needs to Know About the Body* by Lea Pearson
- *Oboemotions: What Every Oboe Player Needs to Know About the Body* by Stephen Caplan
- *What Every Trombonist Needs to Know About the Body* by David Vining
- *The Breathing Book* by David Vining

The Trainee must complete the following:

- engage in self-structured study
- demonstrate Body Mapping knowledge at her instrument
- develop visual aids for use in her presentation
- observe two complete presentations of *What Every Musician Needs to Know about the Body* by two different Andover Educators
- conduct an hour's worth of private Body Mapping teaching sessions that meet approval of two other Sponsoring Teachers
- organize and present a Trial Course of *What Every Musician Needs to Know about the Body* to the satisfaction of the Sponsoring Teacher.[13]

After becoming licensed, the licensee must commit to continuing education activities and periodic peer review.[14]

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[13]This information comes from the Andover Educators' Training Program Guidelines.

[14]This information comes from the Andover Educators' Licensing Agreement.

In my case, I studied weekly piano and Body Mapping lessons privately with Lisa Marsh from September 2009 through July 2010. During that school year, I registered for and completed her year-long Coordinate Movement Program at Portland State University. The program synthesizes piano technique, Body Mapping, musicianship, and wellness. Topics covered included:

- Piano technique: tone production, alignment, forearm rotation, arm position and height, maintaining a neutral hand position, scales, arpeggios, chords, octaves, legato and staccato playing, achieving dynamic range without tension, application to literature.
- Body Mapping: sensory discernment and responsiveness, the core of the body and places of balance, how to sit and stand, the four arm joints, whole body support for arm function, the structures and movements of breathing, leg movement in pedaling, handwriting, computer keyboard skills, activities of daily living.
- Musicianship: performance anxiety, the self-map of the artist, learning and memorizing, the piano map.
- Health and well-being: anti-inflammatory therapies, exercise routines, constructive rest, nutrition, how to warm-up and practice, injury support concepts.[15]

While assisting with Marsh's undergraduate Body Mapping course, I was able to work with students in labs and breakout groups. As my Sponsoring Teacher, Marsh made several further requirements that included reading and summarizing F.M. Alexander's *Use of Self* and extensive journaling. She hosted an Andover Educators Trainee class that met regularly over the course of the school year, in which we discussed advanced Body Mapping concepts and had opportunities to present material in a public setting. More importantly, we observed several master classes led by Andover Educators Cynthia McGladrey (voice), Deena Grossman (flute), and Barbara Conable, founder of the

[15]Portland State University Coordinate Movement Program, http://www.pdx.edu/music/coordinate-movement-program (accessed Mar. 1, 2013).

organization. These were invaluable to my own crystallization of presentation style and master class teaching techniques.

In August 2010, I relocated to Tempe, Arizona to begin my DMA in Collaborative Piano at Arizona State University. Over winter and summer breaks from 2010-2012, I traveled to Portland for more lessons and Body Mapping training with Lisa Marsh. The summers were a time of significant progress as I was able to take part in Marsh's wellness course, deliver lectures, and attend studio classes.

Throughout the summer of 2012, I designed my full presentation of *What Every Musician Needs to Know about the Body* using images provided by Andover Educators and writing a narrative based on the training manual supplemented by my own research. The course contains six hours of content that can be delivered in a variety of formats including master class, workshop, or full academic semester:

Hour One – Training Movement, Senses, and Attention

Hour Two – The Core of the Body and the Places of Balance

Hour Three – Breathing

Hour Four – Legs

Hour Five – The Arm Structure

Hour Six – Lab

The inherently flexible nature of the course makes it possible to offer the hours in a different order, to present a condensed version of the course, or to lecture on selected hours only. I taught and recorded my Trial Course at Arizona State University on July 6 and 9, 2012 for three hours each day. Marsh reviewed the video with me in Portland, Oregon July 16-24, 2012 and granted her approval.

The final step of my licensure was mailing a DVD I compiled of myself teaching two, half-hour Body Mapping sessions to Jennifer Johnson, Andover Educators Sponsoring Teacher and Training Committee member. She responded with comments and her consent of my work on September 6, 2012, which initiated the Andover Educators Licensing Agreement. I officially became a licensed Andover Educator on October 1, 2012 when all signatures were accepted.

Point of Inspiration for the Study

I conceived of this document as a prequel to Martin Katz's indispensable tome *The Complete Collaborator: the Pianist as Partner,* which Marilyn Horne describes as "a bible for accompanists/collaborators."[16] Katz debunks the myth that collaborative pianists must have an innate talent to excel at what they do. His definition of a collaborative pianist is what sparked my imagination: "We are fourfold custodians: We guard and maintain the composer's wishes, the poet's requirements as the composer saw them, our partners' emotional and physical needs, and finally, of course, our own needs as well."[17]

Katz expertly guides the collaborative pianist in how to achieve the first two custodial duties of meeting both the composer's and the poet's intentions throughout the book. He codifies the musical skills necessary for a pianist to perform *with* other musicians by analyzing breath, language inflection, text and subtext expression, orchestral reductions, basics of synchronization, imitation and doubling, and balance. In

[16]Marilyn Horne, dust jacket of *The Complete Collaborator: The Pianist as Partner,* by Martin Katz (New York: Oxford University Press, 2009).

[17]Martin Katz, *The Complete Collaborator: The Pianist as Partner* (New York: Oxford University Press, 2009), 3.

Chapters Four and Five, I attempt to bolster his latter two points with information on how to meet the physical needs of oneself and one's musical partners.

Statement of Purpose

This study intends to provide collaborative pianists with a solid foundation in Body Mapping as a method of avoiding injury and developing artistic freedom. It is hoped that the collaborative pianist will disseminate Body Mapping information to all of her[18] musical partners, further spreading injury prevention awareness. The three fundamental aspects of training movement, attention, and the senses can also serve to impart a means of navigating the oftentimes stressful lifestyle of a collaborative pianist.

Delimitations

This paper advocates the cultivation of an accurate understanding of the body in movement in order to maintain health and prevent injury, and accordingly does not attempt to address recovery from an injury. While proper nutrition, hydration, exercise, meditation, and sleep contribute to overall wellness, these topics are outside the scope of this paper.[19] The author does not represent Body Mapping as a comprehensive solution to injury prevention. Rather, Body Mapping should be a component of an effective practice routine that consists of stretching, breaks, clear goals, and a joyful, nurturing mindset.

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[18]For the sake of uniformity and convenience throughout the document, the feminine pronoun has been chosen.

[19]Lea Pearson, *Body Mapping for Flutists: What Every Flute Teacher Needs to Know about the Body* (Chicago: GIA Publications, Inc., 2006), Preface, xi.

CHAPTER 2

COLLABORATIVE PIANO

Need for the Study

Collaborative piano is a recent specialty that has existed as a college major only since the second half of the 20th century, compared to a music degree that had been in existence for an entire century prior.[20] Because of its status as a relative newcomer to the university curriculum, only a handful of books and dissertations have been written on the subject. In her dissertation, "Competencies in Piano Accompanying," Erma Loreen Rose bemoans this fact: "For being such an important art, it is almost totally neglected."[21] Most writings focus on collating the skills necessary to become a successful collaborator or on developing a curriculum. Missing among these resources is an exploration of protecting a healthy lifestyle and preventing injury of the collaborative pianist. This study seeks to address the deficiency of *somatic*-based[22] music training as a form of injury prevention for collaborative pianists and their musical partners.

Before addressing how Body Mapping can prevent injury in the collaborative pianist and her partners, it will be necessary to:

1. Define the term *collaborative pianist,*

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[20]Erma Loreen Rose, "Competencies in Piano Accompanying" (diss., University of North Texas, 1981) In ProQuest Dissertations & Theses, http://login.ezproxy1.lib.asu.edu (accessed Feb. 19, 2013), 19.

[21]Rose, 49.

[22]*Somatics* is the study of the body in movement. Pioneers in the field are F.M. Alexander, Moshe Feldenkrais, Mabel Todd, Joseph Pilates, and Irmgard Bartenieff. Jennifer Johnson, *What Every Violinist Needs to Know about the Body* (Chicago: GIA Publications, Inc., 2011), 12.

2. Summarize the evolution of collaborative piano as a university major to illustrate that the timing is ripe for reforms to the field,

3. Present selected collaborative piano resources with the purpose of representing specific research already done on the topic,

4. Demonstrate through injury statistics that a disproportionately high number of musicians misunderstand how to use their bodies properly while practicing and performing, and

5. Provide a convenient reference of common injuries to spread awareness among all musicians.

Collaborative Pianist Definition and Skills

A collaborative pianist is essentially the counterpart to a solo pianist, or as Kurt Adler defines it, a "branch [of the] pedigree of the piano player."[23] Collaborate means "to labor together,"[24] which is precisely what a collaborative pianist does: A collaborative pianist plays with one or more vocal or instrumental partners.[25] Dian Baker, in her dissertation, "A Resource Manual for the Collaborative Pianist: Twenty Class Syllabi for

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[23] Kurt Adler, *The Art of Accompanying and Coaching, Corrected Edition* (New York: Da Capo Press, 1971), 4.

[24] *Merriam Webster's Collegiate Dictionary, Tenth ed.*, s.v. "Collaborate."

[25] Dian Baker, "A Resource Manual for the Collaborative Pianist: Twenty Class Syllabi for Teaching Collaborative Piano Skills and an Annotated Bibliography" (DMA diss., Arizona State University, 2006), In ProQuest Dissertations & Theses, http://login.ezproxy1.lib.asu.edu (accessed Feb. 21, 2013). Baker operates on a similar definition on p. 6: Collaborative Pianist: A pianist who performs with one or more other musicians who are either instrumentalists or singers…The term "collaborative pianist" is preferred by some pianists over the term "accompanist," to better define the pianist's co-equal role in much of the collaborative repertoire.

Teaching Collaborative Piano Skills and an Annotated Bibliography," has identified sixteen competencies necessary for collaborative pianists:

A. Sightreading and score reading

B. Transposition and clef reading

C. Continuo and figured bass realization

D. Instrumental collaboration and ensemble/rehearsal techniques

E. Orchestral reduction and transcription

    a. Vocal

    b. Instrumental

F. Recital program-building

G. Career issues, auditions, competitions

H. Style, interpretation, and performance practice

I. Effective piano preparation and practice

J. Functional pianistic technique

K. Cultural, historical, and aesthetic aspects

L. Song translation, lyric diction, International Phonetic Alphabet

M. Vocal collaboration

    a. Opera/oratorio coaching

    b. Solo song recital

    c. Other (choral, dramatic recitation)

N. Educational materials and research

O. Collaborative listening and the psychology of collaboration

P. Repertoire development and maintenance

a. Vocal

b. Instrumental

Q. Other (dance, musical theatre, orchestral piano, organ, conducting, dramatic recitation, school music programs)[26]

Evolution of the Collaborative Pianist

The term *collaborative pianist* replaces the outdated and often negatively perceived title of *accompanist*. The title modification to *collaborative pianist* more accurately represents the pianist's role as equal partner in duo, chamber, and ensemble music settings. Pei-Shan Lee, in her dissertation, "The Collaborative Pianist: Balancing Roles in Partnership," attributes the phrase *collaborative pianist* to Samuel Sanders, co-founder of the accompanying program at The Juilliard School, who deemed *accompanist* degrading. In addition to Samuel Sanders, Erma Rose credits Gerald Moore, Ivor Newton, John Wustman, and Martin Katz for contributing to the improvement of the accompanist's status.[27] In 1989 Alan Smith, a graduate of the University of Michigan's DMA Collaborative Piano Program under Martin Katz, changed the name of the accompanying program at the University of Southern California to "Keyboard Collaborative Arts."[28]

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[26]Baker, 3-4.

[27]Rose, 12-13.

[28]Pei-Shan Lee, "The collaborative pianist: Balancing roles in partnership" (DMA diss., New England Conservatory of Music, 2009) In ProQuest Dissertations & Theses, http://login.ezproxy1.lib.asu.edu (accessed Feb. 18, 2013), 4-5.

The three main textbooks chronicling this evolution from accompanist to collaborative pianist are Kurt Adler's *The Art of Accompanying and Coaching,* Robert Spillman's *Art of Accompanying: Master Lessons from the Repertoire,* and Martin Katz's *The Complete Collaborator: The Pianist as Partner*.

In 1965, Kurt Adler wrote the first textbook on accompanying since the early 19th century.[29] Despite his admirable attempt to create an "aid to pianists who want to become or already are professional accompanists or coaches,"[30] he refers to the instrumentalist/vocalist as "artist" and the pianist as "accompanist."[31] This is indicative of the view that pianists were not as important as the other musicians with whom they played. Adler is explicit that chamber music and accompanying are two separate entities, and he also makes a distinction between an accompanist and a coach. Each plays ballet, chorus, instrumental and vocal repertoire, but an accompanist generally works as a performer while the coach teaches. Few pianists at the time did both.[32]

By the time Robert Spillman penned his book *Art of Accompanying: Master Lessons from the Repertoire* in 1985, he refers to an accompanist as a pianist who plays both instrumental and vocal repertoire in a coaching or performing capacity. He points to the fact that discussions were budding among colleagues who were "interested in developing a new nomenclature for this branch of the profession, calling themselves (and

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[29]Adler, 3.

[30]Ibid., 4.

[31]Ibid., 6.

[32]Ibid., 5-6.

other pianists) *collaborative artists* or *partners* or, following European practice, referring to the partner at the piano simply as *the pianist."*[33]

In 2010, Martin Katz barely affords this topic any discussion because the change in terms from accompanist to collaborative pianist had taken hold. "Nowadays, however, the word 'accompanist' has been almost universally replaced. The old title seems to strike many as pejorative, demeaning, or indicative of a lack of self-esteem; as a result, a different word for this specialized art has come into common usage today: collaborative pianist."[34]

Selected Book Review

The following three sources are the main texts available to collaborative pianists.[35] Imparting accurate anatomical information lies outside the scope of these works, yet it is intricately linked to their subject matter. Movement creates sound, and therefore a musician needs to know how to move her body to get the sound she desires. A pianist cannot begin to apply any of the truly wonderful artistic suggestions by Adler, Spillman, or Katz without knowing how her body works.

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[33]Robert Spillman, *Art of Accompanying* (New York: Shirmer Books, 1985), 2.

[34]Katz, 3.

[35]For a complete review of how these books establish competencies for the collaborative pianist, see Dian Baker's dissertation, "A Resource Manual for the Collaborative Pianist: Twenty Class Syllabi for Teaching Collaborative Piano Skills and an Annotated Bibliography." Baker also notes Algernon H. Lindo's *The Art of Accompanying* (1916), Philip Cranmer's *The Technique of Accompaniment* (1970), and Deon Nielsen Price's *Accompanying Skills for Pianists* (1991) as other resources for the collaborative pianist.

1. Kurt Adler's *The Art of Accompanying and Coaching* (1965 and revised 1971 editions)

Adler devotes only about a quarter of his text to the actual art of accompanying and coaching, which serves as a great jumping off point for a beginning collaborator. Some of Adler's comments may seem outmoded for today's college students, but they are reflective of the attitudes of his era. Much of the information is still applicable to modern players. There have been many technologic advances recently that have changed some vocal pedagogy, and as a result, the information on the physiology of the voice is not entirely accurate (see Chapter Five).

Introduction

Adler outlines his musical philosophy and defines an accompanist.

Chapter 1 – The Historical Background of Accompanying

Chapter 2 – The Historical Background of Coaching

Chapters one and two offer a thorough account of accompanying through the ages.

Chapter 3 – The Mechanics of Musical Instruments

Adler provides explanations of the violin, keyboard instruments (pianoforte, celesta, organ, and harmonium), and the human voice.

Chapter 4 – Phonetics and Diction in Singing

Chapter 5 – Italian Phonetics and Diction

Chapter 6 – French Phonetics and Diction

Chapter 7 – Spanish Phonetics and Diction

Chapter 8 – German Phonetics and Diction

The phonetics and diction chapters are extraordinarily thorough with much contextual information. Because the format is prose as opposed to textbook-style charts, it is difficult to reference a concept quickly.

Chapter 9 – Elements of Musical Style

Adler consulted many sources for this chapter, and thus it is a great overview to all the classical music eras.

Chapter 10 – Program-Building

Adler gives advice on how to program varying types of recitals including debut, touring, recurring, refresher, one-composer, topical, and even one designed to garner praise from critics.

Chapter 11 – The Art of Accompanying and Coaching

Based on his many years of experience in the profession, Adler shares his wisdom through anecdotes and examples on virtually all situations a collaborative pianist will encounter: relationship with the voice teacher; operatic and oratorio coaching; song coaching; self-accompanying; technique; transposing; instrumental accompanying; dance, dance studio, and dance recital accompanying; and teamwork.

2. Robert Spillman's *Art of Accompanying: Master Lessons from the Repertoire* (1985)

Spillman first asks the reader and her partner to play through the songs/pieces, which he supplies in entirety. He then addresses the topics indicated at the beginning of the unit (e.g. pulse) by basically coaching the singer/pianist or instrumentalist/pianist duo

through guided questions. He explores each song/piece in great detail following this procedure, and each subsequent unit progresses similarly.

Unit 1: Introduction

Spillman states his intention to help a moderately advanced pianist learn more about accompanying vocal, instrumental, and ensemble repertoire.

Unit 2: Four *Lieder* by Brahms: *Die Mainacht, Wie Melodien zieht es mir; Ständchen,* Op. 106, No. 1; *Sapphische Ode;* concepts of pulse, balance and analysis. He provides a helpful checklist for beginning a song at the end of this unit.

Unit 3: Three *Lieder* by Schumann: *Widmung, Seit ich ihn gesehen, Stille Tränen;* commitment, personality and choice; architecture and meaning.

Unit 4: Two Sonata Movements by Beethoven: Sonata for Piano and Violin in F Major, Op. 24, First Movement; Sonata for Piano and Violoncello in D Major, Op. 102, No. 2, Second Movement; instrumental accompanying; architecture and articulation.

Unit 5: Three Twentieth-Century Instrumental Works: Bloch: *Suite Hébraïque* for Viola and Piano, First Movement; Debussy: Sonata for Violoncello and Piano, First Movement; Prokofiev: Sonata in D Major, Op. 94, First Movement; concepts of cooperation; Apollo and Dionysus.

Unit 6: Three Aria by J.S. Bach: ”Endlich wird mein Joch”; Höchster, deine Güte”; “Seufzer, Tränen, Kummer, Not”; realizing continuo parts.

Unit 7: Six French *Mélodies*: Fauré: *Le Secret, Nell, Clair de Lune;* Debussy: *C’est l’extase, Clair de lune, Fantoches;* French culture; musical ethics.

Unit 8: Two Concerto Accompaniments: Mozart: Clarinet Concerto, First Movement; Mendelssohn: Concerto in E Minor for Violin and Orchestra, Op. 64, First Movement; orchestral reductions.

Unit 9: Seven Italian Opera Arias: Mozart: "Porgi amor"; Rossini: "Ecco ridente," "Una voca poco fa"; Donizetti: "Una furtive lagrima," "Bella siccome un angelo"; Verdi: "Pietà, rispetto, amore"; Puccini: "Un bel dì"; opera coaching; transposing.

Unit 10: Five American Songs: Carpenter: *The Sleep That Flits on Baby's Eyes;* Ives: *The Circus Band;* Barber: *The Monk and His Cat, Sure on This Shining Night;* Rorem: *Early in the Morning;* conceptualization and commitment.

Unit 11: Three Wolf and Three Strauss *Lieder:* Wolf: *Auch kleine Dinge, Verborgenheit, Ich hab' in Penna;* Strauss: *Allerseelen, Morgen, Ständchen;* intensity and line.

Unit 12: More Instrumental Music: Hindemith: Sonata for Trumpet and Piano, First Movement (excerpt); Sonata for Bass and Piano, Second Movement; Brahms: Sonata in F Minor, Op. 120, No. 1, Second Movement.

Unit 13: Four *Lieder* by Schubert: *Die Forelle, Heidenröslein, Gretchen am Spinnrade; Wanderers Nachtlied;* playing the words.

Unit 14: Conclusion: marking music; sight-reading; spontaneity; playing recitals.

3. Martin Katz's *The Complete Collaborator: The Pianist as Partner* (2010)

Katz charmingly depicts the modern collaborative pianist and shares practical advice on how to successfully interact as a musical partner. Standing apart from his

predecessors is his embracement of technology: A companion website features Katz himself playing over sixty musical examples.

I. An Introduction: What Is Collaboration Anyway?

The text is meaningful for all readers but is especially intended for serious collaborative pianists. Collaboration is not "merely rhythmic synchronization…A quick glance at the chapters that follow will give some idea of the myriad tasks facing any accomplished collaborator."[36]

II. Breathing and Singing

Breath is the single most important aspect of playing collaboratively because it is the source of coordination between the partners. There are three types of breaths:

1. Nothing needs to be done (i.e., there are rests built into the music)

2. Nothing can be done (i.e., the musical impulse depends on the singer)

3. Permit breath and preserve flow (the pianist's material can be flexible)

III. The Word Is the Thing

The chapter concerns the pianist's need to know the sound and inflection of the words the singer sings so that she can play with the vowels and shape the musical phrase according to the textual phrase.

IV. The Pianist as Designer

He discusses the pianist's role of inspiring the singer with what is concretely in the text: characters, verbal structures, and quotations in the poem. The tools available to pianists are:

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[36]Katz, 3.

1. Tempo

2. Damper pedal

3. Una corda

4. Articulation

5. Balance

6. Arpeggiated chords

V. The Pianist as Director

The pianist must rely on imagination to interpret what is suggested by the text for introductions, interludes, postludes, and strophic songs.

VI. Kitchen Tools

"Behind-the-scenes preparation"[37] includes: starting a piece at the same time as one's partner; the singer starting alone or soon after the piano; breaking chords; silences chosen by the performers; pianist imitating singer; pianist doubling singer; and final tonic chords.

VII. The Bother of Balance

The pianist should always be able to hear her partner; the lid should never be closed completely and should be full-stick in chamber ensemble situations. In all other instances, the lid should be positioned in a way that benefits the ensemble. The pianist needs to be attentive to: registers of instruments; speed and words; string pizzicato, double-stops, and harmonics; and singers' vowel projection.

VIII. The Steinway Philharmonic

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[37]Katz, 93.

When imitating an orchestra: never sound like a piano; know the orchestration before practicing; restrike keys to maintain sustaining quality; use least percussive sound for strings; play a complete chord and alternate voices underneath the initial sound to obtain a successful tremolo; pizzicati should all be same length and can be best achieved with no voicing; use a focused and fast attack for woodwinds and brass; no arpeggiation except for harps; imitate effect of percussion, not what they actually play; double octaves in bass; and continuo should be bottom-heavy with no pedal and lean texture.

IX. More about Orchestral Playing

Rework for comfort anything that: is technically impossible; does not capture the true sound of the orchestra; has a better solution; and will require too many hours of practice without guarantee. Alter jumps, repeated notes, and fast, complicated passagework, and add solos that have been omitted. If there are three elements demanding attention, simplify the least important one.

X. Odds and Ends

Miscellaneous items Katz addresses: the moments immediately before and after a piece, supplying emergency pitches; selecting a starting tempo; page turns; when your partner has faster-moving material than the you; and cuts.

XI. Is There Life after Singers?

Advice on working with instrumentalists: The pianist must rely on visual cues since there are no words and always ask about tuning preferences.

XII. In Conclusion: A Pep Talk

Katz addresses the inequality issue here and counsels that the collaborative pianist must love helping people.

All three of these books share some anatomical inaccuracies when attempting to describe how the pianist should move her body at her instrument. For example, Adler explains that "the pianist's arms and fingers can act as hammers."[38] However, a pianist who thinks of striking her fingers against the keys as a hammer is destined to develop an injury due to overforce (see Chapter Three). Katz instructs the pianist to rotate at the wrist to play a tremolo.[39] The human body is designed to rotate at the elbow, not the wrist, and trying to rotate at the wrist will produce injury (see Chapter Four). And Spillman explains that "you may find yourself using not only your whole arm but also the whole back as well, in order to produce a *fortissimo* that is round rather than hard."[40] A pianist should use her whole arm for all movements at the piano, regardless of dynamic level, because patterns of holding limit mobility and lead to injury (see Chapter Four). Moving from the "whole back" is vague and causes confusion; human beings move from joints.[41] See Chapters Four and Five for the role of the spine and back muscles in supporting and moving the arms.

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[38]Adler, 26.

[39]Katz, 164.

[40]Spillman, 44.

[41]Pearson, 19.

Selected Dissertation Review

Many fine researchers have written about collaborative piano topics with some papers focusing on examining the curriculum and others on defining skills. Baker has named seven "landmark documents" contributing to the development of collaborative piano research.[42] The author has relied on three main recent dissertations for discussions of collaborative skills and perceptions of the collaborative piano craft.

1. Pei-Shan Lee, "The Collaborative Pianist: Balancing Roles in Partnership" (2009)

Pei-shan Lee examines the practical relationship between the educational needs of collaborative pianists and the service needs of accompanying programs at universities. From the basis of interviews conducted with six collaborative piano program directors and three online surveys, she concludes that the collaborative pianist is still perceived as less important than his/her partner. She devotes a portion of her text to discussing curriculums with advice on preventing overuse of collaborative pianists. Lee's document

[42]Baker, 10. These documents are:
1. Judyth C. Lippmann, "A Program in Piano Accompanying at The Ohio State University: A Feasibility Study" (Ph.D. diss., Ohio State University, 1979).
2. Edward L. Daniel, "Rationale for Integrating a Portion of Chamber and Accompanying Instruction with Applied Piano Study at the Collegiate Level" (DMA diss., Ball State University, 1979).
3. Erma L. Rose, "Competencies in Piano Accompanying" (Ph.D. diss., North Texas University, 1981).
4. Betty J. Redfern, "The Use of Piano Proficiency Skills by Music Teachers in Elementary and Secondary Public Schools in Connecticut, Indiana, and Arizona" (Ed.D. diss., Indians University,1983).
5. Wendy March, "A Study of Piano Proficiency Requirements at Institutions of Higher Education in the State of Oregon as Related to the Needs and Requirements of Public School Music Teachers" (DMA diss., University of Oregon, 1988).
6. Steven R. McDonald, "A Survey of the Curricular Content of Functional Keyboard Skills Classes Designed for Undergraduate Piano Majors" (Ph.D. diss., University of Oklahoma, 2000).
7. Linda Christensen, "A Survey of the Importance of Functional Piano Skills as Reported by Band, Choral, Orchestra, and General Music Teachers" (Ph.D. diss., University of Oklahoma, 2000).

is a crucial reminder that although the collaborative piano field has burgeoned over the past 60 years, it is facing an ever-present battle for equality.

2. Dian Baker, "A Resource Manual for the Collaborative Pianist: Twenty Class Syllabi for Teaching Collaborative Piano Skills and an Annotated Bibliography" (2006)

Baker organizes her study into three main parts: a review of selected literature, sample teaching syllabi, and an annotated bibliography. Particularly, her thoroughly-examined accounts of the available literature are valuable. She analyzes important competency points and aids the reader with convenient charts. Baker compiles salient information from previously existing studies in an organized way that can easily be referenced by future researchers and planners of collaborative piano courses.

3. Erma Loreen Rose, "Competencies in Piano Accompanying" (1981)

At a time when accompanying programs were in their nascence, Rose gathered opinions from accompanying teachers and professional accompanists regarding what they felt were the most important skills for a successful accompanist to develop. She hoped that these competencies would demonstrate a need to differentiate between solo pianism and accompanying, and encourage the formation of better accompanying curriculums. Rose recounts a fascinating history of curricula and curricular models as well as accompanying.

These dissertations share in common the emphasis on the value of proper training for collaborative pianists as it affects their employment marketability in the areas of both performing and teaching. Pianists are always in demand for various vocal and instrumental rehearsals and concerts,[43] and, moreover, current job postings for professor positions require collaborative skills.[44] Baker, Lee, and Rose have been pivotal in elevating the field of collaborative piano, though none of these authors focus on the physical needs of the collaborative pianist herself.

A Brief History of the Collaborative Piano Academic Program

Gwendolyn Koldofsky was an internationally famous accompanist and vocal coach who "raised the stature of accompanying to a recognized art."[45] She introduced the first accompanying program in the world at the University of Southern California in 1947.[46] It began as an undergraduate degree with master's (mid-50s) and doctoral (1969) degrees being added later. "In a 1979 study, Judyth Lippmann reported that only fourteen of the thirty-seven largest music schools in the United States offered an accompanying curriculum."[47] Eighty-two programs now exist in North America under the name of

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[43]Baker, 2, Lee, 97, Rose, 1-2.

[44]Lee, 38, Rose 2-3.

[45]James Lytle, "Gwendolyn Koldovsky, Accompanist, Dies at 92," *USC News* (December 7, 1998), http://www.usc.edu/uscnews/stories/4096.html (accessed Feb. 15, 2013).

[46]USC Thornton School of Music. http://www.usc.edu/schools/music/programs/kca/ (accessed Feb. 15, 2013).

[47]Rose, 1.

Collaborative Piano.[48] Just half that number (about 42) existed in 1977 according to a NASM survey.[49]

Body Awareness

Statistics point to pianists sustaining injuries at a more frequent rate than other instrumentalists excepting string players.[50] No data is available for the specific niche of the collaborative pianist who is, in general, under more pressure to prepare and perform more music at a faster rate than a solo pianist, and is therefore under an increased chance for injury. Lee reported in her dissertation that all six of her interviewees (Anne Epperson, Margo Garrett, Alan Smith, Jean Barr, Jonathan Feldman, and Cameron Stowe) agreed that "collaborative majors must cover a huge amount of repertoire in a considerably short period of time."[51]

Collaborative pianists are continually jockeying the lessons, rehearsals, coachings, studio performances, and recitals of not only their own, but *all* their partners. Lee points out that the collaborative pianist must physically and mentally adjust to multiple partners, changing repertoire, various personalities, different instruments, and

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[48]Lee, 4.

[49]Rose, 3.

[50]Rebecca Barton, et al, "Occupational Performance Issues and Predictors of Dysfunction in College Instrumentalists," *Medical Problems of Performing Artists* 23, no. 2 (2008), http://login.ezproxy1.lib.asu.edu (accessed April 24, 2011).

[51]Lee, 48. Anne Epperson, Professor of Collaborative Piano and Director of Collaborative Services, University of Texas in Austin, Jean Barr, Director and Professor of Piano Accompanying and Chamber Music, Eastman School of Music, Jonathan Feldman, Chair of Collaborative Department, Juilliard School, Margo Garrett, Faculty of Accompanying and Coaching, University of Minnesota and Faculty of Collaborative Piano, Juilliard School, Alan Smith, Director of Keyboard Collaborative Arts and Professor of Keyboard Studies, University of Southern California, Cameron Stowe, Co-chair of Collaborative Piano Department, New England Conservatory.

different rooms and acoustics.[52] Furthermore, collaborative pianists must devote time to punching holes, making copies, taping, and organizing binders of music, and arranging a rehearsal schedule to accommodate many partners. Lee recounts:

> Particularly during peak season, when the school has large numbers of graduation recitals and is simultaneously holding auditions and jury exams, collaborative pianists become swamped with work. It is common to see them running to several rehearsal and studio lessons in the same afternoon, after which they may play a recital and/or accompany a studio class in the same evening.[53]

The pressure of learning a prodigious amount of repertoire quickly and upholding a hectic schedule may translate into stress, which produces muscle tension.[54] Stress is a contributing factor to incurring an injury, as it inhibits circulation and breathing, limiting blood flow and oxygen to all parts of the body.[55] Hence, collaborative pianists need to be especially aware of their body use in the prevention of injury.

Summary

Collaborative pianists have made considerable advancement in their quest for equality as partners in musical performance over the last half-century. The graduate collaborative piano curriculums serving these pianists have made enhancements, and the collaborative piano competencies taught to them have been refined. Yet, still unattended is the collaborative pianist's urgency for adequate training of healthy body use. Especially when considering the stress that may result from learning a large volume of

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[52]Ibid., 51.

[53]Ibid.

[54]Pearson, 17.

[55]Horvath, 24.

music quickly and negotiating a busy workload, the collaborative pianist must be committed to preventing injury through body awareness.

CHAPTER 3

INJURY FACTS

Injured musicians rarely share their personal stories, especially around a conservatory or school of music where an injury is usually viewed as a technical weakness. In her book *Playing (Less) Hurt*, Janet Horvath describes how at one point during the Minnesota Orchestra's season, six musicians were "sidelined with injuries," which compelled her resolve to "come out of the closet and find solutions to our problems."[56] Musicians who do not discuss their pain or injuries are doing a huge disservice to the entire field; reticence only ensures the status quo.

Notably in collaborative piano, where the pianist is often facing multiple performing situations, one must be a vigilant advocate for injury prevention. Lee explains, "Administrators, faculty, and students can unthinkingly mistake the collaborative piano program for a service department,…[and] as a result, collaborative majors sometimes must deal with issues of overuse."[57]

A musician who is experiencing pain should always consult with a doctor first, as pain can be a manifestation of an underlying medical condition unrelated to playing music. Many injuries affect the soft tissue only, and it is difficult for standard medical tests to detect these. Hence, it is important to see a doctor who has experience with repetitive strain injuries.[58] Janet Horvath's book *Playing (Less) Hurt* contains a resource list that includes selected medical practitioners, and she suggests checking the Performing

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[56]Horvath, 5.

[57]Lee, 6.

[58]Horvath, 4.

Arts Medicine Association (PAMA) website to find a doctor in other locations.[59]

Repetitive Strain Injury (RSI) and Overuse

Repetitive Strain Injury has a variety of definitions, seemingly because it is a catchall term. The Harvard RSI Action Group recommends Emil Pascarelli's book *Repetitive Strain Injury: A Computer User's Guide,*[60] and this is the source that Horvath cites numerous times. Pascarelli's definition of RSI is:

> an umbrella term for several cumulative trauma disorders caused by overuse of the hand and arm. The tendons, tendon sheaths, muscles, ligaments, joints and nerves of the hand, arm, neck and shoulder can all be damaged by repetitive movements.[61]

As defined by Christian Nordqvist in an article for *Medical News Today:*

> Repetitive strain injury or RSI, also known as repetitive stress injury, repetitive motion injuries, repetitive motion disorder (RMD), cumulative trauma disorder (CTD), occupational overuse syndrome, overuse syndrome, and regional musculoskeletal disorder is a range of painful or uncomfortable conditions of the muscles, tendons, nerves and other soft tissues. RSI is usually caused by repetitive use of a certain part of the body, often somewhere in the upper limbs (arms).[62]

Other internet searches drum up definitions similar to the one used by *Medical News Today*. Wikipedia, by no means a reliable medical source, is the first to pop up in a google search for "repetitive strain injury," and is therefore helpful to include here as an example for what a casual internet search by an ordinary person uncovers:

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[59]Ibid., 213. PAMA's website is www.artsmed.org.

[60]Harvard RSI Action, "Tips," http://www.rsi.deas.harvard.edu/tips.html (accessed Mar. 4, 2013).

[61]Horvath, 11.

[62]Christian Nordqvist, "What is Repetitive Strain Injury (RSI)? What Causes Repetitive Strain Injury?" (January 19, 2010), http://www.medicalnewstoday.com/articles/176443.php (accessed Mar. 4, 2013).

> Repetitive strain injuries (RSIs) are injuries of the musculoskeletal and nervous systems that may be caused by repetitive tasks, forceful exertions, vibrations, mechanical compression (pressing against hard surfaces), or sustained or awkward positions. RSI is also known as *cumulative trauma disorders*, *repetitive stress injuries*, *repetitive motion injuries or disorders*, *musculoskeletal disorders*, and *[occupational] overuse syndromes*.[63]

RSI is synonymous with *overuse*, which Horvath defines as:

> a loose term applied to several conditions in which body tissues have been stressed beyond their biological limits. These disorders of the musculoskeletal system can affect bones, joints and such soft tissues as ligaments, tendons and muscles.[64]

R. Bahr reports in a 2009 study:

> It is believed that repetitive low-grade forces exceeding the tolerance of the tissues cause overuse injuries.[65]

A recent 2012 study states that in typical medical literature, overuse is:

> caused by repeated micro-trauma without a single, identifiable event responsible for the injury.[66]

These latter two definitions suggest that overuse is a long-term process that has been underway before symptoms start presenting.

The purpose of surveying the multiple definitions of *RSI* and *overuse* is to demonstrate that not everyone agrees on one definition or on the causes of the associated

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[63]Wikipedia, "Repetitive Strain Injury," http://en.wikipedia.org/wiki/Repetitive_strain_injury (accessed Mar. 4, 2013). The source is attributed to Public Employees Occupational Safety and Health Program of the New Jersey Department of Health and Senior Services.

[64]Horvath, 9.

[65]R. Bahr, "No Injuries but Plenty of Pain? On the Methodology for Recording Overuse Symptoms in Sports," *Br J Sports Med* 43 (2009), http://bjsm.bmj.com.ezproxy1.lib.asu.edu/content/43/13/966.long (accessed Mar. 4, 2013).

[66]C.P. van Wilgen and E.A.L.M. Verhagen, "A Qualitative Study on Overuse Injuries: The Beliefs of Athletes and Coaches," *Journal of Science and Medicine in Sport* 15, no. 2 (March 2012), http://www.sciencedirect.com.ezproxy1.lib.asu.edu/science/article (accessed Mar. 4, 2013).

injuries, and that the validity of the view that it is *misuse* rather than *overuse* that leads to an injury. Body Mapping operates on the premise that a musician can prevent injury and promote artistic freedom by using her body in accordance with its design, i.e. not misusing the body. Barbara and William Conable note in *How to Learn the AlexanderTechnique: A Manual for Students:*

> The body is beautifully designed for repetitive movement unless it is misused…If repetitive movement were the issue, all musicians should hurt.[67]

The previously mentioned 2012 study was in the form of qualitative interviews conducted with nine athletes and nine coaches from the Northern Netherlands. The researchers found that athletes and coaches have a "holistic view" that "integrate[s] somatic as well as psychological and sociological factors into the definition of and risk factors for overuse injuries,"[68] which is contrary to the medical definition. At the time of publication, there were no studies done on the prevention of overuse injuries, and therefore the authors claim that this information will help to structure prevention programs:

> In practice, this could manifest as athletes being educated on how to deal with fatigue and pain at the onset of an overuse injury, how to communicate with coaches, teammates and parents, and how to deal with stress and pressure. For coaches, communication skills with athletes and the training regimen may also be subjected to a preventive program.[69]

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[67]Barbara Conable and William Conable. *How to Learn the Alexander Technique: A Manual for Students, 3rd Edition* (Portland, OR: Andover Press, 1995), 132.

[68]Wilgen and Vorhagen.

[69]Ibid.

This has many implications for the musical arena as well, insofar as wellness reforms are concerned. Chapters Four and Five explore the technique of Body Mapping as a prevention program.

Musicians and Repetitive Motions

Musicians make many repetitive motions and are able to execute thirty-eight notes in three seconds.[70] Pianists can make 28,800 repetitive motions in an hour, according to Thomas Mark, author of *What Every Pianist Needs to Know about the Body*.[71] If tension accompanies these motions, over time an injury will result. The process of overuse is as follows:

> Muscle damage can cause problems other than biomechanical inefficiency. Muscles deteriorate and rebuild as a natural process of life, but when they are overused, the body can't catch up with the destruction of delicate tissues and may replace them with scar tissue, which is inelastic. Overuse of the muscles causes cells to break down, releasing waste products, which produces pain and inflammation. Cleanup crews in the form of white blood cells called macrophages come to carry away the cellular debris. If you take anti-inflammatory drugs (such as aspirin) at this time, the natural inflammation process is disrupted, and instead of being cleansed away in the bloodstream, the trash settles into scar tissue. This scar tissue can bind muscles and tendons together, forcing them to work when they shouldn't have to….When someone has too much scar tissue, the risk of permanent disability looms large….Muscle shortening in the forearms also strains the tendons of the fingers because they have to work harder than they should. Tendons stretch very little, so the shortened muscles and tight tendons cause increased friction from shearing and you get further inflammation and tendinitis. Inflammation can cause swelling, which can make the tissue press on the nerve, and this can lead to neurological problems.[72]

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[70]Horvath, 10. This figure comes from neurologist Frank Wilson, author of *Tone Deaf and All Thumbs* and *The Hand.*

[71]Mark, 1.

[72]Horvath, 12. She quotes Pascarelli and Quilter here from their book *Repetitive Strain Injury, A Computer User's Guide*.

Injury Warning Signs

Pain is the main symptom of an overuse injury, but other symptoms could include "swelling, instability, reduced strength, limited range of motion, reduced agility, and other functional limitations affecting performance."[73] Janet Horvath has developed a convenient list of symptoms that can help a musician detect an injury in its early stages:

1. Pain and/or burning sensation.
2. Fatigue or heaviness.
3. Weakness.
4. Impaired dexterity.
5. Tingling, numbness.
6. Clumsiness.
7. Stiffness.
8. Involuntary Movement.
9. Impaired Circulation.
10. Difficulty with normal daily activities. [74]

It is imperative to be aware of these warning signs as they are crucial in preventing the severity of the condition. "The earlier the symptoms are recognized and treated, the sooner and more completely recovery can ensue."[75]

Causes of Injury

Robin Gilmore in *What Every Dancer Needs to Know about the Body* defines *tonic* and *phasic* as two types of muscle. Tonic muscles are "slow twitch" postural muscles that keep us upright and are slow to fatigue. Phasic muscles are "fast twitch"

[73]R. Bahr, 2009.

[74]Horvath, 29.

[75]Ibid., 28.

movement muscles that fatigue quickly and become weak if misused.[76] Misuse occurs when phasic (movement) muscles are continually recruited to perform the job of tonic (postural) muscles (see Chapter Four for information on how Body Mapping resolves this issue). When movement muscles take on the work of postural muscles, they will be continually contracted/tensed. Not only will they not be available for movement, but the perpetual tension contributes to injury. "Injuries come from chronically tense movement."[77]

Thomas Mark, author of *What Every Pianist Needs to Know about the Body*, cites four main causes of injury: co-contraction, awkward positions, static muscular activity, and excessive force, which are all forms of misuse. Muscles work in pairs, such that when one contracts, the other releases. This is how, for example, the arm bends and unbends—the bicep contracts to bend the arm and then releases when the tricep contracts to straighten it. *Co-contraction* happens when both opposing muscles remain contracted. *Awkward positions* of the bones create crooked pathways through which tendons must pass, which forces the tendons to work harder and weakens them. In dynamic muscular activity, the muscle shortens on contraction and lengthens on release, encouraging blood flow. But in *static muscular activity*, the muscle length stays the same, which fatigues the muscle and makes it susceptible to injury. *Excessive force* causes more "stress to the muscles, tendons, and other vulnerable structures" especially when combined with the

[76]Robin Gilmore, *What Every Dancer Needs to Know About the Body: A Workbook of Body Mapping and the Alexander Technique* (Annapolis, MD: Chesapeake Bay Alexander Studies, 2005), 28.

[77]Mark, 141.

repetitions a musician practices.[78]

Predisposal Factors for Musicians

Musicians are predisposed to injury based on several factors: technique (poor posture, unusual positions, repetitive movements), instrument played (the bigger the instrument, the higher the rate of injury), practice habits (infrequent breaks or sudden increase in duration), type of occupation, inadequate physical conditioning, and stressful activities.[79] An individual's risk factors for injury include size, strength, muscle tone, flexibility, congenital musculoskeletal disorders, and gender. Since women are smaller, more flexible, and have less upper body strength than men, they have twice the amount of reported hand problems.[80] It might seem counterintuitive that a musician with flexible joints would be prone to injury, but players with *joint laxity* (hypermobility of the joints) often use excessive force to prevent the joints from collapsing. The excessive force is what can cause an injury.[81] Janet Horvath identified ten potential factors contributing to overuse:

1. Body size, build.
2. Conditioning.
3. Muscle imbalances due to the demands of playing an instrument.
4. Fatigue.
5. Joint laxity.
6. Stress levels.
7. Misuse: poor technique, poor habits and/or poor posture.

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[78]Ibid., 141-142.

[79]Barton 2008.

[80]Ibid.

[81]Horvath, 11.

8. Abrupt changes or increases of schedule, length of practice, instrument type or weight.
9. Style of playing and lifestyle choices.
10. Your equipment setup. [82]

Risk factors for overuse injuries include repeated forceful, fast-paced movements of hands and arms, repeatedly lifting arms to the side or away from the body without support, repeatedly flexing the wrists with palm toward the forearm, repeated ulnar deviation, and working in cold conditions. These factors can cause cumulative damage to muscles and tendons and all require more rest than the time spent performing the movement.[83]

Injury Basics

Hoppmann and Patrone have identified three types of performance related injuries: musculoskeletal overuse, when a tissue is stressed beyond its limit; nerve-entrapment syndromes, when the nerve is "subject to compression, stretch, or friction";[84] and focal dystonia.[85] Focal dystonia affects approximately 1% of musicians and is a "task-specific movement disorder that manifests itself as a loss of voluntary motor

[82]Ibid., 26.

[83]Horvath 9-10. This list is taken from the book *The Athletic Musician* by Barbara Pull and Christine Harrison.

[84]R.J. Lederman, "Neuromuscular and Musculoskeletal Problems in Instrumental Musicians," *Muscle & Nerve* 27, no. 5 (2003), http://onlinelibrary.wiley.com.ezproxy1.lib.asu.edu (accessed April 26, 2011).

[85]Barton, 2008.

control in extensively trained movements."[86] Lederman evaluated 1,353 musicians in a 2003 study and found that sixty-four percent (64%) of the injuries were musculoskeletal (muscle pain, tendonitis, ligament sprain), twenty percent (20%) were peripheral nerve problems (thoracic outlet syndrome, carpal tunnel syndrome), and eight percent (8%) were focal dystonias. Sixty percent (60%) of the injuries occurred in women.[87]

A study by Barton et al. "Occupational Performance Issues and Predictors of Dysfunction in College Instrumentalists" yielded results that were "consistent with the literature," i.e., that prevalence of symptoms is more common in female musicians (82.2% reported pain) than male musicians (50% reported pain) and in piano and string players.[88] Keyboard and string players most often suffer from carpal tunnel syndrome.[89]

Injury Statistics

The following statistics indicate how widespread injuries are and are intended to shine a light of knowledge on anyone who operates under the impression that an injury only affects the rare players who have "bad" technique.

A staggering eighty-nine percent (89%) of musicians will be injured or experience pain during playing at some point during their careers, and seventy-six percent (76%) of musicians in a study by Fishbein and Middlestadt of 2,000 participants "reported

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[86]Eckart Altenmüller and H. Jabusch, "Review - Focal Dystonia in Musicians: Phenomenology, Pathophysiology, Triggering Factors, and Treatment," *Medical Problems of Performing Artists* 25, no. 1 (2010). http://login.ezproxy1.lib.asu.edu (accessed April 26, 2011).

[87]Lederman, 2003.

[88]Barton, 2008.

[89]Horvath, 55-56.

problems significant enough to impair their musical performance."[90] These 1988 statistics remain the standard as no other study has been so comprehensive.[91]

Abréu-Ramos and Macheo administered a questionnaire to the Puerto-Rican Symphony Orchestra and found that eighty-one-point-three percent (81.3%) of instrumentalists admitted to a musculoskeletal problem, mostly back pain, that affected their ability to play.[92] Shoulder injuries are the third most common complaint among instrumentalists. Ninety percent (90%) of string players in a 2008 study showed right shoulder movement deficit.[93] Violinists, percussionists, and conductors are more likely than other musicians to develop performance-related problems with their shoulders since their arms are elevated at shoulder height for relatively long and continuous periods of time.[94]

Common Injuries

In a 2002 study, Dawson found that the most common injury in musicians' upper extremities was muscle-tendon related, but inflammatory disorders, hypermobility,

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[90]Barton, 2008.

[91]Horvath, 7.

[92]Antonio M. Abréu-Ramos and William F. Macheo, "Lifetime Prevalence of Upper-Body Musculoskeletal Problems in a Professional-Level Symphony Orchestra: Age, Gender, and Instrument-Specific Results," *Medical Problems of Performing Artists* 22, no. 3 (2007), http://login.ezproxy1.lib.asu (accessed April 24, 2011).

[93]Horvath, 41.

[94]Ibid., 42.

masses, and arthritic problems were found to be common as well.[95] Winspur and Butler found wrist fractures in musicians common.[96] Moore et al. found that shoulder impingement (an overuse injury) was common among violin and viola players.[97] In a study of musicians under the age of eighteen, Burkholder and Brandvonbrener found that the most common injury location was "in the upper extremity and most frequent problems were musculoskeletal pain syndrome and excessive muscle tension."[98] Abréu-Ramos and Macheo showed that musicians are predisposed to musculoskeletal problems and neuromuscular disorders.[99] Another concern for musicians is "all kinds" of hearing loss.[100]

Liu and Hayden performed a review in 2002 that categorized problems according to section of the orchestra. Violinists and violists experience skin conditions where the instrument contacts the left side of the neck, which can be alleviated with a technique using less pressure and friction. Eczema can occur on the face if there is sensitivity to the

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[95]William Dawson, "Upper-Extremity Problems Caused by Playing Specific Instruments," *Medical Problems of Performing Artists* 17, no. 3 (2002), http://login.ezproxy1.lib.asu.edu (accessed April 24, 2011).

[96]Ian Winspur, Ian and K. Butler, "Restoring Wrist Rotation in Injured Pianists and Violinists," *Medical Problems of Performing Artists* 24, no. 2 (2009), http://login.ezproxy1.lib.asu.edu (accessed April 24, 2011).

[97]M. Moore, L. DeHaan, T. Ehrenberg, L. Gross, and C. Magembe, "Clinical Assessment of Shoulder Impingement Factors in Violin and Viola Players," *Medical Problems of Performing Artists* 23, no. 4 (2008), http://login.ezproxy1.lib.asu.edu (accessed April 24, 2011).

[98]Kristen Burkholder and A. G. Brandfonbrener, "Performance-Related Injuries Among Student Musicians at a Specialty Clinic," *Medical Problems of Performing Artists* 19, no. 3 (2004), http://login.ezproxy1.lib.asu.edu (accessed April 24, 2011).

[99]Abréu-Ramos and Macheo, 2007.

[100]Steven Liu and G. F. Hayden, "Maladies in Musicians," *Southern Medical Journal* 95, no. 7 (2002), http://web.ebscohost.com.ezproxy1.lib.asu.edu (accessed April 25, 2011).

chin rest. String players can contract contact dermatitis from bow rosin, and they often develop calluses on the left-hand fingers. Cellists often have skin conditions on their chest or left knee due to contact with the instrument. String players can develop TMJ (temperomandibular joint) dysfunction and overuse syndromes in left and right hands, shoulders, and neck. They can also develop nerve entrapment in the wrist (carpal tunnel syndrome), and in violinists and violists it can also occur in the left elbow because it must be bent to hold the instrument. Focal dystonia usually occurs in the left hand of string players.[101] A 2008 Lederman study found that sixty percent (60%) of string players experienced sensory loss in their left arm because of its static component.[102] Violinists and violists are four times more likely than other instrumentalists to have jaw pain (forty-seven percent have jaw pain).[103]

Clarinetists and saxophonists can develop irritations on their lips from their reeds, and flutists can develop skin irritations on their chins. Overuse syndromes occur primarily in the right shoulders of flute players and in the "web-space muscles" between the thumb and index finger of clarinetists, oboists, and bassoonists.[104] Woodwind players can get nerve damage in their lips, and clarinetists can get focal dystonias in their right hands. Woodwind players can also suffer from excess air leaking out their noses because of "incompetent palates."[105]

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[101]Ibid.

[102]Horvath, 58.

[103]Ibid., 78.

[104]Liu and Hayden, 2002.

[105]Ibid.

Playing high-resistance instruments like winds and brass leads to a greater incidence of visual field loss. Trumpet players with nickel allergies, like flutists, can develop eczema on their lip areas. Brass players are predisposed to lip muscle injuries because of the pressure required to blow air through the mouthpiece, and they can also develop dystonias in the embouchure muscles including face and mouth. Nasal air escape can also occur in brass players. Some studies have revealed cardiovascular conditions in French horn players.[106]

Injuries in singers include vocal nodules/nodes, which are calluses on the epithelium membrane covering the vocal folds, and vocal hemorrhage, which is a rupture in a blood vessel in the vocalis muscle.[107] Guitarists can develop dermatitis on the breast where the instrument contacts the body, and guitarists as well as harpists can develop calluses on their fingers. Overuse syndromes affect keyboard players in the wrist and fingers, and they have the highest occurrence of dystonias. In the conclusion of their review, like Barton et al., Liu and Hayden also recommend greater awareness among musicians.[108]

Summary

Injuries affect a majority of musicians at some point during their careers, and the bulk of these are musculoskeletal. Musicians make many repetitive gestures while

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[106]Liu and Hayden, 2002.

[107]Melissa Malde, MaryJean Allen, and Kurt-Alexander Zeller, *What Every Singer Needs to Know about the Body* (San Diego: Plural Publishing, 2009), 104.

[108]Liu and Hayden, 2002.

playing, and this repetition in combination with the misuse of their bodies causes these injuries. In order to stop the injury statistics from soaring, the focus should be on training proper body use. Chapter Four ("Body Mapping Basics") and Chapter Five ("Instrument-Specific Body Mapping") present Body Mapping as a technique for injury prevention.

CHAPTER 4

BODY MAPPING BASICS

This chapter presents principles of Body Mapping as a technique to avoid misuse of the body that can cause an injury (see Chapter Three). Body awareness and training the senses and attention are not only crucial to injury prevention, but also to gaining musical artistry and freedom. "There is another group of [musicians] who has not perhaps experienced chronic pain and injury but suffers with a different kind of trauma: feeling *limited* in ability no matter how long they dedicate themselves to their craft."[109] Through daily practice, musicians are in constant search for freer artistic expression, if not for themselves, then for their students. For the musician who has never experienced pain or injury, Body Mapping is a tool for achieving technical development, and for the teacher who came by her technique naturally and flawlessly, Body Mapping can function as a means of communication with a student having difficulties that she never encountered herself. In order to understand Body Mapping, one must first examine its roots in the Alexander Technique.

Explanation of the Alexander Technique

No two definitions of the Alexander Technique are alike. Michael Gelb posits in his book *Body Learning* that the Alexander Technique "eludes precise definition because it involves a new experience–the experience of gradually freeing oneself from the

[109]Johnson, 11.

domination of fixed habits."[110] Gelb's proclamation can be interpreted as a functional definition. The American Society for the Alexander Technique posts on their homepage: "A proven approach to self-care, the Alexander Technique teaches how to unlearn habitual patterns that cause unnecessary tension in everything we do."[111] In their book *How to Learn the Alexander Technique: A Manual for Students*, Barbara and William Conable write that "the Alexander Technique is a simple and practical method for improving ease and freedom of movement, balance, support, flexibility, and coordination."[112] Finally, Missy Vineyard in *How You Stand, How You Move, How You Live: Learning the Alexander Technique to Explore Your Mind-Body Connection and Achieve Self-Mastery* defines it as such:

> The Alexander Technique is an objective system of self-study that helps us learn to perceive ourselves more accurately. It is a hands-on method that gives us an experience of improved mind-body connection, and that teaches us the tools for change and self-mastery.[113]

Based on Alexander's own writing in *The Use of Self*, an amalgamation of all the above definitions could perhaps most accurately capture the summary of Alexander's discoveries.

Frederick Matthias Alexander (1869-1955) was an Australian stage actor who developed hoarseness and complete loss of his voice during his recitations. Doctors

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[110]Gelb, Michael J., *Body Learning.* 2nd Ed. (New York: Henry Holt and Company, 1994), 1.

[111]American Society for the Alexander Technique, http://www.amsatonline.org/ (accessed Mar. 6, 2013).

[112]Barbara Conable and William Conable, 1.

[113]Vineyard, Missy, *How You Stand, How You Move, How You Live: Learning the Alexander Technique to Explore Your Mind-Body Connection and Achieve Self-Mastery* (New York: Marlowe and Company, 2007), 12-13.

instructed him to remedy his voice by resting it, and this provided a temporary cure. But after a full program of reciting, the symptoms reappeared. Thus, he deduced that the way in which he was using his voice was causing the hoarseness. As his doctor was ineffective at diagnosing which of Alexander's habits was producing the hoarseness, Alexander embarked on a journey of self-discovery.

He observed himself in a mirror while reciting and noticed that he, 1. pulled his head back, 2. depressed his larynx, and 3. inhaled audibly (what Alexander referred to as "sucking in breath").[114] Eventually, he noticed that the same habits were present during his regular speaking, and he decided that he must be using these body parts incorrectly if they produced strain. The misuse of the head, neck, larynx, vocal and breathing organs (*parts*) affected the entire body (*whole*) with tension. His next step was to conduct a series of experiments searching for a movement change that prevented (*inhibited)* strain, the conclusion of which was the pulling back of the head. This discovery of the relationship of the head and neck he later called *primary control*.

When Alexander moved his head forward and up, his body lengthened and his back widened. However, when Alexander combined the prevention of the misuse of his head by pulling it down with the *direction* of the new movement of his head forward and up during recitation, he failed. This impressed upon him the significance of the unity of the physical body and the "mental."[115] He surmised that his wrong use of his body felt natural since it was the habit to which he was accustomed and realized that his sense of

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[114]F. Mathias Alexander, *The Use of the Self* (Long Beach, CA: Centerline Press, 1989), 5.

[115]Alexander, 23.

feeling was not accurate.[116] If he undertook his actions without thought for *how* to achieve the goal (*end-gaining*), the habit persisted.[117] By *inhibiting* the habitual response and replacing it with the new *direction* of primary control, Alexander was able to overcome his vocal difficulties over time.[118] He himself refers to his process as, "the technique which I gradually evolved over a period of years in my search for a means whereby faulty conditions of use in the human organism could be improved."[119]

Once Alexander improved his body use, his fame grew as an actor, and he began to teach fellow actors his Technique. Doctors began sending their patients to him, and his reputation flourished. Alexander divided his time between the United States and Britain between the World Wars and established successful practices in both countries. He wrote four books *Man's Supreme Inheritance* (1910), *Constructive Conscious Control of the Individual* (1923), *The Use of the Self* (1932), and *The Universal Constant in Living* (1941) explaining concepts of the Technique and eventually began training official teachers of the Technique to carry on his tradition.[120]

More pertinent than procuring a definition for the Alexander Technique is the benefit of its practice on the individual. The classical musician can learn through "self-observation and experimentation" just as Alexander did.[121] Following the Technique, the

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[116]Ibid., 40.

[117]Ibid., 27.

[118]Ibid., 20.

[119]Ibid., 1.

[120]Gelb, 15-21.

[121]Vineyard, 13.

musical performer learns enhanced body awareness that brings "a control which is fluid and lively rather than rigid. It provides a means whereby the use of a part–a voice or an arm or a leg–is improved by improving the use of the whole body, indeed, the whole self."[122]

Summary of Alexander Technique Principles

1. There is a profound connection between the mind and body.[123]

2. The use of a part is reflected in the use of the whole.

3. The quality of the relationship of the head and neck impacts the whole body.

4. Use of the body affects function of the body.[124]

[122]Barbara Conable, *What Every Musician Needs to Know about the Body*, Revised Ed. (Chicago: GIA Publications, 2000), 5.

[123]Alexander, 2.

[124]Ibid., 24.

Table 1 Alexander Terms

Alexander Term	Definition
Constructive Conscious Control	A process of self-observation and self-analysis wherein one becomes intimately knowledgeable about one's own habits so that one can suspend habitual muscular tightening where it exists, and gradually consciously replace it with constructive behavior.
Directing	Giving oneself specific verbal instructions that describe a new and better pattern of movement.
Downward Pull	Habitual muscular tightening.
End-gaining	Focusing one's attention exclusively on a particular result or outcome without regard for or with insufficient attention to the best means of achieving it.
Inhibition	At a neurological level, inhibition is the capacity of a neuron to cause another neuron to be less easily activated. In the Alexander Technique, conscious inhibition is a skilled use of the mind to prevent or cease unwanted, harmful, or unnecessary behavior as it is happening or as it begins.
Misuse	A harmful, inefficient, or ineffective way of moving or using the self (mind and body), which is generally unconscious.
Primary Control	The dynamic relationship between the head and neck, and between the head, neck, and trunk that enhances the individual's locomotor coordination and its overall functioning.

Sources: Missy Vineyard, 10, 305-310, Barbara Conable, *What Every Musician Needs to Know about the Body*, 5.

Explanation of Body Mapping

William Conable, Alexander Technique teacher and Emeritus Professor of Music (cello) at The Ohio State University, first discovered the body map in the 1970s when he noticed that his students moved according to the imagined structure of their bodies rather

than by the anatomical reality of their bodies.[125] He cites the following situation as the animus for Body Mapping in his 1991 article, "Origins and Theory of Body Mapping":

> Some years ago a colleague asked me to observe a violin student who was having difficulty bending her bow arm at the elbow. Nothing the student or the teacher could think of was effective in helping her to solve this problem. Watching her play, I asked myself what I would have to think in order to move that way. It looked to me as if a possible answer was that she was thinking of her elbow joint about two inches higher on her arm than it really was. I thought that a plausible reason for this would be that that was the distance of her elbow from her shoulder when she started the violin as a child and that perhaps she had not changed her thinking as she grew.* [sic] When I proposed this to her and showed her where her elbow joint really moved, she said, 'Oh, I can do that,' and immediately proceeded to play with a freely moving elbow.[126]

William Conable recognized the difficulty of learning the Alexander Technique and found an inconsistency in the perception of the location of body parts in both students of the Technique and among the highly-trained Alexander teachers themselves.[127] These misconceptions about the anatomy of the body led him and Barbara Conable, who is also an Alexander Technique teacher, to author the book *How to Learn the Alexander Technique: A Manual for Students* in 1991. They note in their preface that integrating Body Mapping into the study of the Alexander Technique spurs faster and more secure learning. Although they intended the book to be utilized by students attending regular Alexander lessons, music students experienced success after "read[ing] this Manual and assimilat[ing] the ideas in it…[even without] the privilege of Alexander

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[125]Barbara Conable, *What Every Musician Needs to Know about the Body*, 5, and Johnson, 16.

[126]William Conable, "Origins and Theory of Body Mapping," http://bodymap.org/main/?p=299 (accessed Mar. 9, 2013).

[127]Ibid.

lessons."[128] This revelation then prompted Barbara Conable in 1998 to write *What Every Musician Needs to Know about the Body, the Practical Application of Body Mapping to Making Music.*

Body Mapping has since become its own entity through Barbara Conable's establishment of the Andover Educators organization in 1997.[129] The chief difference between the Alexander Technique and Body Mapping is that Alexander teachers "teach" with their hands[130] by guiding students' bodies into helpful patterns and movements whereas Body Mapping is intended for self-study. While Body Mapping is mainly associated with Andover Educators or the Alexander Technique, it serves as a helpful basis for any somatic discipline.

Definition of Body Map

"The Body Map is one's self-representation in one's own brain" that includes information on the size, structure, and function of the body.[131] An accurate body map produces healthy movement while an inaccurate body map, i.e., one that is "inconsistent with the reality" of the body's structure, results in inefficient or harmful movement.[132] Through self-observation and careful study with teachers, books, anatomical models,

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[128]Barbara Conable and William Conable, *How to Learn the Alexander Technique,* preface xi.

[129]Vining, 2.

[130]Barbara Conable and William Conable, *How to Learn the Alexander Technique*, 18.

[131]Barbara Conable, *What Every Musician Needs to Know about the Body*, 5.

[132]Barbara Conable, *The Structures and Movement of Breathing: A Primer for Choirs and Choruses* (Chicago: GIA Publications, 2000), 14.

images, and mirrors, a faulty map can be consciously corrected.[133] Body Mapping is the process of refining one's body map "to produce efficient, graceful, and coordinated movement."[134]

In his article, "The Scientific Basis of Body Mapping," Richard Nichols distills the extraordinarily complex workings of the brain during voluntary muscle movement. A "somato-topic" map is the representation of the body on the cortical surface with the use and precision of movement relating to size, i.e., larger surface area corresponds to more intricate movements. During voluntary muscle movement, executive motor areas of the cerebral cortex communicate directly with neurons that activate muscles. Prior to this stage of the muscles actually moving, motor planning takes place. Motor planning occurs in premotor areas and encompasses motor strategies and programming movement sequences. It is at these cognitive levels of processing that the body map is engaged and can "influence cortical representation along the entire chain of information flow, from planning to execution."[135] The executive cortical areas reorganize themselves to reflect motor planning, and it is therefore possible to change maps. However, pathologic changes such as tendonitis can arise if the movement is faulty. "These conclusions underscore the importance of educating musicians in anatomy and physiology of the motor system so that practices that can lead to pathology in the musculoskeletal system can be avoided."[136]

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[133]Barbara Conable *What Every Musician Needs to Know about the Body*, 5.

[134]Ibid.

[135]Richard Nichols, "The Scientific Basis of Body Mapping," http://bodymap.org/main/?p=213 (accessed Mar. 9, 2013).

To summarize, a body map based on an accurate understanding of the human anatomy will generate efficient movement whereas a body map based on erroneous information can lead to disorganized or injury-producing movement. Because musicians move for a living just as dancers or athletes, it is imperative that they learn to use their bodies properly. Through training movement, attention, and senses, Body Mapping promotes freedom of movement and prevents injury in musicians.

The Kinesthetic Sense

Body Mapping requires kinesthetic awareness to be successful. Kinesthesia is our sense of movement and derives from the Greek roots *kinema* (motion), and *aesthesia* (perception).[137] Barbara Conable posits that either a "cultural prejudice" or a preference for the other five senses exists because the kinesthetic sense is neither named nor trained.[138] Kay Hooper, in her book *Sensory Tune-ups: A Guided Journal of Sensory Experiences for Performers of All Ages,* alleges that, "most of us tune this sense out because it often works for us on a very subtle level."[139] The kinesthetic sense delivers information about effort, movement, position, and weight delivery.[140] Receptors for our

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[136]Ibid.

[137]Barbara Conable, *What Every Musician Needs to Know about the Body,* 45.

[138]Barbara Conable and William Conable, *How to Learn the Alexander Technique,* 20.

[139]Kay Hooper, *Sensory Tune-ups: A Guided Journal of Sensory Experiences for Performers of All Ages* (Selinsgrove, PA: AllSense Press, 2005), 12.

[140]Ibid.

sense of movement are found in nerve endings that are mostly in the joints, muscle, and connective tissue.[141]

It is vital for musicians to cultivate the kinesthetic sense since quality of movement affects quality of sound insofar as a sound can only be produced on an instrument or with the voice by movement. String players move the bow to vibrate the strings, wind players move air to vibrate across a mouthpiece or reed, and singers move air across the vocal folds. Kinesthesia relays feedback about how and where the body moves and also the quality of that movement.[142] A musician should be able to recognize the quality of her movement in order to regulate the amount of effort she exerts, such that effort appropriately matches the task.[143]

Other Senses and Sensations

In addition to the kinesthetic sense, musicians should notice many other elements such as the tactile sense, pain, hunger/thirst, pleasure, emotions, and the brain.[144] The tactile sense, or sense of touch, can help one feel connected to the keys, valves, or strings of their instruments, and also to monitor air temperature. The reader will recall that working in cold conditions is a risk factor for developing injury (see Chapter Three). Found on the skin and in the nasal passages, the receptors for the tactile sense can

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[141]Mark, 8.

[142]Malde, 5.

[143]Ibid.

[144]The information in this paragraph comes from Barbara Conable and William Conable, *How to Learn the Alexander Technique,* 25-30 unless otherwise noted.

increase one's awareness of the contact of one's clothing on the skin; tight clothing can cause tension in the body.[145] Awareness of the heat in muscles and of pain can detect an injury in its early stages. Being aware of hunger and thirst will remind one to take frequent breaks to satisfy these basic human needs. Responsiveness to pleasure in body movement can signify successful primary control. Releasing emotions is often intertwined with physical freedom;[146] musicians must be finely attuned to this bond as a musical performance contains both technical skill and emotional content.[147] Thomas Mark encourages musicians to be aware of their brains while playing to maximize its areas of functioning: cognitive (knowing and remembering), sensory (sensations), motor (movement), and emotional (feelings).[148]

"Any posture that is rigidly held for a long time is exhausting, even if you are in perfect alignment."[149] The key to avoiding a "rigid posture" is micro-movement. Micro-movement can prevent a performer from holding her body in a fixed position, which can disrupt the musical flow and contribute to injury. With micro-movement, a musician can feel many small movements in her body that are invisible to her audience.[150] Barbara Conable interchanges the words micro-movement and micro-motion and describes it thus:

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[145]Horvath, 62.

[146]Barbara Conable and William Conable, *How to Learn the Alexander Technique,* 29.

[147]Mark, 14.

[148]Ibid.

[149] Horvath, 36. She quotes Emil Pascarelli.

[150]Lisa Marsh, *Fundamental Principles of Coordinate Movement for Pianists* (Portland,OR: Lisa Marsh, 2010), 3.

> Micro-motion is all the sensation of the activity going on in the body. It must be complex, to say the least. It must include the muscular activity that keeps us reflexively upright (a sort of kinesthetic hum), the flow of fluids, the subtler sensations of breathing.[151]

Inclusive Attention/Awareness

Also necessary for healthy body use is the training of one's attention. "Loss of awareness is one of the main causes of tension."[152] Three types of attention exist: concentration (attention on a single object to the exclusion of all other objects); rapid scanning (sequential concentration); and inclusive attention/awareness ("the skill of perceiving self and world simultaneously").[153] When attention narrows (concentration), so does the body–"furrowed eyebrows, needlessly tensed muscles, and mental strain."[154] One should constantly expand one's awareness to include more stimuli and how they relate to one another. The benefit of inclusive attention is that one can choose to shift focus to any element at any given time.[155] Inclusive attention allows a musician to be embodied while playing, i.e., to have an "immediate, detailed awareness" of her body at all times while maintaining awareness of her surroundings.[156]

Inclusive attention is arguably the most valuable skill for a collaborative pianist to possess. Inherent in the very title of the craft is that another musician will always be

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[151]Barbara Conable and William Conable, *How to Learn the Alexander Technique*, 28.

[152]David Nesmith, *The Breathing Book: Horn* Edition (Flagstaff, AZ: Mountain Peak Music, 2011), 6.

[153]MaryJean Allen, 7.

[154]Johnson, 13.

[155]MaryJean Allen, 8.

[156]Mark, 12.

present and therefore must be incorporated into the pianist's awareness. The ability for the collaborative pianist to respond fluidly to her partner depends on her inclusive attention. For example, a collaborative pianist might need to listen for the singer's breath at one instant, give a head cue the next, and then look at her hands for a large jump across the keyboard. Inclusive awareness is a skill that will improve with daily use.[157]

Six Places of Balance

Each instrument requires different movement, and therefore each instrumentalist has special Body Mapping needs. For example, a vocalist should have an especially detailed map of her larynx while a pianist should have a detailed map of her wrist and fingers. Every player should have general knowledge of basic body structures.

There are six points of balance that should be aligned for optimal body movement: the AO (atlanto-occipital) joint, which is where the base of the skull (occiput) articulates with the top vertebra of the spine (atlantis); the shoulder joint; the lumbar spine; the hip joint; the knee joint; and the ankle joint. Weight is distributed from the head down through each of these joints to the floor when standing and from the pelvis to the chair or bench when sitting. The bones of the skeleton should easily stack one on top of the other.[158]

If the body is not aligned properly, weight is delivered to body parts that are not designed for the purpose of postural support, and muscles will be recruited to hold up the body instead. When muscles are contracted for postural purposes, they are not available

[157]Vining, 16.

[158]Johnson, 7.

for movement.[159] Contrarily, these muscles become tense, and chronic tension can lead to injury.[160] "Muscles like to be in neutral position or at the midpoint of their normal range of movement."[161] Furthermore, "tension interferes with kinesthetic sensitivity."[162]

Barbara Conable and William Conable in *How to Learn the Alexander Technique* explain that all patterns of tension and misuse of the body begin with an imbalance of the head on the neck. When the head is not balanced on the spine, muscles contract to hold the head up, and this continues a series of muscle contractions, or tension, throughout the entire body resulting in what Alexander called *downward pull.* The muscles that are needed for movement are instead being used to hold up the body because weight is not being distributed efficiently through the skeleton. Barbara and William Conable supply a meticulous description of downward pull:

> Downward pull is the pattern of tension in the whole body that originates with habitual tension in the neck. The eyes accommodate the chronic backward drag of the head by shifting in the orbit and they are chronically partially lidded. The jaw loses mobility and juts forward in opening. The tongue bunches and the throat tightens. The vertebrae of the neck are jammed together, putting pressure on nerves and blood vessels, creating a susceptibility to tension headaches. Breathing is impaired, vital capacity decreased, rib mobility decreased; the movement of breathing becomes disorganized. The spine loses range as well as its ability to lengthen and sequence in movement. Pressure is put on internal organs. The arm structure is distorted. The shoulder blades are pulled together as the back narrows and there is also a caving-in of the chest, dragging the collarbones down and in; in other words, we narrow front and back. The upper arm is torqued outward, rotation is compromised at the elbow, there is retraction across the wrist, and the hands tense. Meanwhile the whole back shortens and narrows. The lumbar area is shortened and forced forward, or back. The gluteals shorten, forcing the hip joints

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[159]The above two paragraphs come from Mark 34-36 but are found in every *What Every Musician…* books and in the Training Manual.

[160]Mark, 1.

[161]Horvath, 33.

[162]Vining, 14.

> forward in space. The pelvic floor is tightened uncomfortably upward. The thighs torque outward, putting pressure on the knees and causing the muscles of the lower leg to tighten, hardening the area between the tibia and the fibula. The lower leg is pulled off the perpendicular at the arch, forcing weight onto the heel, or, in extreme cases, onto the ball of the foot. The foot torques, the heel pulling to the inside and the front of the foot twisting outward, often sufficiently so that the reflexes that give us a sense of a spring in the step are lost. Toes lose mobility.[163]

Downward pull affects us when we sit as well since our sitting balance is the same as our standing balance, except that weight delivery is transferred from the pelvis to the chair, not the legs.[164]

As demonstrated in Chapter Three, injuries develop because of misuse of the body and a misunderstanding of how movement functions at the joints. Outlined below are the joints of the six places of balance and proper movement that occurs at these joints. Once a musician refines her kinesthetic sense, she will have the ability to maintain alignment and correct use by monitoring these places in the body. "Think joints," suggests Thomas Mark, because they are loaded with sense receptors.[165]

The AO Joint

The AO (atlanto-occipital) joint, the meeting of the base of the skull (occiput) with the top vertebra of the spine (atlantis), is located at the top of the body's central core. Higher than many people expect, the AO joint is positioned at the level of the ear lobes. If neck muscles are free, the head, which weighs an average of ten pounds, will balance on top of the spine. Knowing this will prevent downward pull. "The atlanto-

[163]Barbara Conable and William Conable, *How to Learn the Alexander Technique,* 13.

[164]Mark, 36.

[165]Ibid., 68.

occipital joint is the most important joint of the body. It influences overall movement coordination and breathing freedom."[166]

The upper teeth are not part of an upper jaw, rather they constitute the base of the skull. The jaw is an appendage that attaches at tempero-mandibular joints (TMJs) at the front of the ear lobes. Understanding the location of the TMJs and that gravity pulls the jaw down to open the mouth will avert TMJ disorder and headaches. When the head is balanced, the roof of the mouth should be roughly parallel to the floor.

The Lumbar Spine

The spine has four curves (the natural curve of the spine is called *lordosis*[167]), and the front half bears weight while the back half houses the spinal cord and nerves. The five largest vertebrae comprise the lumbar spine positioned behind the belly button. Incorrectly mapping the back half of the spine as weight-bearing shifts weight distribution to the heels when standing and the tailbone when sitting. Bearing weight along the back half of the spine puts pressure on the discs and can cause a slipped disk.[168] It will also limit arm mobility since most muscles that move the arms originate on the back. Free torso muscles depend on free neck muscles.

The head leads all spinal movement with vertebrae following in sequence and movement equally distributed across the whole spine. The spine coordinates all movement in the body, particularly breathing, by lengthening and gathering. In addition

[166]Nesmith, 13.

[167]Horvath, 35.

[168]Johnson, 38.

to lengthening and gathering, the spine can bend, twist, spiral and absorb shock because of its curvature.

The Hip Joint

Free leg muscles depend on free torso muscles: The sit bones (ischial tuberosities) are the bottom of the pelvis, which is also the bottom of the torso. The hip joint is where the thigh bone (femur) meets the pelvis and accommodates motion in all directions, including rotation, because of its ball and socket structure. One bends at the hip joint, not at an imaginary waist, and musicians bow from this joint. The hip joints mark the midpoint of the body.

The Knee Joint

The knee joint is below and behind the knee cap (patella), which does not bear weight. The shin bone (tibia) is the only lower leg bone that bears weight because it is connected to the femur (thigh bone). The fibula functions to stabilize the ankle. "Achieving whole body balance with easy, unlocked knees not only takes undue pressure off of the knee joints, but helps free blood circulation throughout the body."[169]

The Ankle Joint

The ankle joint is located over the arch of the foot, not on the sides as is commonly thought, and it is best felt at the front of the foot. The ankle moves as a hinge

[169]Nesmith, 9.

only–various bones of the foot move to create a circle.[170] In reality, the arch of the foot is comprised of three main arches: one from the heel to the head of the big toe (medial longitudinal), one from the heel to the head of the pinky toe (lateral longitudinal), and one between the head of the big toe and head of the pinky toe (transverse).[171] A "multitude" of arches lie between the two main lengthwise arches,[172] which provide incredible support for the entire bony structure above it. The toes are not involved in balancing the skeletal structure, only in propelling the foot forward during walking.

The Arm Structure

The whole arm consists of thirty-two bones: a collarbone (clavicle), shoulder blade (scapula), upper arm bone (humerus), two lower arm bones (radius and ulna), eight wrist bones (carpals), and nineteen hand bones (metacarpals and phalanges).[173] The only point of attachment with the torso that the arm has is at the sterno-clavicular joint, the articulation of the breast bone (sternum) and the collar bone (clavicle). The shoulder blades (scapulae) float freely over the ribs to protect the lungs and are not connected to the ribs as they are often mistaken. The arm structure receives support from underneath by the spine and from above by connective tissue.[174]

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[170]Gilmore, 38.

[171]Ibid., 40.

[172]Johnson, 83.

[173] Mark, 64.

[174]Images of the joints of the six places of balance can be viewed in my Trial Course presentation from July 9 and 12, 2012. Information derives from the Training Manual.

The Structures and Movement of Breathing

Collaborative pianists do not need to breathe to create a sound on the piano, but an accurate map of breathing can help them when coaching their partners or in supportively phrasing with them.[175] Mapping the structures and movement of breathing will help collaborative pianists, and all musicians, when faced with a stressful learning or performance environment.

> Studies have proven that coordination of the ribs and abdomen deteriorates during stressful situations. Musicians constantly perform in stressful situations, and for this reason, it is important to develop awareness of the coordination of the ribs, diaphragm, and abdominal cylinder.[176]

When the body needs oxygen, the brain sends a signal to the diaphragm, a dome-shaped muscle attaching to the spine and lower ribs, to contract.[177] Breathing occurs in a wavelike movement from top to bottom on both inhalation and exhalation. On inhalation, the diaphragm contracts, pushing the contents of the abdominal cavity down and out, and deepening the pelvic floor, the "muscle group that lies between the pubis and the sacrum front to back and between the siting bones side to side."[178] The contraction of the diaphragm also causes the ribs to swing up and out, the spine to gather, and the arm structure to rise. The arms should be at balance so that they do not interfere with rib movement.[179]

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[175]Barbara Conable, *What Every Musician Needs to Know about the Body*, 75.

[176]Caplan, 80.

[177]Malde,66.

[178]Barbara Conable, *The Structures and Movement of Breathing: A Primer for Choirs and Choruses*, 38.

> As we inhale, the lungs get taller, wider, and deeper. As the volume of the lungs increases, the air pressure inside them decreases. Outside air rushes in through the nose or mouth, through the trachea and bronchial tubes, and into the lungs to equalize the pressure. Voilà! Inhalation! The amount of air depends on the extent of contraction of the diaphragm and external intercostals.[180]

On exhalation, the diaphragm ascends, the viscera move up and in as the pelvic floor ascends, the ribs swing down and in, the arm structure descends, and the spine lengthens.[181] Exhalation happens quickly at rest but can be controlled by the descent of the ribs and gradual release of the diaphragm during speaking, singing, or playing an instrument.[182] Seventy-five percent of the work of breathing is done involuntarily by the diaphragm and twenty-five percent by rib movement. The neck, tongue, and throat should remain released during breathing so as not to obstruct the process.[183] The movements of breathing happen together, and isolating any part will interfere with these movements and cause tension.[184]

Summary

Possessing knowledge of how the body is designed to balance and move will arm the collaborative pianist against injury of herself and her musical partners. Moreover, accessing this knowledge of healthy body movement corresponds to producing sounds

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[179]Malde, 50.

[180]Ibid., 66-67.

[181]Barbara Conable, *The Structures and Movement of Breathing*, 33.

[182]Malde, 67.

[183]Johnson, 137.

[184]Vining, 58.

freely on one's instrument. For the collaborative pianist who coaches and teaches, Body Mapping yields universal terminology that can aid communication with vocalists and instrumentalists regardless of their technical approaches.

The mapping of all parts of the body should always be integrated into the awareness of the whole of the body.[185] "A good musician ultimately should have as much awareness and understanding of movement, senses, and attention as he or she does of pitch or rhythm."[186] Refining one's body map takes patience, time, and daily practice in the same manner as learning an instrument. "Practice [Body Mapping] every day, remembering that your body *is* your instrument of movement."[187] Most importantly, a musician needs to correlate the movement of her body with the sound that it produces. "Create a strong association between an accurate and adequate body map and improved tone, intonation, and articulation."[188]

[185]Mark, 61.

[186]Pearson, 3-4.

[187]Johnson, 22.

[188]Vining, 112.

CHAPTER 5

INSTRUMENT-SPECIFIC BODY MAPPING

Because of their work with a large number and variety of musical partners, collaborative pianists are in a unique position to share Body Mapping information. "The accompanist and coach can help in achieving [perfect coordination of mind and body in their musical partners] by knowing the technical, anatomical, physiological, physical, and mechanical facts and laws."[189] Both through coaching and teaching, a collaborative pianist can enhance musical sounds by helping themselves and their partners obtain correct body use. Below is basic instrument-specific Body Mapping information that will equip collaborative pianists with an accurate vocabulary to translate interpretive ideas into proper body movement and sound production. Pianists should encourage their partners to read the instrument-specific Body Mapping books (see "References" at the end of the document) for more detailed accounts of healthy body use with their particular instruments.

Pianists

The Whole Arm

Pianists need to be impeccably clear about the map of their arm structure. As was mentioned in chapter five, the sterno-clavicular joint is the only place that the arm attaches to the skeleton. The collarbone and shoulder blade are connected by a joint and

[189]Adler, 41.

ligaments forcing them to move together: the collar bone cannot move without the shoulder blade moving and vice versa. Movements at this joint while playing the piano will be small, but sensing micro-motion will prevent fixing the shoulder. Pianists who do not include the collarbone or shoulder blade in their map stop moving these structures, which in turns limits movement of the upper arm bone (humerus).

Humero-Scapular Rhythm

The upper arm bone (humerus) and shoulder blade (scapula) are interdependent and work together in what is known as *humero-scapular rhythm.* Humero-scapular rhythm refers to the sequence of movement involving the humerus and shoulder blade: in any direction the humerus can only move a certain distance before the shoulder blade moves as well. In *What Every Dancer Needs to Know about the Body*, Gilmore gives the following description:

> There is a 2:1 ratio of movement between the humerus and scapula. To achieve 180 degrees of motion, the humerus moves 120 degrees, and the scapula moves 60 degrees.[190]

Since the collarbone attaches to the shoulder, it also moves during humeroscapular rhythm, and without this freedom of sequential movement, a rotator cuff injury can develop.

The shoulder (gleno-humeral) joint is the most mobile joint because the ball of the humerus articulates with the thumb-print-sized glenoid fossa, allowing a broad range of

[190]Gilmore, 45.

motion.[191] The shoulder can be in approximately 16,000 different positions.[192] The humerus can move up/down, forward/back, and rotate. The arms in playing position at the piano should replicate the arms when at rest next to the sides—the arms are neutral when the palms face backward.[193]

Forearm Rotation

The humerus meets the ulna and radius at the elbow where bending and rotation take place. When the palm faces up (supination), the ulna (bone on the pinky side) and radius (thumb side bone) are parallel. Turning the palm over (pronation) crosses the radius over the ulna. The ulna acts as the axis of rotation, and pianists should always organize movement around the pinky side of the arm. One of the most common misconceptions and causes of injury among pianists is that the ulna rotates around the thumb, implying thumb orientation.[194] "Support for the arms comes from the little finger side from the tip of the scapula to the tip of the pinky."[195]

The Wrist and Fingers

Two rows of eight bones comprise the wrist, which is approximately two inches long. The three joints of the wrist permit elongation, fanning of the fingers, bending

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[191]Mark, 64-77.

[192]Horvath, 41.

[193]Mark, 78-79.

[194]Ibid., 80-87.

[195]Gilmore, 46.

up/down (flexion/extension), and sideways bending (radial/ulnar deviation). Pianists who try to rotate at the wrist will incur an injury.

Nineteen joints make up the hand. The carpo-metacarpal (CMC) joints are where the finger bones meet the first row of wrist bones. Understanding that the thumbs as well as the four fingers begin at this joint should help the fingers to feel long and flexible. The fingers spread at the CMC joint, and knowing this can be a huge asset when attempting octaves. Metacarpo-phalangeal (MCP) joints permit bending/unbending and limited sideways motion. The fingers cannot combine the motions of bending and spreading at this joint, thus playing arpeggios with the fingers stretched out will never be as fast as with a neutral hand. Only bending/unbending occurs at both the proximal interphalangeal (PIP) and distal interphalangeal (DIP) joints. [196]

Most movement of the fingers and hand are controlled by muscles located in the forearm; those on the palm side (ventral) bend the fingers and hand toward the palm (flexor muscles) while the extensor muscles on the dorsal side straighten and lift the fingers and hand.[197] Long tendons passing through the wrist connect these muscles to the fingers, and Thomas Mark warns:

> Moving the hand in extreme positions can put extra stress on the tendons, since the tendons must then follow a tortuous path to reach the part moved. This may result in less power delivered to the part, or in stress to the tendon as it rubs against neighboring structures.[198]

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[196]Mark, 88-99.

[197]Ibid., 105.

[198]Ibid., 107.

While over-curling the fingers during playing forces the muscles into a state of co-contraction that can lead to injury,[199] collapsing fingers results in excess finger pressure that can also cause damage.[200]

Neutral Hand

Neutral hand position occurs as the arms hang at the sides and the thumbs point to the legs.[201] When the hand is hanging by the side, no muscles are engaged, and, therefore, the shape of the hand is in "the appropriate base position for the fingers in piano playing."[202] A pianist should seek a return to neutral as frequently as possible while playing; honoring the body's skeletal design cannot be emphasized enough. "If you use a mid-range of movement for [flexion, extension, abduction, and adduction of the fingers] and return to the neutral hand as much as possible, you will be less likely to strain or fatigue your hand," advises Lisa Marsh in her book *Fundamental Principles of Coordinate Movement for Pianists.*[203]

Sitting at the Piano

To obtain the most efficient use of the body while playing the piano, a correct "spatial relationship to the piano" needs to be established. A pianist should sit at balance

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[199]Mark, 107.

[200]Horvath, 62.

[201]Johnson, 122.

[202]Mark, 107.

[203]Marsh, 25.

on the front half of the piano bench at a distance that enables the elbows to rest slightly in front of the torso. Optimal bench height allows the tip of the ulna to be at the level of the top of the white keys, which delivers the weight of the forearms into the key bed. Sitting too high forces the wrist to compensate by dropping too low and can cause upper back tension and wrist strain; sitting too low encourages the torso to slouch and the wrist to be held too high. Proper height of the piano bench encourages "the unification of finger, hand and arm."[204]

Sight-Reading

Collaborative pianists frequently sight-read, and they almost always play with music. They should understand that images enter the eyes in the same way that sounds enter the ears, which is without muscle involvement. The pianist can see more of the page and further ahead in the music when she is not staring.[205] Some players squint or furrow their brows when reading music and others jut their heads forward. These motions can cause tension in the face and neck, which may lead to a pattern of tension throughout the body.[206] "When you narrow your attention to include only the page of music, you tend also to limit your range of movement and to experience some tension, especially in the upper body."[207] Allowing a neutral neck will help to avoid eye strain[208] and using

[204]Marsh, 13.

[205]Johnson, 153.

[206]Hooper, 37.

[207]Pearson, 12.

[208]Horvath, 80.

peripheral vision and easy eye movement help to maintain inclusive awareness.[209] "Fixing the eyes fixes the head, which results in stiff movement."[210]

Jennifer Johnson, in *What Every Violinist Needs to Know about the Body*, recommends the subsequent experiment for successful sight-reading:

> Try cupping your hand over the back of your head where the visual cortex is located. Allow the image of the notes to travel from the page through your eyes, through the mid-brain, where the optic nerves come together to integrate the image, and on to the visual cortex at the back of your brain where the work of interpreting the image is done.[211]

Violinists and Violists

Supporting the Instrument

Support for the instrument depends on a free atlanto-occipital (AO) joint since the head is one of the contact points the violinist has with the instrument. The five contact points are:

1. Jawbone
2. Collarbone shelf
3. Side of the neck
4. Left hand
5. Friction of bow hair on string[212]

The head should "lightly nod" to meet the instrument since little head weight is needed to support the one-pound violin.[213] The neck needs to be free, as neck muscles run under the

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[209]Johnson, 181.

[210]Gilmore, 17.

[211]Johnson, 153.

[212]Ibid., 45.

collar bone, which is the shelf for the violin.[214] At neutral, the collar bone should be approximately parallel to the floor.[215] The collar bone is the primary source of support among the five–violinists may choose a shoulder rest, no left hand support, or no head support–but the collar bone is constant while the other four points are in flux.[216] The shoulder rest should sit on bone, not muscle, in order to avoid muscle tension and restriction of arm movement.[217] The neck and back can become overworked if the violinist does not recognize the left hand as a source of support.[218]

The Jaw

A violinist should know where the TMJs are located because the jaw contacts the chinrest.[219] Jaw and neck muscles are closely related, and if the teeth are clenching, neck tension will result. Muscular neutral is teeth parted and lips closed.[220]

The Arm Structure

In addition to the information on the arm structure listed under "Pianists," Jennifer Johnson suggests bringing the instrument in from above to encourage neutral

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[213]Ibid., 44.

[214]Ibid., 48.

[215]Ibid., 60.

[216]Ibid., 156.

[217]Ibid., 157.

[218]Ibid., 155.

[219]Ibid., 150.

[220]Ibid., 159.

arm balance.[221] She advises: "The set-up of [the] violin should accommodate [the violinist's] design, not the other way around."[222]

The Bow Arm

Bowing is a complex movement involving all four arm joints (sterno-clavicular, shoulder, elbow, and wrist) moving in multiple directions:

> 1. After following the humerus forward and up at the end of the up bow, the collarbone releases down to its balanced place of suspension.
> 2. The humerus moves in three different directions: down, back, and in rotation.
> 3. The elbow joint unbends and pronates the forearm as the bow reaches the tip.
> 4. The wrist extends by using all three of its joints.
> 5. The collarbone/shoulder-blade unit is allowed some forward movement as the bow approaches the tip, especially for short-armed players.
> This happens in reverse for an upbow.[223]

The Left Arm

A violinist can choose how much to move the violin: A player who does not move the violin at all does not have the collarbone mapped as part of the arm.[224] The bicep does the initial work of bending the forearm to bring the violin to playing position, but then the ulna balances on the humerus when playing begins.[225] The humerus provides the upright

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[221]Ibid., 90.

[222]Ibid., 89.

[223]Ibid., 176.

[224]Ibid., 159.

[225]Ibid., 100.

forearm with a "bony perch rather than requiring it to maintain its uprightness by purely muscular means."[226]

Left-hand fingernails should be held towards the player's face, and the fingertip should cross the string through its center.[227] Gravity acts on the passive curve of the hand in playing position, and this is a neutral hand.[228] The thumb should be free to rest on the neck opposite the first finger and move across from any finger in opposable fashion when necessary.[229] A free wrist is especially important for the left hand when reaching for notes in the highest register of the instrument.[230]

French Horn Players

Accurately mapping the structures and movement of breathing is most important for all brass players.[231] As with all movement-related activities, finding AO joint balance is paramount:

> Achieving consistent balance [at the AO joint] liberates respiration, vital blood flow to and from the brain, and lymph fluid flow. Head-spine balance eases swallowing, clarifies articulation in speaking, singing, and playing the horn, and all the other places of balance will be easier to find.[232]

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[226]Ibid., 99.

[227]Ibid., 115.

[228]Ibid., 116.

[229]Ibid., 105.

[230]Ibid., 107.

[231]Barbara Conable and William Conable, *How to Learn the Alexander Technique,* 137.

[232]Nesmith, 8.

Breathing

The natural breathing rhythm includes four phases: inhalation, transition from inhalation to exhalation, exhalation, and rest after exhalation (muscular neutrality, no work).[233] David Vining describes the process as feeling "circular."[234] Musical elements to consider when matching air intake to the phrase include dynamics, phrase length (next logical place to breathe), range, and tempo. Synchronizing the end of the musical phrase with the body's resting phase before taking another breath will be easier when subdividing and breathing rhythmically.[235] "Allow yourself to be breathed."[236]

Holding the Instrument

David Nesmith explains in *The Breathing Book* that one of the greatest dilemmas among horn players is whether to hold the instrument or to rest it on the leg while seated. Most players consider this a choice based on technique, but Nesmith claims that it is one related to healthy body use. True with any instrument, once a player finds balance, she should bring her instrument to her rather than manipulate her body around her instrument. Nesmith advocates holding the horn off the leg. Even if the seat height and torso length are optimal, the player will benefit from holding her instrument to make "the unique, subtle adjustments necessary for each note throughout the whole range of the horn."[237]

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[233]Ibid., 4.

[234]Vining, 118.

[235]Ibid., 41.

[236]Nesmith, 32.

[237]Ibid., 15.

"Consider cultivating the mindful intention of exhaling as you bring the horn to playing position. Release into the movement, maintaining lively balance and open awareness."[238] The weight and size of the horn should easily be transferred through the player's balanced structure into the chair and floor. If a horn player finds her instrument too heavy, it is because she is using muscular effort to hold her body up and additional effort to hold her horn up rather than allowing the balanced skeletal structure to distribute the weight. Nesmith encourages resting the horn on the leg or horn stand when possible during non-playing moments of longer pieces to give the hands and arms a break.[239]

Embouchure

The placement of the mouthpiece should match the angle of the bite of the upper and lower teeth, and the jaw should be at rest before playing. Nesmith advises returning to this place of no work at breaths and rests throughout a piece. Horn players frequently mistake the lipstick lips as the only body part involved in forming an embouchure when, in fact, all the face and neck muscles work together to produce an embouchure. Thus, having a relaxed and neutral facial expression is key to free playing.[240]

Trombonists

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[238]Ibid., 12.

[239]Ibid., 15.

[240]Ibid., 18.

Holding the Instrument

Mouthpiece placement should be slightly lower than the AO joint as the trombonist brings her instrument to her face; if the trombonist instead moves her face to her instrument, breathing, slide technique, and endurance will be compromised.[241] The left arm holds the instruments and bears its weight while the right hand moves the slide by gripping with the pads of the fingers, not the joints.[242] Trombonists must know about the weight-bearing spine as it supports their bodies and their instruments and also coordinates the right arm when moving the slide.[243] The left-hand pain from holding up the instrument that many trombonists experience can be alleviated by considering the hand as connected to the rest of the body instead of isolated.[244] Trombonists often come off balance at the lumbar spine by leaning back to compensate for the weight of the slide in front. David Vining, author of *What Every Trombone Player Needs to Know about the Body*, suggests a counterweight on the back of the instrument for players with heavy slides[245] and using a rest bar to help change the position of the left hand to distribute the weight of the instrument more efficiently.[246]

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[241]Vining, 28-30.

[242]Ibid., 96.

[243]Ibid., 17-20.

[244]Ibid., 10.

[245]Ibid., 31.

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[246]Ibid., 96.

Embouchure

The embouchure affects register (low notes require large volumes of air moved slowly, and high notes require less air moved quickly[247]), volume (playing louder requires more air pressure), articulation (combination of air flow and tongue movement[248]), and tone quality (combination of air flow and lip movement).[249] Trombonists need a good balance of half of the top lip and half of the bottom lip in the mouthpiece to achieve a desirable sound.[250] Embouchure movement involves cooperation of air flow, lips, jaw, tongue, and facial muscles: "An embouchure is a three dimensional entity in motion created by the flow of air past lip tissue which results in vibration."[251] Therefore, the lips, jaw, tongue, and facial muscles should be adequately mapped to be free to function as an integrated whole. Sufficient air flow propels the lips, balances resistance of facial muscles, and supports movement of the tongue while a free jaw supports register changes. Trombonists should address air flow problems if they are suffering from poor tone or articulation.[252]

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[247]Ibid., 70.

[248]Ibid., 60.

[249]Ibid., 13.

[250]Ibid., 62.

[251]Ibid., 59.

[252]Ibid., 69-70.

Breathing

The volume of air a trombonist is capable of taking in depends on the amount of free rib movement.[253] A trombonist's "active role" in breathing is to assist the elastic recoil of the diaphragm, ribs, and pelvic floor with abdominal and internal intercostal muscles when the musical phrase calls for it. The stored potential energy of elastic recoil is available only without interference of excessive abdominal work; unnecessary muscular effort will make it difficult to feel the natural motions of breathing.[254]

Articulation

Since a variety of tongue movement produces a variety of articulation, it follows that a trombonist should know that the tongue is a composite of muscles allowing the front half to move independently from the back half. The back half of the tongue should remain free from tension so that the front half of the tongue can touch the roof of the mouth for articulation:[255]

> [The tongue] bounces off of the air stream and is propelled back down and out of the way of the air flow. A normal articulation of the tongue doesn't stop the airflow – it dents the air flow.[256]

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[253]Ibid., 48.

[254]Ibid., 55-56.

[255]Ibid., 68.

[256]Ibid., 72.

Slide

Knowing about the sterno-clavicular joint provides easier movement to lower slide positions (fifth, sixth, and seventh positions) and helps with tuning.[257] The shoulder blades should be free to move with the collarbones, and the elbows should remain mobile.[258] Forearm rotation is important in slide technique for "slight adjustments in pitch and for slide vibrato,"[259] and a trombonist should understand the three joints of the thumb in holding the slide.[260] If the trombonist moves the slide in a straight line, not necessarily parallel to the floor, the four joints of the arm (not just the wrist), will work together to accommodate its movement. It is helpful for collaborative pianists to note for balance purposes that the bell does not need to be pointing directly at the audience.[261]

Flutists

Sitting Balance

Flutists spend most of their time sitting for orchestral and chamber rehearsals and stand only during lessons and when playing a concerto or solo recital. When moving the upper body around while sitting, a flutist should "maintain the integrity of the torso as a

[257]Ibid., 78.

[258]Ibid., 85.

[259]Ibid., 89.

[260]Ibid., 95.

[261]Ibid., 98.

whole."[262] Sitting off balance pulls the arms down and in, which limits finger movement and puts pressure on the nerves.[263]

> In terms of arm movement, the most important back muscle attaching to the arm bone is the latissimus dorsi. If the back muscles are tight, the upper arm bones will be pulled in, consequently shortening all the arm muscles. This can also skew the rotation at the elbow and compress the wrist, increasing the risk for tendonitis and carpal tunnel syndrome.[264]

Holding the Instrument

Knowing about the connection of the *latissimus dorsi* from the arm structure to the sacrum and the free rotation of the shoulder blade and collarbone forward will help the flutist in bringing the left arm to playing position.[265] To counterbalance the weight of the arms and flute in front, Lea Pearson, author of *Body Mapping for Flutists: What Every Flute Teacher Needs to Know about the Body*, suggests breathing in and letting the lower back go back in space while picking up the flute.[266] It is helpful to place fingers on the keys pinky first one by one to maintain ulnar orientation.[267] A flutist should know about the first thumb joint in both hands to support the flute; a Thumbport can help

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[262]Pearson, 35.

[263]Ibid.

[264]Ibid., 52.

[265]Pearson 2nd Ed., 61-62.

[266]Pearson, 39.

[267]Ibid., 48.

facilitate this support and prevent rolling in. The hand that works less in any given passage can support the flute more, giving the active hand more freedom to move.[268]

A flutist should take care not to set the head forward and up before playing as this causes front neck tension and jaw tension, which can adversely affect tone and flexibility.[269] Likewise, if the tongue is bunched because of neck tension, it will be difficult to increase double tonguing speed.[270]

Breathing

The diaphragm is associated with the internal pelvic muscle (psoas major) through continuous muscle fibers that attach to the inside of the thighbone; the hip flexors (psoas major, iliacus, and iliopsoas) are involved in raising the knee and affect lengthening and gathering of the spine. Thus, legs play an important role in breathing and should not be ignored or tightened subconsciously while playing.[271] When inhaling, it can be advantageous for a flutist to think of the gluteal muscles moving low and wide to create room for the internal organs and diaphragm to descend and on exhalation to think of the gluteal muscles going down.[272]

Oboists

[268]Ibid., 60-63.

[269]Ibid., 68.

[270]Ibid., 66.

[271]Ibid., 72.

[272]Ibid., 84.

Holding the Instrument

Oboe players must have sufficient maps of fingers, embouchure, air, and tongue, to which Stephen Caplan affectionately applies the acronym "FEAT" in his book *Oboemotions: What Every Oboe Player Needs to Know about the Body.*[273] An oboist's hands must maneuver the keys and also balance the instrument; the tendency of many players is to support the two-pound instrument with the thumb instead of the whole arm.[274] A variable combination of the right thumb, left hand, and embouchure provide the three points of balance for the oboe.[275] "It is best to understand hands not in terms of finding a position, but in terms of discovering ideal relationships between the instrument, the fingers, and the four arm joints."[276]

Oboists move their arms less than violinists or pianists, and this causes many players to think that they must hold their arms still by locking the collarbone and shoulder blade.[277] Oboe players bend at the elbow to bring the reed to the embouchure, and for certain passage work, hands will have to be at an angle to the forearms, which is safe as long as hands return to neutral.[278] "Unfortunately, traditional oboe teaching puts a lot of emphasis on the thumbs and doesn't pay much attention to the relationship of

[273]Caplan, 5.

[274]Ibid., 59.

[275]Ibid., 37-38.

[276]Ibid., 42.

[277]Ibid., 40.

[278]Ibid., 42-43.

elbows to pinky fingers": The hand/forearm should be brought to the keys of the instrument while maintaining alignment with the ulna bone to the elbow.[279]

Embouchure

No uniform appearance for embouchure exists since it is based on the jaw line, lip size, and dental structure of each individual player, but it should be flexible enough to adjust to musical demands during playing. Body Mapping accommodates the many theories and preferences for holding the reed including how much of it should be in contact with the mouth, how resistant or flexible the reed should be, and whether it is anchored to top or bottom lip.[280] Size of teeth affects how much the lips can be rolled in to form the embouchure, and the bite affects the angle of the reed in relation to the embouchure (crooked or pointy teeth can be painful for an oboist). The teeth are a reliable foundation for the embouchure since they attach to the jaw and skull and allow lips to move freely. Oboists should keep the vibration of the reed in their awareness and how the tongue, lips, and air affect it.[281]

Oboe players must manage air in unique ways because only a small amount of air is necessary to set the reed vibrating (less than other instruments).[282] Although oboists must play with high air pressure, the reed does not allow the release of a large quantity of air, which, to the oboist, feels like holding the breath. Appropriate pressure depends on

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[279]Ibid., 44.

[280]Ibid., 64.

[281]Ibid., 67-68.

[282]Ibid., 72.

the resistance of reed, but ultimately comes down to the desired sound.[283] When the soft palate is raised, its muscular fibers seal off the passageway between the mouth and nose, which may improve resonance, ease articulation, and free the movement of air to the reed. When the passageway does not completely seal off, air that leaks into the nose can result in grunting (velopharyngeal incompetence). Causes of velopharyngeal incompetence encompass: a sudden increase in practice time, sickness, taking certain medication that dries out the sinuses, playing on an overly-resistant reed, and poor breath management.[284]

Articulation

"For wind players, tonguing is the essence of a good sound–every note begins with an articulation"[285]–and is intimately connected to embouchure and air. The tongue should be buoyant and spring effortlessly from one movement to the next.[286] It varies, but somewhere near the tip of the tongue should touch somewhere near the tip of the reed with sound always acting as the guide. The faster the tongue moves away from the reed, the greater the accent will be, and contrarily, slow movement creates gentle articulation.[287]

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[283]Ibid., 82.

[284]Ibid., 85.

[285]Ibid., 95.

[286]Ibid., 96.

[287]Ibid., 106-107.

Making Reeds

An oboist spends a considerable amount of time making reeds, and consequently she needs to have healthy body awareness during this activity. Adequate lighting, appropriate chair and table height, and a comfortable work area are all conducive to proper body use. Also helpful is finding balance before starting and taking frequent breaks. Using a sharp knife will require less effort, and, in fact, one may need to sharpen it several times while making a single reed. The oboist should find a comfortable way to hold the reed and the knife that maintains proper relationship to hands, wrists, and forearms.[288]

Singers

Breathing

A singer must have an accurate and adequate body map of the vocal tract and the structures and movement of breathing.[289] Many singers conceive of a "rib cage" that implies rigidity and lack of movement. Foremost, the ribs are flexible and connect to the spine with joints in the back and to springy cartilage that connects to the sternum in front. The twenty-four ribs, twelve on each side, angle downward from back to front.[290]

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[288]Ibid., 126-127.

[289]Barbara Conable, Introduction to *What Every Singer Needs to Know about the Body*, viii.

[290]Malde, 48.

Because the diaphragm is the principal breathing muscle, singers need to have a clear map of it. Attached to the lumbar vertebrae in back and to the lowest ribs all around, the lungs connect to the top of the diaphragm and the heart to its central tendon. The diaphragm is dome-shaped at rest and upon contraction, it flattens somewhat and pushes the underlying abdominal organs downward and out. This contraction also pulls on the ribs, initiating their excursion up and out. However, for a long vocal phrase requiring more air (i.e., deep inhalation), the muscles between the ribs (external intercostals) become engaged. The contraction of the external intercostal muscles brings the ribs closer together (raises them from their downward angle), moving them at the sternum and their spinal joints and consequently expanding the abdominal cavity 360°.[291]

Three layers of abdominal muscles surround the abdominal cavity on all sides of the body, and it may add clarity to a singer's map to think of this as the *abdominal muscle cylinder.*[292] Many singers only consider the abdominal muscles on the front of the body, and this inhibits motion on the sides and back. In point of fact, the abdominal muscles extend down to the pubis bone and up to the lower ribs. These muscles need to release on inhalation, or the diaphragm cannot fully contract and the ribs will not be free to rise.[293]

> Tense abdominal muscles prohibit efficient breathing. *Toned* abdominal muscles, on the other hand, are great for singing. Their elasticity causes them to spring back to their original shape on exhalation. The only time they would

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[291]Malde, 55-57.

[292]David Nesmith uses this description in the *Breathing Book,* 29.

[293]Malde, 58.

contract during breathing for singing would be to articulate accents or staccato notes in a phrase.[294]

Also assisting the abdominal muscles in "elastic recoil" on exhalation is the pelvic floor.[295] The pelvic floor is domed downward and stretches this shape even more downward on inhalation. It acts like a "trampoline" to propel the viscera up on exhalation.[296] Tension, when chronic, does not merely impede free breathing, but can result in an injury, as singers (and all wind and brass players) should recollect from Chapter Three.

Vocal Tract

Constriction in the vocal tract, the passageway for air to reach the lungs, will result in a noisy breath. The neck muscles should be free to maintain a balanced head, the walls of the throat (pharyngeal muscles) and the vocal folds (vibrating structure of the larynx) should be open, and the tongue should be released.[297] Knowing that the trachea is located in front of the esophagus can aid a singer in allowing air to flow into the lungs rather than having the sensation of sucking in air, as through a straw.

Larynx

The larynx, the size of a walnut, is made of cartilage and muscle and is located at the front of the neck. It attaches to the trachea on the bottom and the hyoid bone above.

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[294]Ibid., 59.

[295]Ibid., 64.

[296]Vining, 54.

[297]Malde, 65-66.

The hyoid bone anchors the base of the tongue and connects to the jaw with multiple muscles. Therefore, tongue or jaw tension directly affects the larynx. Raising the chin stretches laryngeal muscles while lowering the chin constricts them; both can lead to vocal damage.[298]

Coordinated laryngeal muscles control pitch (rate of vibration), registration (color), and onset (start of the vocal sound).[299] Length, thickness, and tension of the vocal folds determine the pitch: shorter, thicker, and looser vocal folds lower the pitch while longer, thinner, tenser vocal folds raise the pitch.[300] The shape of the vocal folds regulates the four registers (modal voice, falsetto/flute, whistle, and glottal fry) by engaging various laryngeal muscles.

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[298]Ibid., 77-79.

[299]Ibid.,97. For a complete discussion on the laryngeal muscles, cartilage, and ligaments, see pages 81-96.

[300]Ibid., 97-98.

Table 2 Vocal Registers

Register	Muscles	Quality of Vocal Folds	Tone Quality
Modal–Chest voice	Thyroarytenoids predominate over cricothyroids	Short and thick	Heavy
Modal–Middle voice	Cricothyroids and thyroarytenoids are in dynamic equilibrium	Mixture of head and chest voice	Balanced
Modal–Head voice	Cricothyroids predominate over thyroarytenoids	Long and thin	Light
Falsetto/flute	Thyroarytenoids completely released	Only vocal ligaments vibrate	Ethereal
Whistle	Thyroarytenoids completely released	Back of vocal folds are damped – no vibration	Lightest and highest of all registers
Glottal fry	Cricothyroids completely released	Thick and released	Breathy, no vibrato, lowest part of range

Source: Adapted from Malde, 99-100.

The three types of onset are aspirate, balanced, and glottal. In an aspirate onset, air flow reaches the glottis (opening between the vocal folds) before it closes, whereas in a glottal onset, the vocal folds are closed when the air flow reaches them. Both types cause a delay in vibration. Most standard is the balanced onset in which, "the air flowing from the lungs meets the glottis just as it is closing and sets the vocal folds into vibration immediately."[301]

The larynx also participates in dynamics and vibrato, both of which depend on a balanced body and free neck. Resistance of the vocal folds to the speed of the breath flow

[301]Ibid., 101.

controls dynamics. A soft sound requires less flow and less resistance, and a loud sound necessitates high flow and strong resistance. Vibrato results when breath flow "balances phonation, and there must be just the right amount of antagonistic force in the muscles of the larynx."[302]

Instruments without Specific Books

Cellists and Double Bass Players

All string players can benefit from the information contained in the "Violinists and Violists" section above. Additionally, cellists need stability at the sit bones to support themselves while sitting and stability at the floor for the endpin of the cello, which will prevent them from gripping the instrument with their knees. Cellists need an accurate map of the width and length of the lower back to play easily and should maintain fluid contact with their instrument.[303]

Bass players need to remember to allow the head to lead all spinal movement so that the spine is free to lengthen. A free spine will allow movement to all parts of the instrument. A bassist should not feel obligated to bend the spine as free movement can be achieved without it.[304]

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[302]Ibid., 104.

[303]Barbara Conable and William Conable, *How to Learn the Alexander Technique,* 134.

[304]Ibid.

English Horn Players, Clarinetists, and Bassoonists

Most of the information given in *Oboemotions: What Every Oboe Player Needs to Know about the Body* is applicable to other wind players as well. Clarinetists, like oboists, must support the instrument with the thumb. Correctly mapping the three joints of the thumb, forearm rotation, and the AO joint are crucial. "Downward pull tenses the arms in proportion to the tensing of the torso, and tensed muscles do a poor job of bearing weight."[305] English horn players often tilt their heads down to make the reed more comfortable on their embouchure when they should move their arms instead or use a different bocal (bent metal tube to which the reed attaches).[306] Mechanical supports for the bassoon will only be effective if the bassoonist avoids downward pull.[307]

Summary

The information in this chapter was collected from the instrument-specific Body Mapping books available and was chosen based on its relevance to the collaborative pianist. General accounts of each instrument were intended to supply an overview to the collaborative pianist who might otherwise not know how to recognize or address tension in a singer or instrumentalist. Undoubtedly, a collaborative pianist should refer their musical partners and students to these resources for a more thorough analysis of their content.

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[305]Ibid., 136.

[306]Caplan, 22.

[307]Barbara Conable and William Conable, *How to Learn the Alexander Technique,* 136.

CHAPTER 6

SYLLABUS PROPOSAL

This chapter examines the formation of a syllabus for a class entitled *An Introduction to Collaborative Piano and Body Mapping*. The class is formatted for a fifteen-week semester that meets once or twice per week, with the first hour of the class consisting of a lecture and the second hour a lab to explore the concept introduced in the lecture. *An Introduction to Collaborative Piano and Body Mapping* could either replace the typical introductory course in collaborative piano required for undergraduates at most institutions, or it could function as a graduate seminar course. The flexible syllabus allows expansion of topics if a year-long course is desired. The instructor should meet the qualifications to teach a course in collaborative piano at the college level and have a familiarity with Body Mapping concepts.

Course Goals

This class offers a unique approach to teaching introductory collaborative piano skills alongside healthy body use. Training attention, movement, and senses as well as competencies in collaborative piano will be addressed. The musical perspective will be movement-based rather than interpretation-based. Each pianist will be paired with one singer to prepare an aria or song and one instrumentalist to prepare a movement of a sonata or concerto. Due to possible limits on the number of vocal/instrumental participants, the same singer or player may partner with any or all of the pianists. The pianists will be required to attend one lesson with each partner and will have coachings

during class labs. The semester will conclude in a short recital so that pianists have a performance opportunity in a safe, nurturing environment.

Class Size

The class that has a maximum capacity of approximately ten students most favorably meets the needs of those students enrolled. The small group size allows students the freedom to share ideas and presentations, engage in discussion, and have ample space to move their bodies during labs and breakout groups. The smaller class size also ensures that the teacher has time to devote adequate attention to each student.

Required Texts

1. Mark, Thomas. *What Every Pianist Needs to Know about the Body.* Chicago: GIA Publications, Inc., 2003.
2. Katz, Martin. *The Complete Collaborator: The Pianist as Partner*. New York: Oxford University Press, 2009.

These texts were selected because of the authors' mastery of their respective subject matter. Mark's book is the best on Body Mapping for pianists, and Katz's book is the finest depiction of the collaborative pianist as equal partner. The combination of these two sources will give the student a well-rounded foundation of how to perform collaboratively in a healthy way.

Sample Syllabus

I. Week 1 – Introduction to Collaborative Piano, Outline Basic Competencies, Career Issues

A. Lab

1. Assign partners and repertoire

2. Determine coaching schedule

3. Discussion about *accompanist* versus *collaborative pianist*

B. Reading: Katz Chapters 1 and 12

C. Essay: What is your opinion about the title *accompanist*? What do you hope to gain from taking a class on collaborative piano? Why are collaborative skills necessary? Discuss your previous collaborative experiences and repertoire played.

D. Repertoire – German and English art songs

1. Schubert, "An die Musik"

2. Barber, "Sure on this Shining Night"

II. Week 2 – Introduction to Body Mapping, Sensory Discernment, Inclusive Awareness, Collaborative Listening, Sightreading

A. Lab

1. Experiment with the senses

a. Supplementary material "Solo Spotlight" from Kay S. Hooper's Book *Sensory Tune-ups*[308]

b. Supplemental material "Chapter 3: The Eyes Have It"[309]

[308]Hooper, 75.

2. Sight-read selections from *Easy Classics to Moderns*[310]

B. Reading: Mark Chapter 1; Katz Chapter 7

C. Essay: Identify and describe three goals you have for improvements in your practicing, performing, and lifestyle.

D. Repertoire – French and Italian art songs

1. Fauré, "Lydia"

2. Bellini, "Vaga luna, che inargenti"

III. Week 3 – The Core of the Body and the Places of Balance, the Laws of the Spine

A. Lab

1. Range of motion at each balance point

2. Balance ball for spinal movement

B. Reading: Mark Chapters 2, 3, 9

C. Essay: What does it mean to be balanced? What are the six places of balance? Which of your balance points need adjustment? What are the four laws of the spine?

D. Repertoire – French and Italian arias

1. Ravel, "Air de l'Enfant" from *L'Enfant et les Sortilèges*

2. Puccini, "Donde lieta" from *La Bohème*

IV. Week 4 – The Whole Arm

A. Lab

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[309]Ibid., 30-41.

[310]Denes Agay, ed., *Easy Classics to Moderns* (New York: Amsco, 1956).

1. Range of motion for four arm joints

2. Finding neutral with pool noodle and movement activity

B. Reading: Mark Chapters 4 and 5

C. Essay: Draw the whole arm before and after reading the chapter. What were your misconceptions about your arms and how did they affect your movement?

D. Repertoire – German and English arias

1. Mozart, "Der Hölle Rache kocht in meinem Herzen" from *Die Zauberflöte*

2. Purcell, "Thy hand, Belinda! When I am Laid" from *Dido and Aeneas*

V. Week 5 – Pianistic technique issues, Piano Map

A. Lab

1. Explore action model of piano

2. Sitting at the piano

3. Incorporating safe movements at the piano from Taubman Technique with excerpts from students' repertoire

B. Reading: Mark Chapter 7 and supplementary handout "Chapter 9: The Piano Map" from Lisa Marsh's *Fundamental Principles of Coordinate Movement for Pianists*[311]

C. Essay: Describe the piano that you practice on. Find challenging spots in music you are currently learning and apply Taubman Technique principles.

[311]Marsh, 27-32.

D. Repertoire–students should demonstrate using repertoire they are currently practicing

VI. Week 6 – The Structures and Movement of Breathing

A. Lab

1. Group activity: inhalation / exhalation

2. Activities with props to observe breathing movements: scarves, chairs with partners, balance ball, pool noodle

B. Reading: Mark Chapter 6, Katz Chapters 2 and 3

C. Essay: Name at least five structures of breathing. Outline the inhalation and exhalation process. Is your breathing free and easy? If not, which structures and/or movements might be compromised?

D. Repertoire – review songs and arias. Be prepared to sing and play simultaneously.

VII. Week 7 – Opera, Oratorio, and Song Coaching, Choral Collaboration

A. Lab

1. Aria coaching with singer

2. Song coaching with singer

B. Reading: Katz Chapters 4, 5, 6

C. Essay: How will you use the information you know about the structures and movement of breathing to coach your singers? How can this approach help you in defining your role as a coach during voice lessons when a voice teacher is present?

D. Repertoire – Choral

1. Mozart “Ave Verum Corpus”

2. Handel “Dixit Dominus”

VIII. Week 8 – Constructive Rest, Review

A. Lab: Constructive Rest

B. Midterm: Take home exam

IX. Week 9 – Instrumental Collaboration and Ensemble / Rehearsal Techniques, Vocal and Instrumental Reduction Techniques

A. Lab

1. Coachings with partners on sonata or concerto movement

2. Discuss rewriting choices of reductions

B. Reading: Katz Chapters 11, 8, 9

C. Essay: Describe how playing a reduction requires as much artistry as solo repertoire.

D. Repertoire – Woodwind duo movement – Schumann *Drei Romanzen*, Op. 94, Movement I

X. Week 10 – Performance anxiety, stress, learning quickly

A. Lab

1. Guided meditation from Meribeth Bunch Dayme’s book *The Performer’s Voice*[312]

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[312]Meribeth Bunch Dayme, *The Performer’s Voice: Realizing Your Vocal Potential,* (New York: W.W. Norton & Company, Inc., 2005), 170-171.

[312]Ibid., 177-178.

2. Visualization exercise from Meribeth Bunch Dayme's book *The Performer's Voice*[313]

3. Stretching

B. Reading: Supplementary material: "What to Do about Performance Anxiety" by Barbara Conable[314] and "Ease Performance Anxiety" by David Nesmith[315]

C. Essay: Discuss how the feedback loop works and how judgmental self- talk interrupts its process. What activities in your life cause stress? What can you do to change this?

D. Repertoire – Review Schumann

XI. Week 11 – Injuries, Injury Prevention, Wellness Basics

A. Lab

1. Breakout groups present an aspect of wellness

2. Breakout groups discuss ideas for spreading awareness of injury prevention around school

B. Reading: Mark Chapter 9

C. Essay: What movements in your playing create pain or tension? What activities in your daily life cause pain or tension? Keep a daily journal documenting any activity that causes pain, tension, or fatigue and include this in your answer.

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[314]Andover Educators, http://bodymap.org/main/?p=206 (accessed Mar. 6, 2013).

[315]Andover Educators, http://bodymap.org/main/?p=265 (accessed Mar. 6, 2013).

D. Repertoire – String Concerto Movement – Mozart Violin Concerto in G Major, K. 216

XII. Week 12 Self Map of the Artist and Collaborative Pianist, Setting Healthy Boundaries

A. Lab: Breakout groups present strategies for setting healthy boundaries in response to challenging situations.

B. Reading: supplementary handout "Chapter 3: The Self Map" from Lisa Marsh's *Fundamental Principles of Coordinate Movement for Pianists*[316]

C. Essay: What is meant by the self-map and how is it different from the body map? Describe your self-map as an artist and collaborative pianist. What cultural and historical influences have affected the self-maps of classical musicians? How can you help foster respect in your relationships?

D. Repertoire – Review Mozart

XIII. Week 13 How to Practice and Prepare

A. Lab: Coachings with partners on practice techniques

B. Reading: supplemental material Dayme's Checklist for practicing from *The Performer's Voice*[317] and "How Many Hours a Day Should You Practice?" from *The Bulletproof Musician*[318]

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[316]Marsh, 83-84.

[317]Dayme, 187-188.

[318]Dr. Noa Kageyama, "How Many Hours a Day Should You Practice?" The Bulletproof Musician Blog, http://www.bulletproofmusician.com/how-many-hours-a-day-should-you-practice/ (accessed Mar. 6, 2013).

C. Essay: Notice and record your practice habits. Describe how utilizing new approaches can improve your practicing.

D. Repertoire – Choose one of the works you have learned for class and be prepared to speak about your learning process.

XIV. Week 14 Leg Movement in Playing and Singing, Continuo Playing

A. Lab

1. Range of Motion activities

2. Add embellishments

3. Play recitatives

B. Reading: review Mark 2 and 3, review Katz pp. 184-188

C. Describe in detail the three joints of the leg. How is weight distributed from the anterior spine to the floor when standing and into the bench or chair when sitting? How does tension in the muscles of your back affect leg muscles?

D. Repertoire – Recitative – Mozart, "È decisa la lite" (before the sextet) from *Le nozze di Figaro*

XV. Week 15 – Collaborative recital with paired partners to be video-recorded

Final – Take-home video evaluation

Conclusion

Considering that statistics dictate that more musicians than not will suffer from an injury at some point during their careers, it is logical to focus on a means of prevention. Since misuse of the body causes injury, it follows that learning how to use the body in a healthy way would solve this problem. Body Mapping is a solution for collaborative

pianists to avoid injury and liberate artistry through knowledge of the anatomy in movement. Jennifer Johnson advises that Body Mapping information:

> can be imparted quite successfully to the resourceful learner from the printed page. However, as with learning anything, private attention from an Andover Educator to address the body map [or] an [Alexander Technique] teacher for hands-on guidance…to enhance a student's body awareness through guided movement will speed and facilitate the process of change.[319]

It is the author's hope that the collaborative pianist may draw from the Body Mapping information presented in this paper and apply it to herself and her partners or students.

[319]Johnson, 2.

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APPENDIX A

TABLE 3 ANATOMICAL TERMS

Table 3 Anatomical Terms

Anatomical Term	Definition
Tendon	Rope-like fibers that neither stretch nor contract; attach muscle to bone.
Ligament	Rope-like fibers that attach bone to bone.
Joint	A place where two or more bones come together, usually in such a way that motion is possible.
Joint Capsule	A layer of ligaments and cartilage that surrounds and holds together the bones of a joint.
Muscle	Tissue that consists of muscle cells and their fibrous connective tissue coverings. Muscle tissue shortens/contracts in response to nerve, nerve-like, or hormonal stimulation.
Dynamic Muscle Activity	Alternates between tension and relaxation or flexion and extension, which causes blood flow and waste products to be flushed out.
Static Muscle Activity	Postural position that does not allow oxygen to replenish or wastes to be removed. Fatigue and then pain will set in.

Sources: Mark, 67, Horvath, 33, and Wynn Kapit and Lawrence M. Elson, *The Anatomy Coloring Book, 3rd Ed.*, (San Francisco: Benjamin Cummings, 2002), 13.

APPENDIX B

TABLE 4 COMMON MUSICIANS' INJURIES

Table 4 Common Musicians' Injuries

Injury	Definition	Causes	Symptoms
Bursitis	Inflammation of bursa - fluid-filled sacs that cushion movement between bones and tendons or ligaments. Most common location for musicians is shoulder but occurs at elbow and hip frequently	Holding the arms out from the body or overhead for long periods of time can pinch the bursa in the shoulder; chronic wear and tear; repetitive rotation of the arm towards the body and then back	Pain can be gradual or sudden and severe
Carpal Tunnel Syndrome	Compression of the median nerve by swollen tendons passing through the carpal tunnel	Repetition of wrist in poor position	Pain and inflammation can occur at all points along the tendon, stiffness, numbness, pain that can radiate up the arm, clumsiness, waking at night, weakening grip, muscle atrophy
Cubital Tunnel Syndrome	Compression of the ulnar nerve at the elbow	Repetition of elbow bending or flexion	Pain and numbness radiating down pinky side of both top and bottom of hand
De Quervain's Tenosynovitis	Inflammation of the synovial membrane and tendon at the base of the thumb affecting the abductors or extensors	Repetitive motion, excessive thumb squeezing, holding the thumb in a straight position for an extended amount of time	Pain in thumb especially during twisting motions
Deep Vein Thrombosis	A blood clot most often found in the calf	Extended sitting or cramped positions	Pain in the leg that is worse when standing or sitting, swelling in the leg, and redness or warmth

Injury	Definition	Causes	Symptoms
Focal dystonia	Neurological disorder resulting in loss of motor control and cramps only when playing your instrument	Excessive repetition	Small lapses in ability to perform instrument lead to spasms only when playing your instrument (not other acitvities)
Forearm Tendinitis	Tendonitis in the forearm	Excessive finger motion or pressure; too much wrist extension, flexion, or deviation	Tight, achy pain in the forearm area
Frozen Shoulder	Severe loss of motion in the shoulder	Shoulder area weakness or imbalance, stiff shoulder from lack of use, illness such as stroke, inflammation, adhesions (sticky bands that grow around shoulder joint)	Stiff joint, restricted movement especially above 90˚
Ganglion Cysts	Fluid-filled lumps that grow on fingers, hand, wrist, tendon, tendon sheath, or lining of a joint	Overuse, wear and tear	May be painful and limit activity
Golfer's Elbow / Medial Epicondylitis	Pain where tendons attach to the bony bump on the inside of the elbow	Repetitive rotation or twisting of the forearm especially with a bent or flexed wrist	Pain on the inside of the elbow that may spread to forearm and wrist
Morton's Neuroma	Pain in the ball of the foot, usually between third and fourth toes	Repetition of pressure on small nerves between base of toe bones	Severe pain in the ball of the foot
Overuse Injury	Body tissues become stressed beyond their biological limits	Repetitive action that is combined with poor posture, excessive force and stress	Pain, swelling, aches, soreness, decreased strength or speed

Injury	Definition	Causes	Symptoms
Rotator Cuff Tear	Ripping of tendons around weakened muscles of rotator cuff	Repetitive strain and previous tendonitis injuries	Pain from shoulder down the upper arm, weakness, inability to lift the arm
Shoulder Impingement	Repetitive use of arms above shoulder level reduces blood flow and can cause inflammation and microscopic tears	Holding arms at or above shoulder level, reaching up, moving an already raised arm	Pain with overhead use of the arms, difficulty reaching up behind the back, weakness of shoulder muscles
Shoulder Tendonitis	Repetitive irritation of tendons and bursa under the roof of the shoulder blade, which can lead to bone spurs around the joint of the collar bone and shoulder blade	Continuous shoulder level or overhead work	The shoulder will ache, pain when arms lifted to front or side
Spinal Disc Problems	Spinal vertebrae compress the spongy discs on the front half of the spine so that a bulge occurs on the back half and comes into contact with the spinal cord nerves	Slouching, bending necks to look down, bending down, bending over, or tilting neck to one side for long periods of time (static muscles) or small repetitious forward-bending movements	Pain, numbness, or tingling in the back, arms, or legs; inability to bend or straighten the back; progressive loss of strength in arms and legs
Sprain	Overuse of muscle-tendon unit		
Strain	Overuse of ligament		

Injury	Definition	Causes	Symptoms
Tendonitis / Tendinitis	Inflammation of the tendon and a collection of fluid (edema)	With overuse, overstretching, or overtwisting, the lubricant diminishes from the protective sheath surrounding the tendon, and the friction between the sheath and the tendon results in inflammation	Pain and tenderness outside the joint
Tennis Elbow / Lateral Epicondylitis	Pain at wrist extensors insertion point at small tunnel on the outside of the elbow	Jerky motions and by lifting fingers off keys/strings toward forearm	Pain on the outside of the elbow
Thoracic Outlet Syndrome	Compression of nerves and arteries of the thoracic outlet	Pulling down the collar bone	Pain in the whole arm, numbness, weakness in the hand and arm, fatigue, coldness, discoloration
TMJ Dysfunction	Pain in the jaw	Stress leading to clenching the jaw or grinding the teeth	Headaches, hearing loss and ear pain, blurred vision, backaches, jaw clicking, sore and tight jaws, facial pain and worn teeth

Source: Adapted from Horvath, 11, 35-79, mayoclinic.com, and webmd.com.

APPENDIX C

PROPOSED SYLLABUS TAKE-HOME MIDTERM

1. Name seven areas of focus you would like to include in your inclusive awareness as you perform.

2. Define a body map and include the three components.

3. Name the four senses musicians use and describe where the sensory receptors for each are located.

4. What are two reasons tension in the muscles of the neck affect movement of the whole body?

5. What are the four laws of the spine? Give one example of how knowledge of these laws has changed your movement.

6. Where is the middle of your body top to bottom? Why is *waist* a confusing word when thinking about the middle of your body?

7. What are some tools you can use to correct your body map?

8. Why would you want to correct your body map?

9. Describe the relationship between the AO joint and the lumbar spine balance point.

10. Describe the relationship of the kneecap and the knee joint.

11. List three reasons you would want to achieve a balance of the whole arm structure suspended over the ribs.

12. Describe the three types of arm rotation and the three joints involved.

13. Describe humero-scapular rhythm and give an example of a movement or an activity that involves this concept.

14. Give three reasons why you would want to encourage a long and flexible wrist.

15. How many joints are in the hand? Why would you want to know how many there are and where they are?

16. Where does the thumb move from and what is a common mismapping of the thumb?

17. Describe the wave of inhalation and exhalation to include the structures and movements you have learned about.

APPENDIX D

PROPOSED SYLLABUS TAKE-HOME FINAL

Video Evaluation

Please write a three-page essay based on the following prompts:

1. Head balance, points of balance

2. Laws of the spine

3. Whole arm movements

4. Wrist position and fluidity

5. Breathing

6. Awareness and use of the legs

7. Performance presence – connection to music and audience, self-map

8. Musical elements – dynamics, articulation, voicing, pedaling, rhythm, phrase structure, and direction

9. Ensemble elements – balance, synchronization, imitation, onsets/attacks, releases/cut-offs, cues, blend, and tempo

10. Other