

THE IMMEDIATE EFFECTS OF SOMATIC APPROACH WORKSHOPS ON THE BODY
USAGE AND MUSICAL QUALITY OF PIANISTS

By

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ABSTRACT

There is a growing popularity among musicians to turn to somatic approaches such as the Alexander Technique, Body Mapping and Feldenkrais Method to improve posture and movement at the instrument and to produce better tone quality. There is little scientific and objective data to support the changes that are apparently seen and heard after such training. This study examines if a single somatic session has an immediate, perceivable effect on pianists' body usage and musical quality. In the first mode of evaluation, judges rated specific aspects of body usage and musical quality. In the second mode of evaluation, judges were asked to identify post-somatic performances. Results indicated that there are perceivable changes in body usage and musical quality although those differences are not as apparent or easily detectable as is often believed. The findings also suggest that it is easier to identify post-somatic performances through body usage than musical quality.

Keywords: Alexander Technique, Body Mapping, Feldenkrais Method, music workshops, pianists, body usage, musical quality

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INTRODUCTION

The field of piano pedagogy covers a wide variety of topics, including piano performance, piano technique, educational material, curriculum, and teaching strategies. These can encompass the philosophy, psychology, and physicality of piano playing. In-depth research is required concerning all these areas for the purpose of developing and furthering piano pedagogy. Lin's 2010 doctoral dissertation mapped the trends in research projects specific to piano pedagogy by Masters and Doctoral students from 1951 to 2008. She analyzed 457 theses and dissertations for this project. Topics were then grouped into 12 different categories according to the areas of research. The three most studied fields concerned repertoire, teaching methods and theories, and piano curriculum or programs. Lin stated that this reflects what researchers feel are the most important features of piano teaching. Topics dealing with the physical aspects of piano playing were grouped with those of a psychological and neurological nature under the heading of "Performance." This category was the second-least researched area with only 4.8% of papers examining this issue. Some issues have been examined more than others and it would be advantageous for the field of piano pedagogy if investigations into areas that are less studied were conducted. From this overview, it can be argued that more research is needed in the area of physical aspects of performance.

There are many elements that can be categorized under the physical aspects of playing, including the execution of technique, the usage of the body during piano playing, and sound production. Also included in this category would be the examination of the various methods employed by pianists to improve music-making. There is a growing popularity among musicians to seek out somatic approaches for the betterment of their playing. Somatic approaches are comprised of "a variety of methods concerned with the learning process of the living body (the

‘soma’) as it acquires awareness through movement within the environment” (Joly, 2000, p. 5). Perceived advantages of these methods include better posture and body usage as well as improved tone quality. The Alexander Technique, Body Mapping and the Feldenkrais Method are favoured methods among musicians. From interacting with many musicians, the author of this thesis has found that there is a keen interest in taking these sessions and those who have already taken classes testify to the effectiveness of the method with which they were engaged. Evidence of this can also be found through the examination of literature pertaining to these methods as well as video recorded somatic sessions. It would be worthwhile to examine if this trend truly affects musicians, specifically pianists, in a beneficial way.

CHAPTER 1: LITERATURE REVIEW

Somatic approaches are ways in which musicians can learn about their bodies and make practical applications to their playing. Workshops are often used to introduce these approaches to musicians. The specific kinds of methods that are most popular among musicians and that will be covered in this thesis are the Alexander Technique, Body Mapping and the Feldenkrais Method. In this review of literature, an overview of these three methods will be provided, followed by a presentation of some general benefits of somatic approaches for musicians, and the benefits of these approaches in the specific context of music workshops.

1.1 Overview of the Alexander Technique, Body Mapping and Feldenkrais Method

In this section, each method will be presented individually. The purpose of each approach will be explained and a summary of what may be achieved through the study of each method will be presented. This will be followed by a description of how these sessions are conducted.

1.1.1 Alexander Technique

The purpose of the Alexander Technique is “to change (movement) habits in our everyday activities” (Arnold, n.d., para. 3). It is a re-education of the body in which one’s habitual ways are unlearned and new patterns developed so that the body can be used efficiently (Arnold, n.d.; Mayers & Babits, 1987; Nesmith, 2001). According to Conable and Conable (1995), it is “a simple and practical method for improving ease and freedom of movement, balance, support, flexibility, and coordination” through which the usage of one part of the body can be improved through the bettering of the whole body (p. 1). It is a means through which habits can be recognized and changed for more reliable motor coordination (Kleinman &

Buckoke, 2013). The Alexander Technique is based on an idea termed “primary control,” which is “the inherent and intrinsic mechanism for balance and support in the body” through which “movement will be supported and fluid” (Conable & Conable, 1995, p. 1). When this mechanism is constrained, the body’s balance and support is disrupted, leading to tension (Conable & Conable, 1995). Through the Alexander Technique, one can learn to facilitate the primary control which allows for freedom of movement. This method teaches one how to best use the body, and changes inefficient habits and responses to function at an optimal level (Arnold, n.d.; Walker, 2009). The Alexander Technique aims to help the student identify, remove, and prevent harmful and superfluous movement habits that hinder him from moving efficiently and freely through the usage of the skeletal system (Arnold, n.d.; Nesmith, 2001; Iammatteo, 1996). It can help in the development of an awareness concerning the physical state of the body (kinesthetic sense) and help in the inhibition (or the conscious decision to refrain from responding in a habitual manner) and reorganization of movement through clear mental instructions (Mayers & Babits, 1987; Nesmith, 2001). Besides learning body balance and offering a skill set that can be used in many situations, the study of the Alexander Technique can allow one to rethink movement and allow for change to occur on an integral level (Arnold, n.d.; Iammatteo, 1996; Nesmith, 2001; Walker, 2009).

Alexander sessions involve a teacher guiding a student through the re-education of his or her body. There are seven basic movements from which the restructuring of the body is based: “leaning forward and backward, moving the arms, walking with ease, moving the legs, heel and toe movements, knee bending, standing up/sitting down exercises” (Harper, 1995, p. 9). While moving, the student focuses on the skeletal structure of the body so that he is aware of its role in movement and how it can affect the kind of motion he makes (Peterson, 2008). During lessons,

the teacher presents the student with a situation, such as standing up from a chair, to develop the student's awareness concerning the movements he makes in various circumstances (Alcantara, 1997). According to Alcantara (1997), the "objective of all Alexander work is for [a student] to meet a stimulus that puts [him] in the wrong and to learn to deal with it" (p. 152).

There are two main kinds of Alexander sessions: "hands-on work" and "lying-down work" (Walker, 2009, p. 14). In hands-on work, the teacher uses her hands to physically lead the student through various motions. She also uses her hands to monitor the student, to prevent undesirable movements from occurring, and to direct the student through motions. Through the usage of her hands, it is possible for the teacher to influence the student's body usage (Alcantara, 1997; Walker, 2009). Lying-down work may also be referred to as "table work" because these sessions often take place while the student is lying on a table. During these sessions, a student learns to "prevent and release tension in a different relationship to gravity" (Walker, 2009, p. 14). The teacher manipulates the student's body to trigger a response with the goal of teaching him to develop a response different from his habitual reaction (Alcantara, 1997). It is important to employ the kinesthetic sense during the learning of the Alexander Technique as awareness is a key factor in noticing how the body is moving and will direct the student in fluid motion (Alcantara, 1997; Conable & Conable, 1995). Lessons are often conducted with a context in mind, such as playing an instrument (Nesmith, 2001). However, Walker (2009) stated that lessons do not usually begin with a direct involvement of an instrument as patterns of tension are continuously present.

1.1.2 Body Mapping

Body Mapping is a method that originally stemmed from the Alexander Technique. According to Conable (2000), "[the] goal of Body Mapping is to alleviate the misery of body

[misuse] by changing misuse into movement in keeping with the elegant design of the body” (p. 49). The purpose of changing one’s misuse is “to produce efficient, graceful, and coordinated movement” (Conable, 2000, p. 5). It is “an approach to understanding the way [one’s] body functions best” which involves learning with both the mind and body as well as the nervous system to discover the way in which one’s body was designed to move (Kleinman & Buckoke, 2013, p. 84). It is the process of consciously adjusting and improving one’s own body map. A body map is one’s conception of one’s body including its structure, size and function (Mark, 2003). Good or erroneous movement is based on the representation one has in mind. Inaccurate maps can produce inefficient and possibly injurious motion, but when the map is corrected, an improvement in movement follows (Conable, 2000; Mark, 2003; Nesmith, 2001). Body Mapping is a method through which musicians can learn about their structure and move according to their design through the development of a mind-body connection (Buchanan, 2005; Johnson, 2008). According to Mark (2003), the aim of Body Mapping is to improve the quality of movement that a musician executes at the instrument. Conable and Conable (1995) stated that when there is a conflict between one’s mental representation of the body and reality, the representation will determine the kind of movement that is produced. However, when the map is improved, effective movement is enabled. The aim is “prevention and confusion-control” (Conable & Conable, 1995, p. 33). Through the study of Body Mapping, the student learns to identify “the source of inefficient or harmful movement” and to replace it with efficient and effective movement (Conable, 2000, p. 5). It allows for the development of awareness concerning the information that various senses (i.e. auditory, visual, kinesthetic) bring to the mind so that suitable actions can be taken by the body (Buchanan, 2005). Through the study of one’s own body, students can correct and develop a map that is accurate and reliable (Buchanan,

2005; Nesmith, 2001; Peterson, 2008). Besides cultivating a correct self-representation, students will also train movement, relevant senses, and become aware of body movement in different contexts (Buchanan, 2005). Freedom of movement, that is, movement that occurs in accordance with one's actual body structure rather than with preconceived and possibly incorrect notions, is hoped to be achieved (Buchanan, 2005; Johnson, 2008).

Lessons in Body Mapping can be held in person or online with a teacher. These sessions allow the student to develop an accurate map of his own body through "self-observation and self-inquiry" (Conable, 2000, p. 5). The process of developing a sound conception of one's body involves the study of anatomical images and models, palpating the bony structure, using mirrors and videos to study movement, and, for musicians in particular, observing and imitating performers with good body usage (Conable & Conable, 1995; Conable, 2000; Johnson, 2008). A comparison between a preconception and fact will help the student learn about his body structure and aid in the correction of any mismappings he may have had (Johnson, 2008; Nesmith, 2001; Peterson, 2008). The kinesthetic sense, which is the sense that provides feedback concerning the body's position in space and movement, is used to guide the student toward better motion. Awareness is emphasized as a key point in helping retraining to take place and to be effective in performance situations (Johnson, 2008; Peterson, 2008). During the correction of one's body map, it is important to be aware of both the function and the structure of the body (Conable & Conable, 1995). The student should be aware of his quality of movement as he applies Body Mapping principles and should ask himself questions to provide feedback concerning the motions he makes.

1.1.3 Feldenkrais Method

The objective of the Feldenkrais Method is to improve “physical and mental functioning through the exploration of body movement patterns and the use of attention” (The Feldenkrais Method®: An Introduction, n.d., para. 1). This method, according to Peterson (2008), is a “psychophysical education” that involves the training of the mind as well as the body (p. 69). Verin stated that a “physical distortion exists in the brain” and that the “correction lies in releasing an inhibition in the brain cortex so that the old pattern of response is broken and can be replaced with a useful response” (as cited in Harper, 1995, p. 10). The Feldenkrais Method aims to change movement habits to generate more efficient and effective results. Through the study of this technique, students can improve their whole selves by being aware of and refining movement (Fraser, 2011). Through sessions, the Feldenkrais Method aims to guide students toward a better awareness of their movement habits for the establishment of new motor patterns and through the usage of motion, changes in feeling, interaction, and thinking are developed (The Feldenkrais Method®: An Introduction, n.d., para. 3). This approach is “a self-discovery process using movement” with the purpose of producing an individual who will “perform with minimum effort and maximum efficiency” (Nelson & Blades-Zeller, 2002, p. 3).

Feldenkrais sessions are usually done lying down on the stomach or back, and later on, sitting or standing. Movement is used in these lessons to help students understand their habits and to identify and learn other ways of performing tasks that are efficient (Peterson, 2008; The Feldenkrais Method®: An Introduction, n.d.). Many of the movements that are learned are based on the developmental motions of infants, such as “crawling, rolling, and standing up” (Peterson, 2008, p. 69). Movements are often repeated to solidify concepts while focus remains on “the how-to” of the movement (Nelson & Blades-Zeller, 2002, p. 3). According to Fraser (2011), the

“Feldenkrais Method focuses more on the movement functions themselves that generate good posture” (p. 426).

There are two types of sessions in the Feldenkrais Method. One is called “Awareness Through Movement,” which are group sessions based on movement lessons developed by the founder of this method. These classes are typically done lying on the floor as this position requires the least amount of effort to maintain. Developing sensitivity is facilitated through the ease with which motions are conducted and lying down is conducive to learning this ability (Nelson & Blades-Zeller, 2002). Students are verbally guided through a series of movement progressions using “attention, perception, and imagination” to learn new movement patterns (Nelson & Blades-Zeller, 2002; The Feldenkrais Method®: An Introduction, n.d., The Two Modalities of the *Feldenkrais Method*, para. 1). These motions are often slow and gentle, designed to illustrate a concept or a function. Sensitivity to the movement being done is emphasized. Questions are asked by the teacher to raise their awareness about what they are doing and how they are doing it (Nelson & Blades-Zeller, 2002). There are over 1000 exercises that provide a different basis for each of these classes (Harper, 1995). Besides participating in a class setting, these lessons can also be done to a recording of a session (Weinberger, 1999). The second type of session is known as “Functional Integration.” These lessons are often done lying down on a table or sitting (Harper, 1995; Peterson, 2008; The Feldenkrais Method®: An Introduction, n.d.; Weinberger, 1999). These are one-on-one lessons in which a teacher physically guides a student through touch and by moving him, the teacher helps the student to discover new and more efficient ways of using his body. Progress depends on “the student’s response to the work and on the practitioner’s knowledge and sensitivity, rather than on a predetermined plan” (Nelson & Blades-Zeller, 2002, p. 159). Like Awareness Through

Movement, these sessions have a specific focus in mind. However, with the one-on-one approach, teachers and students are free to explore more in-depth options (Nelson & Blades-Zeller, 2002). The Awareness Through Movement and Functional Integration sessions are meant to be interrelated so that concepts from one can be carried over into the other and vice versa.

1.2 General Benefits of Somatic Approaches for Musicians

Many musicians seek somatic approaches for the betterment of their playing and this section will review the benefits attested to in three types of sources: non-scientific literature (i.e. articles in music magazines and newspapers, websites about these approaches), qualitative research, and quantitative research.

1.2.1 Non-scientific literature

Various non-scientific sources vouch for the effectiveness of the Alexander Technique, Body Mapping and the Feldenkrais Method for musicians and list many advantages associated with these approaches. Benefits are often associated with increased well-being and improvements in musical performance. According to Harper (1995), the Alexander Technique can “relieve a musician’s tension” (p. 9). Alcantara (1997) also declared that excessive tension could be released and relaxation induced. It can also reduce or eliminate pain and discomfort, including headaches and backaches, and can help in the recovery from injuries, sometimes permanently (Alcantara, 1997; Iammatteo, 1996; Kleinman & Buckoke, 2013; Peterson, 2008; Walker, 2009). Alcantara (1997) stated that the Alexander Technique has often been used, with a great degree of success, in the treatment of various illnesses and diseases and can help in the improvement of mental and physical health. This method can promote greater freedom, or ease, of movement. According to Peterson (2008), the Alexander Technique can “transform bad

habits into more productive habits that enable the body to move with ease and comfort” (p. 67-68). Iammatteo (1996) stated that the student can develop “efficiency and grace in motion, while maintaining minimal muscular tension” (p. 37). Among other physical improvements are “increased stamina” and “greater flexibility and strength” (Mayer & Babits, 1987, p. 54). Kinesthetic sensitivity is enhanced as well (Conable & Conable, 1995). Advantages also include energy for a variety of activities and a prevention of fatigue (Alcantara, 1997; Arnold, n.d.; Iammatteo, 1996). There appears to be an improvement on mental abilities as well. These include enhanced concentration, an improvement in the capability to memorize and focus on tasks, a decrease in stress, better emotional patterns, and an increase in self-confidence (Alcantara, 1997; Iammatteo, 1996; Mayers & Babits, 1987; Walker, 2009). Directly involved in the process of music-making, advantages of the Alexander Technique include better breathing, the ability to make appropriate decisions concerning body usage at an instrument, and an improvement in tone quality (Conable & Conable, 1995; Iammatteo, 1996; Mayers & Babits, 1987; Nesmith, 2001). In the words of Alcantara (1997), “[t]echnique (good, bad, or indifferent) is a manifestation of the use of the self – an effect of co-ordination, not its cause” (p. 174). Applied to playing an instrument, this means that knowing how to use the body effectively will affect the movements used in the act of playing and the sounds that are produced. In relation to music performance, the Alexander Technique can offer “the performer a control which is fluid and lively rather than rigid” (Conable & Conable, 1995, p. 1). Applying principles of the Alexander Technique can enhance daily music practice by improving mental attitude, rhythm, and memorization. Overall, musicians seem to be able to perform more easily, with freer musicianship, and with a greater consistency across performances (Alcantara, 1997; Conable & Conable, 1995; Harper, 1995; Iammatteo, 1996; Kleinman & Buckoke, 2013). Besides general

improvements in playing, some musicians found that the Alexander Technique was a helpful tool in managing “stage fright and troublesome passages of music” as well as providing a “general strategy for practicing” (Mayers & Babits, 1987, p. 54).

Benefits for musicians associated with Body Mapping include injury prevention and reducing pain while playing an instrument (Barrett, 2006; Buchanan, 2005; Johnson, 2008; Nesmith, 2001). The study of Body Mapping can allow for physical improvements including recovering full mobility of the head, neck and spine, obtaining free and fluid arms and legs, finding balance in one’s body, developing adept motor skills, and refining the kinesthetic sense (Conable, 2000; Mark, 2003). Students would increase the awareness concerning their bodies and be able to create an accurate mental map (Barrett, 2006; Conable, 2000; Peterson 2008). With a correct understanding of the body, breathing is supported, motor coordination at the instrument is improved, and facility and efficiency of movement is promoted (Buchanan, 2005; Conable, 2000; Kleinman & Buckoke, 2013; Mark, 2003; Nesmith, 2001). Nesmith (2001) declared that a musician will gain “more control over [his] technique and sound” (Body Mapping, para. 8). It is claimed that the study of Body Mapping can improve quality of movement which has many implications for musicians (Conable, 2000; Mark, 2003). Physical problems such as injury and pain can be corrected. A musician can also change their body usage to improve the act of playing an instrument (Mark, 2003). According to Conable (2000), discerning quality of movement is important as “[q]uality of movement determines quality of sound” (p. 46). Playing with a high quality of movement will be without tension and can lead to “free, expressive, and secure” performance (Mark, 2003, p. 5). Conable (2000) claimed that applying principles of this approach will aid in heightening attention during practice and performance and allow any musician to play like a natural. A study of Body Mapping also

appears to provide a musician with “freedom of expression through poised, dynamic, musical movement” (Buchanan, 2005, p. 95). Playing can become “easier, more pleasurable and more accurate” (Kleinman & Buckoke, 2013, p. 88).

The Feldenkrais Method can rid the body of extra tension leading the student to feel more relaxed, while breathing appears to become easier (Fraser, 2011; Harper, 1995; Peterson, 2008; Zdeb, 2008). It can reduce or eliminate pain and serve to decrease the chances of injury (Harper, 1995; Nelson & Blades-Zeller, 2002; Peterson, 2008; The Feldenkrais Method®: An Introduction, n.d.). Injuries that can be treated by this method include tendonitis and carpal tunnel syndrome (Fraser, 2011). There are also many other physical improvements including better posture, freedom of movement, and increased endurance, mobility, flexibility, range of motion, and motor coordination (Harper, 1995; Nelson & Blades-Zeller, 2002; Peterson, 2008; The Feldenkrais Method®: An Introduction, n.d.; Weinberger, 1999). Fraser (2011) declared that Feldenkrais sessions can aid in decreasing involuntary effort and developing a function-oriented posture rather than an appearance-based one. According to Nelson and Blades-Zeller (2002), in applying principles of this approach, “individuals are led through movement sequences designed to introduce or clarify a function” leading them to “‘discover’ a better way to perform this function” (p. 3). Peterson (2008) stated that the Feldenkrais Method can “[lessen] fatigue” as well (p. 70). Mental abilities also seem to be enhanced with lessons in this method. Besides “improving neurologically-based difficulties and learning disabilities,” this approach can help students put their intentions into action with more ease (The Feldenkrais Method®: An Introduction, n.d., para. 1). Other changes include faster learning abilities, becoming more creative and adaptable to various situations, and experiencing less inhibition while performing (Harper, 1995; Peterson, 2008). Regarding musical quality and technique, finger dexterity and

shoulder mobility are improved along with tone quality (Harper, 1995; Peterson, 2008). Efficiency of movement at the instrument is enhanced and playing an instrument becomes easier and much more fluid (Fraser, 2011; Weinberger, 1999). Overall, it is possible for one to perform better than before (Nelson & Blades-Zeller, 2002). Music performance is enhanced as musicians are able to play with more self-assurance (Harper, 1995; The Feldenkrais Method®: An Introduction, n.d.). According to Fraser (2011), the Feldenkrais Method can “bring a new ability and sophistication to the performance of more complex tasks” (p. 5). A musician will be able to realize “[his] musical intentions more instinctively or reflexively because [he] is no longer inadvertently interfering with that process” (Fraser, 2011, p. 427).

While there are numerous sources that account for the positive benefits of these three approaches, they are all given from a subjective perspective and their reliability may be questionable. However, there have been some scientific studies that have supported these assertions. The next two sections will review such studies beginning with qualitative research followed by quantitative research.

1.2.2 Qualitative research

Qualitative studies have also advocated for the benefits of somatic approaches for musicians. The aim of Öhman, Åström, and Malmgren-Olsson’s (2011) study was to describe and analyze the experiences of participants in a group of women taking part in a Feldenkrais intervention group. Fourteen women with neck and shoulder pain participated and Awareness Through Movement classes were utilized to help these participants. Although it was not specified whether or not these women were musicians, they were suffering from symptoms familiar to many music performers and students. Data was collected through notes taken immediately after sessions as well as through interviews four to six months after the intervention

program was completed. The women felt that although the movements required of them were difficult to replicate on their own at home, they still acquired increased body awareness as well as better posture and balance. The participants also felt that these sessions had an impact on their daily activities, making them aware of body usage even after the intervention was completed. The authors concluded that the overall response to the Feldenkrais Method was positive and that movement ability and body awareness was increased.

The objective of Kaplan's (1994) dissertation was to study six different pianists and their experience with the Alexander Technique regarding how they applied it to their playing. She chose participants who she thought would provide the most amount of information concerning their experience, thereby giving insight concerning how the Alexander Technique can help pianists. Data was collected through intensive interviewing over the course of several months. The purpose of the data analysis was to uncover major themes and/or patterns that emerged with regards to participants and their experience with the Alexander Technique. The results showed that the pianists sought help because they experienced pain while playing, were physically uncomfortable at the piano, or because tension was a problem. By the end of their sessions, the participants felt that their self-image and confidence were improved, that there was a better connection between their minds and bodies, an increased awareness about the body's role at the piano, and that the Alexander Technique is an excellent tool to utilize for piano playing.

Knaub (1999) wrote a dissertation concerning Body Mapping. The purpose of this study was to examine how male and female musicians perceived the application of the Alexander Technique, specifically Body Mapping principles, in their own lives and how those perceptions were similar or different. Benefits of such training can be derived from the results of this study. The data for this project came from 500 journals and reports that music students at the Ohio State

University had written for an Alexander course taught by William Conable over the years, from 1973 to 1998. The author categorized answers into specific groups and validated the relationships those answers had with other categories. There were five instrumental groups: singers, upper strings, lower strings, woodwinds, and piano. Results indicated that students were able to apply principles of Body Mapping in both non-musical and musical settings. In non-musical settings, females noticed greater facility and ease in responding to “stressful, emotional situations with more calmness and steadiness” (p. 86). Males applied concepts to physical activities such as dancing and bicycling. Both genders noticed less tension and pain, specifically in the back, while carrying out different tasks. Concerning musical settings, females perceived a freeing of the elbow joint and an improvement in sound while males noticed an increased awareness of their ankles and feet. Again, both genders noticed less pain and tension in their backs as well as their arms as they played or sang and stated that they had an increased body awareness.

1.2.3 Quantitative research

Qualitative research provides insightful subjective information concerning the effects of somatic approaches, but lacks in solid, scientific data to bolster these claims. However, a few quantitative studies have offered support for these assertions. The purpose of Little and colleagues’ (2008) paper was to determine and compare the effectiveness of lessons in the Alexander Technique, massage therapy, and prescribed exercise combined with counselling with a nurse for patients with chronic or recurrent back pain. Five hundred and seventy-nine participants with chronic or recurrent back pain were divided into five groups: normal care, massage therapy, six Alexander Technique lessons, 24 Alexander Technique lessons, and exercise prescription. All patients were required to complete the Roland Morris disability

questionnaire, designed for self-report, as well as an additional questionnaire that required participants to rate themselves on a 7-point scale concerning the health of their back. These were completed three times: before the interventions began, three months after the beginning of treatment, and one year after the treatments had ended. It was found that both exercise and lessons in the Alexander Technique had a lasting effect, even up to one year after the completion of treatments. The effect of 24 Alexander Technique lessons was greater at the one year mark than at three months, making it a much more effective treatment than massage therapy, where few changes outside of pain reduction and enablement were produced. No adverse effects were reported for both exercise and the Alexander Technique. The authors concluded that private Alexander Technique lessons from registered teachers have long-term benefits for patients with chronic back pain. It was found that six lessons in the Alexander Technique were still effective at one year, whereas six sessions in massage were less effective at three months, which, as the authors state, “shows that the long term benefit of Alexander [Technique] lessons is unlikely to result from non-specific placebo effects of attention and touch” (p. 6).

Valentine and colleagues (1995) conducted a quantitative study to examine the experiential and behavioural effects of Alexander Technique lessons on music performance in high and low stress situations. Subjects were divided into two groups: an experimental group who were given 15 lessons in the Alexander Technique, and a control group that was not given lessons. Participants completed the Eysenck Personality Inventory (Eysenck & Eysenck, 1964), the Performance Anxiety Inventory (Nagel, Himle, & Papsdorf, 1982), and rated their degree of interest in taking lessons in the Alexander Technique on a scale from one to four (one being “prefer not” and four being “very interested indeed”) (p. 131). Participants were required to participate in a performance, which was video recorded, at the end of the testing period. These

recordings were watched and rated by two Alexander Technique teachers who were not involved in giving lessons to participants, and two music teachers on faculty at a university in the United Kingdom. All judges were unaware of the participants' condition. The Alexander teachers rated performers on misuse, defined in the paper as "deviations from optimal functioning in accordance with the principles of the Alexander Technique" (p. 131). The judges created a 7-point rating scale with which to make assessments, with 1-2 indicating good usage, 3-4-5 indicating misuse that could impair performance, and 5-6-7 indicating serious misuse (p. 132). The sound on video recordings was turned down so assessments were made based on visual information rather than audio. The quality of music performances were made on a percentage scale. In addition to blind panel evaluations, the researchers asked the participants to complete the Music Performance Anxiety Self-Statement (Craske, Craig, & Kendrick, 1988) and interviews were conducted. For the purposes of this paper, only the results from the behavioural measures portion of the article will be stated. Concerning musical quality, the judges were in high agreement. The experimental group showed an improvement in musical quality from pre-class to post-class while the control group declined. Concerning technical quality, the experimental group again demonstrated a significant improvement while the control group declined. Regarding misuse, the experimental group declined from pre-class to performance. The authors concluded that lessons in the Alexander Technique may have beneficial effects on "the quality of music performance" and "the mental state of the performer" (p. 139).

These two scientific papers provide reliable data from which valuable information concerning the benefits of the Alexander Technique was obtained. They provide quantifiable evidence that support the claim that somatic approaches do have positive effects. Quantitative data concerning the benefits of Body Mapping and the Feldenkrais Method were not available or

accessible. The intention of this thesis is to examine and measure the effects these methods have on the body usage and musical quality of musicians. Specifically, this study will focus on the effects in a particular context, one that is gaining in popularity – the music workshop.

1.3 Somatic Approaches in the Context of Music Workshops

Music workshops are a means through which practitioners of various somatic approaches can introduce ideas to students and teachers alike. These often include a playing portion and a brief somatic session, after which the participant will play again. The somatic teacher as well as the audience members frequently claim they see and hear a great change between the pre-session performance and the post-session performance. Evidence of these claims can be seen and heard in videos of such workshops.

“Young musicians and Alexander Technique by Eli Heifetz” (Alexander4musicians, 2012) is a clip from a workshop session Heifetz held with high school students in Tel Aviv. The video begins with a vocal student singing a song. After listening for a while, Heifetz begins to introduce some ideas from the Alexander Technique to the student. She sings again while he manipulates her head and neck. He also demonstrates good body usage as well as usage that inhibits singing and has the student feel the change in his head and neck as he does so. She sings again as Heifetz adjusts her body usage for her and gives her additional information concerning her body while singing. At the end of the session he says, “That is really good,” implying that there was a change in her performance.

In “Alexander Technique workshop with Rebecca Tuffey” (CUNYQueensborough, 2011), Tuffey begins with a brief testimony about how she came to study the Alexander Technique as well as an overview of the origins of this method. She states that this technique

can complement music performance and practice, and gives a brief description of what the Alexander Technique can do for musicians. In the workshop portion of the video, Tuffey instructs the students in sitting and standing from a chair as well as how to walk using the Alexander Technique. She also works with the students in the context of playing or singing. A volunteer is asked to sing or play, after which Tuffey makes a few corrections to the way they sit or stand, followed by the student singing or playing again. Tuffey comments that there was an audible change in their playing for each of the volunteers. As Tuffey works with the students, she asks if members of the audience notice the volunteer changing his/her body usage, to which the audience nods and comments on how the movements look more effortless. The volunteers themselves state that they feel different when they stand and sing or sit and play. One volunteer, a pianist, says she felt more relaxed. Tuffey asks the audience if they hear a difference in tone and the audience members agree that they do hear a difference and also provide feedback about what they thought was different, specifically in relation to improvements in body usage and musical quality. Comments included noticing differences in how musicians were sitting and how the music seemed to “flow” more.

Jennifer Johnson is a certified Body Mapping teacher and she gave a workshop in 2014 at the University of Ottawa. Johnson worked with a pianist and conducted the lesson online through a web session. The pianist played a piece, after which Johnson talked about the skeletal structure of the arm, bringing his awareness to that part of his body. She also brought his attention to the thumb, as he was holding it up unnecessarily as he played. After playing again, Johnson stated that there was a “huge improvement from what [he] played the first time” as it most likely reduced pressure in his wrist.

WildacresFlutes (2012) posted a video of a Body Mapping session with Lea Pearson. During this class, Pearson shows the audience members how to identify tension and discusses the kinesthetic sense. A workshop with a flautist is also held as a part of this class. After working on breathing with the volunteer for a while, Pearson asks her how it feels and how much effort it took for her to breathe to play. The volunteer replies by saying that it feels “nice” and that it did not take much effort on her part to breathe. Pearson also asks the audience what difference they heard in the flautist’s playing. Someone said that she looked more relaxed and someone else said that the quality of sound was smoother and more resonant. Pearson also stated that the sound was more open as well. After continuing to work with the flautist on breathing, Pearson asks if it was easier for her to hold a note for a longer period of time, to which the volunteer replied in the affirmative.

In “Feldenkrais workshop with Ruty Bar” (Ruty Bar | Feldenkrais, 2014), Bar works with some elderly musicians who had never experienced the Feldenkrais Method prior to this workshop. The video shows clips of Bar guiding the musicians toward better body awareness through an Awareness Through Movement session and applying principles of the method to their playing. At the end of the workshop, Bar asks if anyone would like to share their experience of that day and one musician said that through the Feldenkrais Method, he acquired a way of standing up from whatever position he was in despite a pain in his left knee. There appears to have been a change in this musician’s body usage that was immediately effective.

Hagit Vardi and Uri Vardi are Feldenkrais practitioners and in their 2010 video, they show a number of clips from various workshop sessions they hold for university music students. The video begins with a recording of a Feldenkrais session held by Hagit Vardi. Vardi leads the group in some motions and afterwards asks them to turn and look behind them. She then asks if

any of them felt a difference from the first time they turned around (not shown in the video). The students nod and raise their hands to indicate that they felt a difference. Uri Vardi then takes over the session and states that the Feldenkrais Method is about giving oneself options to facilitate playing an instrument. The video also shows clips of Uri Vardi working with a violinist during a masterclass. He asks the violinist to lie down and demonstrates a principle after which he has the violinist stand and apply that same principle to his playing. When the violinist plays, Vardi states, “Different sound, isn’t it?” Clips from a masterclass with a pianist are also shown. Uri Vardi works with her to relieve excessive tension as she plays and she states that it felt easier to play afterwards. The video ends with positive comments given by musicians who had participated in workshops conducted by the Vardis. In summary, Hagit Vardi states that the Feldenkrais Method allows musicians to play with more ease and can prevent injuries from occurring.

These accounts seem to be very convincing and the benefits appear to be appealing to musicians. However, all testimonies were given by people involved in these sessions, either as a teacher, participant, or audience member. There is a lack of scientific data to support the notion that there is an immediate change after a single somatic session.

1.4 Research Problem

From this review of literature, there appear to be many benefits from participating in somatic sessions, such as the Alexander Technique, Body Mapping and Feldenkrais Method. These include increased relaxation or a release of excessive tension, relief of pain and injuries, freedom of movement, physical improvements, increased energy or a decrease in fatigue, and an enhancement of mental abilities. There also appears to be an improvement in body usage at the

instrument, breathing becomes easier, tone and technique are bettered, and overall musical performance and practice are enhanced. However, there seems to be little scientific data to support these assertions. Most accounts of these benefits come from self-reports and testimonies of participants directly involved in these somatic sessions. In order to assess the effectiveness of these methods from an unbiased perspective, objective or external observations should be conducted. Quantitative research is needed to provide an in-depth study on the perceived changes in order for those claims to be viable. Further studies concerning this issue should be conducted.

Many papers on the benefits of somatic approaches for musicians are qualitative and do not provide solid data to support the assertions that were made. Evidence for this can be seen in Ives and Shelley's (1998) literature review. The authors reviewed a large number of studies with the purpose of evaluating studies on the Feldenkrais Method. Sources that were examined included case histories, case studies, qualitative research, and empirical research (not presented in the literature review of this thesis). The majority of papers that were reviewed concerned recovery from musculoskeletal disorders, improved bodily movement, and the benefits of taking lessons in the Feldenkrais Method. Ives and Shelley found that although improvement was generally indicated, those changes were not as great as the anecdotal claims identified in the studies. The authors also stated that many of the findings and conclusions presented in the papers were questionable due to a lack of control over the studies as well as methodological issues. They concluded that "the most support for the Feldenkrais Method [came] not from the research findings, but rather from the sheer number of positive reports that fit within a sound theoretical framework" (p. 85). The "positive reports" mentioned in this statement refers to the testimonies and self-reports that were found in the process of reviewing literature for their paper.

According to Ives and Shelley, positive feedback, then, provides the basis of the claim that the Feldenkrais Method is an effective approach. As was discovered in another study (Van Vugt et al., 2014), subjective reports (i.e. self-reports) had a higher rate of positive responses concerning changes while objective reports had a lower rate of positive changes.

While all the papers reviewed for this thesis contribute insightful information concerning the benefits of somatic approaches for musicians and appear to attest to the effectiveness of these methods, the majority of them were based on testimonies and self-reports. As was mentioned in Ives and Shelley's paper, the evidence from which these positive conclusions were drawn were derived from anecdotal evidence. This provides subjective information concerning the effects of somatic approaches, but lacks in sufficient quantifiable data to bolster these claims. Although there are some scientific papers that support the positive statements seen in qualitative research, these studies are few. Scientific data would lend more credibility to the support of these assertions.

As was demonstrated earlier in this literature review, workshops are a way through which ideas from somatic approaches can be introduced to musicians. There are a large number of positive responses that can be seen and heard in these sessions, but there is little quantitative data to give credence to these reactions. To determine if these perceived benefits are truly present and to acquire quantitative evidence, external assessments are necessary. There also appears to be little research on the subject of somatic approaches and solo piano playing. Most papers and books were written for musicians in general with no specific applications to pianists. Given the growing popularity to turn to these methods for improvement, more research in the area of somatic approaches and piano performances should be conducted regarding the benefits that these methods can bring to pianists specifically.

The research questions for this study are:

1. Do somatic approach workshops have an observable and quantifiable effect on body usage during piano performance?
2. Do somatic approach workshops have an observable and quantifiable effect on musical quality during piano performance?

Based on the accounts presented in this literature review, two hypotheses were made:

1. It is hypothesized that there will be improvements in body usage.
2. It is hypothesized that there will be improvements in musical quality.

However, these two aspects are not necessarily related. Because somatic sessions work on the body, changes may happen on a physical level, but these physical changes may not always have an immediate and positive effect on musical quality as somatic workshops are not synonymous with piano lessons. It is also important to note that because it is only one session, it is possible the effects will not be great and therefore not as noticeable as is often claimed. Considering also the outcome of van Vugt and colleagues' (2014) study which stated that subjective reports differed from objective reports, results from this thesis study may weaken, to some degree, the responses of participants involved in workshops.

CHAPTER 2: METHOD

2.1 Participants

Ten pianists (eight women, two men, $M = 31.8$ years, age range: 23-66 years) were recruited for this study. All participants were required to have studied and majored in piano at a university. A consent form and questionnaire was given to pianists at the test session to collect demographic and background information (see Appendix A). In many studies, questionnaires were used to collect information about participants' age, gender, instrument, playing habits, and types of treatment received for health issues (Brandfonbrener, 1997; Cooper, Hamann, & Frost, 2012; Ginsborg, Kreutz, Thomas, and Williamon, 2009; Van Vugt, Bouillet, Jabusch, & Altenmüller, 2014). Based on this literature, this study also collected information concerning participants' age and gender. The questionnaire also collected information about the number of years participants had played the piano and at which university they had studied piano. Because the focus of this study was not on health issues, only information concerning whether or not participants had previous experience with somatic approaches was collected without mention of whether or not it was for health reasons. Seven pianists had no previous experience with the Alexander Technique, Body Mapping or Feldenkrais Method. One participant had previously received 13 weeks of Alexander lessons, but most of her experience was comprised of class and paper work. Another participant had received a semester of group Alexander lessons while another attended a workshop in an unspecified method. For our study, participants were randomly assigned to a specific approach. Three pianists received sessions in the Alexander Technique, four in Body Mapping, and three in the Feldenkrais Method. Of the three participants who received an Alexander lesson, one was the pianist who had had a previous experience with class and paper work.

2.2 Materials

2.2.1 Playing requirements

Participants were informed of the playing requirements prior to the day of their test session. These requirements were selected to provide a variety of conditions from which to assess body usage and musical quality (see Table 1). Scales and arpeggios were selected for their linear nature (i.e. pianists move from one side of the piano to the other when playing). They were also chosen for the evaluation of consistent tempo and steady rhythm. *Für Elise* and *Wilder Reiter* were chosen for their contrasting musical styles and for the evaluation of expressivity. During test sessions, scales were played first, followed by the arpeggios, *Für Elise*, and *Wilder Reiter*. These requirements were performed in the same order both before and after the somatic session. A metronome was used when participants played scales and arpeggios to ensure that all pianists played at the same tempo.

Table 1	
<i>Playing Requirements</i>	
<u>Playing Requirement</u>	<u>Specifications</u>
C-major scale in quarter notes	Hands together, two octaves, bpm=120
C-major scale in eighth notes	Hands together, two octaves, bpm=120
<i>Für Elise</i>	M. 1-22, no repeats
<i>Wilder Reiter</i>	Entire piece, with repeats
* Repeats were specified to ensure pieces were played for the same amount of time.	

2.2.2 Video recordings

Two video cameras were used to record the test sessions and these recordings were utilized in the evaluation process. For research purposes, it is fairly common to use video

recordings to access performances. In Valentine and colleagues' (1995) study, video recordings were taken from a final recital. The performers were music students who had either taken 15 Alexander lessons or had not taken any lessons. The recordings were viewed by an evaluation panel to assess body usage and musical quality. Vines and colleagues (2011) made video recordings of two professional clarinetists who were asked to perform in three distinctive styles: with restrained, strained, and exaggerated intention. These recordings were viewed by an evaluation panel who rated their emotions while watching these performances. In a study examining performance expressivity in relation to festival ratings (Price and Chang, 2005), cameras were placed in a location where the frontal view of the performer could be seen, including the torso, arms, and head. In Davidson's (2012) study, cameras were positioned to record the performers from the front as well as the side. These recordings were made to analyze musicians' movements during expressive playing. Based on this literature and the specific needs of this thesis, video recordings were taken before and after the somatic session and used for evaluations. One video camera was placed to record participants' right side to capture the movements of the head, torso, arms, legs, and feet. The other camera was placed behind the pianist to record participants' backs. Although other studies sometimes record a frontal view of performers, this study recorded the backs of pianists as it would provide better insight concerning body usage.

2.2.3 Audio recordings

Audio recordings were also made of the test sessions as is often the case with these kinds of studies. Madsen and Geringer (1999) recorded performances to examine patterns of music listening in musical excerpts varying in tone quality and intonation. These excerpts were presented to a listening panel who rated what they heard. Kinney (2004) and Price and Chang

(2005) also made audio recordings for a listening panel to rate expressive playing. Vines and colleagues (2011) recorded music performances for the purpose of evaluating emotions after having listened to a recording. From this literature and for the purposes of this study, audio recordings were made of the performances, both before and after the somatic session. A Yamaha Disklavier Mark III was used to record the test sessions. However, because the recordings made by the piano were MIDI files and performances needed to be reproduced with an audio file for evaluations, all performances were played directly back from the Disklavier once test sessions were completed and recorded using an iRiver H120 digital audio player (DAP).

2.2.4 Editing

All video and audio recordings were cut into smaller clips to create short individual files for the evaluation process. Recordings were separated so that each playing requirement could be evaluated separately as a standalone file without other playing requirements influencing judges' decisions. All video recordings were cut into small clips using Final Cut Pro X 10.1. Audio clips were made during the playback from the Disklavier. The DAP was stopped after a playing requirement had been completed. Some studies created video recordings that were not accompanied by sound so that evaluations could be based off of movement or expressive gestures alone (Price & Chang, 2005; Valentine, Fitzgerald, Gorton, Hudson, & Symonds, 1995; Vines, Krumhansel, Wanderley, Dalca, & Levitin, 2011). Price and Chang (2005) and Vines and colleagues (2011) also created audio clips that had no images so that evaluations could be made without the influence of visual information. Based on this literature, video clips without sound were used as well as audio clips without images. The sound from the video recordings was removed using Final Cut Pro X 10.1 while short clips were being made. Without sound accompanying the video clips, evaluators would have to base their decisions on body usage

alone. Similarly for the audio clips, without images to watch, judges would have to rate performances based solely on musical quality.

2.3 Procedure

All test sessions were held in the Piano Pedagogy Research Laboratory. Participants completed a consent form and a questionnaire which collected demographic information along with background information prior to the start of the test session. Pianists were then directed to the piano where they performed the playing requirements in the specified order while being recorded.

In a number of studies, various sessions meant to improve a musician's physical well-being were conducted as the stimulus to evaluate the effectiveness those methods had on performance. These pertained mostly to injury prevention and recovery. Van Vugt and colleagues (2014) examined the therapies undergone by pianists with musician's dystonia and the changes that they experienced during task performance. Methods of intervention were chosen by the musicians themselves and done in the musicians' own time rather than administered by the researchers. Brandfonbrener (1997) implemented a prevention program including musculoskeletal education and exercises and studied their effects on orchestral musicians. The prevention program was carried out over the course of three separate sessions comprised of three visits to participating orchestras. The first visit included lectures on anatomy and physiology, posture in relation to instruments, exercise, and risk factors. Two sets of exercises were also done during the first visit. The second and third visits continued with the exercises and were also used to acquire information on the perception of participants concerning the effectiveness of those exercises. Cooper and colleagues (2012) examined the effects of

stretching during rehearsals on music students' physical discomfort. Stretching was carried out at rehearsals in 10-minute intervals every rehearsal for four sessions. Valentine and colleagues (1995) studied the effects that Alexander Technique lessons had on music students' performance. Students in the experimental group received a total of 15 lessons. Based on this literature, this thesis project also gave participants somatic sessions. However, only one session was given to each pianist as the purpose of this study was to examine the effects of a single workshop. Because the focus of this study was not on injury prevention and recovery, somatic sessions were not conducted for this reason. Rather, they were given to assess the immediate effects somatic lessons would have on pianists' body usage and musical quality. All studies except for van Vugt and colleagues' (2014) focused on one specific type of method. This thesis focused on three different kinds of somatic approaches: the Alexander Technique, Body Mapping and Feldenkrais Method. These methods were chosen for their popularity among musicians.

Pianists received a 50-minute somatic lesson with a certified Alexander Technique, Body Mapping or Feldenkrais teacher. A total of five teachers gave lessons to pianists. These included two Alexander teachers, two Body Mapping teachers, and one Feldenkrais practitioner. All somatic sessions were conducted in their usual manner. In the case of Alexander and Feldenkrais sessions, teachers were present in the room for the entire test session. They were able to watch pianists play before and after the somatic session. During the lesson itself, Alexander and Feldenkrais teachers were able to physically manipulate students as well as verbally guide them toward better body usage both away from the piano and at the instrument. A massage table and chairs were provided for these lessons. Sessions in Body Mapping were held online with a certified teacher. This is common practice among teachers of this method and as it was the intention of this study to recreate sessions in their habitual conditions, all Body Mapping

lessons were held with a teacher verbally guiding the pianist via the Internet, both away from the piano and at the instrument. Chairs were provided for the participants' use during these lessons.

The evaluation and data analysis process took place once all test sessions were complete. All video and audio clips were posted privately online and the link was sent to members of the evaluation panel. There were two methods of evaluation: one involving a detailed evaluation of standalone clips, the other involving the identification of post-somatic performances. Judges in the first method of evaluation were sent evaluation charts where they had to rate performances on a 7-point scale. Judges involved in the second method of evaluation were sent response sheets along with 30 pairs of clips. Evaluators were to identify the post-somatic performances in each pair of clips. Upon the return of these documents, the data was analyzed. Responses were converted to percentage scores to facilitate graphing and comparison between pre-somatic and post-somatic performances. Bar graphs were created using Excel, again to facilitate comparison between performances. Statistical analysis was conducted using SPSS.

2.4 Measurement 1

Video and audio clips of the test sessions were sent to two blind-review evaluation panels: a viewing panel to evaluate body usage and a listening panel to evaluate musical quality (see Appendix B).

2.4.1 Body usage

Judges for the viewing panel were selected based on their qualifications. The evaluation panel from Valentine and colleagues' (1995) study consisted of two certified Alexander Technique teachers to assess body usage. Based on this study, only certified somatic approach teachers were chosen to be a part of our panel. The viewing panel consisted of five certified

teachers, at least one for every method that was involved in the test sessions, and included two Alexander Technique teachers, one Body Mapping teacher, one Feldenkrais practitioner, and one Euthonie teacher. All judges were unaware of participants' conditions, that is, they were not informed of whether the clip they were viewing was taken before or after the somatic session. Valentine and colleagues (1995) did not inform the judges on their panel of the performers' conditions. Based on this study and the needs of this project, evaluators were not informed of whether performances were taken before or after the somatic lesson. Without this information, evaluators would be able to make more objective evaluations. Judges were able to view the clips more than once. To control for order effects, the clips were randomized. Kinney (2004) randomized the order in which clips were presented to the evaluation panel. Although this was done for listening assessments, the randomization of clips can be applied to viewing clips of performances as well. Every judge was presented with a differently randomized order so that no two judges watched the clips in the same order.

The evaluation chart for the viewing panel consisted of 7-point rating scales, one for each parameter, for the assessment of body usage (see Appendix C). Rating scales are often used in studies to evaluate body usage. These include 4-point, 5-point, 6-point, and 7-point Likert-type scales (Cooper, Hamann, & Frost, 2012; Ginsborg, Kreutz, Thomas, & Williamon, 2009; Spahn, Burger, Hildebrandt, & Seidenglanz, 2005; Valentine, Fitzgerald, Gorton, Hudson, & Symonds, 1995; Van Vugt, Boulet, Jabusch, & Altenmüller, 2014). In Valentine and colleagues' paper (1995), it was specified that 1 indicated very good usage and coordination of the body while 7 indicated severe misuse. Based on this literature, a 7-point Likert scale was used for our study to evaluate body usage. The same rating scale from Valentine and colleagues' paper was used. This was selected to provide evaluators with a broader scale with which to rate performances. It

would allow them to express their decisions more accurately than a 4-point, 5-point, or 6-point scale. During data analysis, the rating scale was reversed so that 1 indicated severe misuse while 7 indicated very good usage and coordination for consistency with the rating scale used for musical quality. The viewing panel was to rate specific parameters concerning body usage. Through correspondence with Dr. Valentine, we were able to obtain additional information concerning the rating scale, designed by the Alexander Technique teachers on the evaluation panel, used in her 1995 study. She stated that the “judges sub-divided use/misuse into the following categories: head/neck, neck/torso, ribs/breathing, lower back/pelvis, shoulders/arms/hands, legs/feet, weight distribution/joint alignment, overall scores” (personal communication, March 31, 2014). Based on the information provided by Dr. Valentine, judges for our study rated the usage of the head and neck, upper back and chest, lower back, shoulders, arms, hands and wrists, legs and feet, and the evaluators’ perception of the performers’ overall body usage. These parameters were adapted from Dr. Valentine’s by an Alexander Technique teacher for the purposes of this specific study. It should be noted that “good usage and coordination” refers to using or positioning the body in a way that is conducive to freedom or ease of movement. Evaluators from different methods may have different opinions about what good body usage is, but in general, they look for positions or movements that facilitate performance. For example, the structure of the body will not be collapsed or show excessive tension. According to Conable and Conable (1995), in good movement, the head should lead while the spine follows. The head should be balanced on the spine in order for the rest of the body to find balance and to move freely.

2.4.2 Musical quality

Evaluators for the listening panel were also selected based on specific requirements. The evaluation panel in Valentine and colleagues' (1995) study included two members of a university music faculty to evaluate musical quality. Kinney (2004) had four music education professors on the evaluation panel in his study to assess expressive playing. Based on these studies, only experienced piano teachers were chosen to be a part of the listening panel. Teachers were either a piano professor at a university or a member of the Ontario Registered Music Teachers' Association. There were a total of four teachers on the listening panel. Similar to the viewing panel, and again based on Valentine and colleagues' (1995) study, judges were not informed of participants' conditions. Judges were able to listen to the clips more than once. As with Kinney's (2004) study, every evaluator was presented with a different, randomized order in which to listen to the clips.

The evaluation chart for the listening panel consisted of a series of 7-point rating scales, one for each parameter to be assessed (see Appendix C). Rating scales, including 5-point, 6-point, and 7-point Likert-type scales, have been used in other studies to rate musical quality (Britten, 2002; Kinney, 2004; Madsen & Geringer, 1999; Valentine, Fitzgerald, Gorton, Hudson, & Symonds, 1995; Vines, Krumhansel, Wanderley, Dalca, & Levitin, 2011). Based on these studies, a 7-point scale was used by the listening panel of this thesis project with 1 indicating an answer in the negative (ex. very harsh tone, very weak tone) and 7 indicating an answer in the positive (ex. very musical tone, very rich tone). Similar to the viewing panel, a 7-point rating scale provided judges with a broader scale with which to assess performances. The listening panel rated specific parameters pertaining to musical quality. Some studies mentioned the specifications that were rated. Musical aspects included expressivity, rhythm, and tone quality

(Britten, 2002; Vines, Krumhansel, Wanderley, Dalca, & Levitin, 2011). Correspondence with Dr. Valentine revealed further information on the assessment of musical quality in her 1995 study. She stated that judges had rated performances on a percentage scale, but a 7-point rating scale, not included in the final analysis, had been used as well. Evaluators rated musical and technical quality on “communication, expression, interpretation, tone quality, breathing, tempo, rhythm, dynamics, visible signs of tension/anxiety, other; in addition to overall musical and technical quality” (personal communication, March 31, 2014). Based on these studies, specific musical qualities that were rated included consistent tone, steady rhythm, expressive or inexpressive playing, appropriate expressivity, even sound, harsh or musical tone, weak or rich tone, suitable tone, consistent tone, and the perceived ease with which the playing requirement was performed. Expressivity was broken up into two groups as some performances could be considered very expressive, but may not be an appropriate kind of expressivity for the specific playing parameter. Because many people have a different idea of what good tone quality is, particular aspects were specified.

2.5 Measurement 2

The link to view video clips and listen to audio clips were sent to members of a viewing panel and listening panel with the purpose of asking judges to identify, between two performances, the post-somatic clip. The clips from the first method of evaluation were used, this time placed in a different order and paired to suit the purposes of this method of evaluation.

2.5.1 Body usage

Similar to the first method of evaluation, judges needed to meet certain conditions to be considered for the viewing panel. The panel consisted of seven certified somatic approach

teachers including one Alexander Technique teacher, two Body Mapping teachers, two Feldenkrais practitioners, and two Euthonie teachers. All judges were unaware of participants' conditions. Evaluators were presented with a total of 30 sets of video clips, each set consisting of a pre-somatic and post-somatic performance by the same pianist. The panel was to identify the post-somatic performance based on body usage and judges were able to view the clips more than once. The file names from each set of videos were placed side by side on a response sheet and evaluators would circle which performance they thought was post-somatic (see Appendix D).

2.5.2 Musical quality

As in the first method of evaluation, only teachers who were piano professors at a university or members of the Ontario Registered Music Teachers' Association were selected to be on the listening panel. For the second method of evaluation, graduate students in the Piano Pedagogy program at the University of Ottawa were also included. In total, there were eight members on the panel, all of whom were unaware of participants' conditions. Evaluators were presented with 30 sets of audio clips, each set including a pre-somatic and post-somatic performance from the same pianist. Judges were to identify the post-somatic performance through musical quality and were able to listen to the clips more than once. Similar to the response sheet for the viewing panel, the file names of each set of audio clips were placed next to each other on the sheet (see Appendix D). Evaluators indicated the performance they thought was post-somatic by circling their answer on the sheet.

CHAPTER 3: RESEARCH PAPER – THE EFFECTS OF SOMATIC APPROACH WORKSHOPS ON PIANO PERFORMANCE

There is a growing popularity among musicians to seek out somatic approaches such as the Alexander Technique, Body Mapping and Feldenkrais Method for the betterment of their playing. Benefits of these methods are often attested to in non-scientific literature. These advantages include relieving excessive tension, reducing pain as well as recovering from and preventing injuries, and increasing efficiency of movement (Barrett, 2006; Harper, 1995; Johnson, 2008; Kleinman & Buckoke, 2013). Fatigue is also claimed to be lessened and energy for various activities is increased (Alcantara, 1997; Arnold, n.d.; Peterson, 2008). Mental capabilities are also claimed to be enhanced through the study of somatic techniques (Iammatteo, 1996; Walker, 2009). In terms of music performance, improvements include better body usage at the instrument, fluid control over technique and better tone quality (Mayers & Babits, 1987; Nesmith, 2001; Weinberger, 1999). Music performance in general is enhanced as well (Buchanan, 2005; Conable & Conable, 1995; Conable, 2000; Fraser, 2011). While these benefits appear to be very desirable for musicians, it must be noted that these advantages were all impressions presented from a subjective perspective. However, there have been some scientific research that have provided support for these assertions.

These studies include both qualitative and quantitative research. Qualitative studies have advocated for an increase in body awareness as well as better posture and balance, improved self-image and confidence, improvements in responding to emotional situations, better tone quality, and an increased awareness of body usage at the piano (Kaplan, 1994; Knaub, 1999; Öhman, Åström, & Malmgren-Olsson, 2011). All data from these papers were collected through self-reports and testimonies. While qualitative research provides insightful subjective

information concerning the benefits of somatic approaches, quantitative research can aid in bolstering these assertions with solid data. Little and colleagues' (2008) paper examined the effectiveness of Alexander Technique lessons, massage therapy, and prescribed exercises on chronic or recurrent back pain. A total of 579 participants with chronic or recurrent back pain were divided into five groups: normal care, massage therapy, six Alexander Technique lessons, 24 Alexander Technique lessons, and exercise prescription. All patients were required to complete the Roland Morris disability questionnaire, designed for self-report, as well as an additional questionnaire that required participants to rate themselves on a 7-point scale concerning the health of their back. These were completed three times: before the interventions began, three months after the beginning of treatment, and one year after the treatments had ended. It was found that both exercise and lessons in the Alexander Technique had a lasting effect, even up to one year after the completion of treatments. Valentine and colleagues (1995) studied the experiential and behavioural effects of lessons in the Alexander Technique on music performance in high and low stress situations. Twenty-one music performance students were randomly assigned to a control group or to the experimental group. The experimental group received 15 Alexander lessons while the control group received no lessons. Every student performed individually at a final recital and were video recorded. Assessments were made by an evaluation panel consisting of two Alexander Technique teachers and two music faculty members. The Alexander teachers used a 7-point rating scale to evaluate body usage while the faculty members used a percentage scale to rate musical quality. All judges were unaware of whether or not the performer had taken lessons in the Alexander Technique. It was found that musicians who had had lessons were scored higher for both better body usage and musical quality.

Both qualitative and quantitative research contribute to our current understanding of the benefits of somatic approaches for musicians. Ives and Shelley (1998) compiled a review of literature in which case histories, case studies, qualitative, and empirical research were examined for the purpose of evaluating studies on the Feldenkrais Method. The authors found that a tendency toward improvement was usually indicated. However, they found that these changes were not as great as many anecdotal claims, consisting of self-reports and testimonies, declared them to be. The results and conclusions were found to be questionable due to a lack of control over the studies along with methodological issues. Ives and Shelley concluded that most of the support for the benefits of the Feldenkrais Method came not from research findings, but rather from the number of positive anecdotal reports and testimonies. The issue with subjective information is the possibility of bias influencing the assertions. Insightful information regarding the benefits of somatic approaches for musicians can be gleaned from the papers discussed in this review of literature. However, there is a lack of recent quantitative data to support these claims, especially pertaining to musicians. The purpose of our study is to objectively examine and measure the effects these methods might have on the body usage and musical quality of musicians. Specifically, this paper will focus on the effects in a specific context, one that is gaining in popularity – the music workshop.

Music workshops are a way in which concepts from these approaches can be introduced to musicians. These sessions often involve a participant who will perform on their instrument, after which the somatic teacher will identify problems that appear to hinder the musician's playing or singing. Somatic work is done to try to improve or correct those issues. The participant then plays again, after which the audience members and practitioners themselves claim they see or hear an obvious change in physical and/or musical aspects. Evidence of this

can be seen and heard in video recordings of somatic workshops. Physical changes that are seen include moving more efficiently at the instrument, using the body differently to produce sounds, breathing more effortlessly, and feeling more relaxed (CUNYQueensborough, 2011; Johnson, 2014; WildacresFlutes, 2012). Changes in musical quality include smoother, more resonant sound, as well as better tone (Hagitvardi, 2010; WildacresFlutes, 2014).

There appear to be many benefits from lessons in the Alexander Technique, Body Mapping and Feldenkrais Method. However, one must be careful in relying mostly on subjective data. Van Vugt and colleagues (2014) found that when comparing subjective and objective reports, subjective responses had a higher rate of positive feedback. This indicates that bias may be playing a role in making these assumptions. In music workshops, many positive responses are seen and heard, but the reliability of these claims needs to be supported. Self-reports and personal testimonies are not enough to substantiate the effectiveness of sessions. There also appears to be little on the subject of somatic approaches and pianists as most papers and books are written for musicians in general with no specific applications to pianists. Given the growing popularity of these methods for the purpose of bringing improvements to music performance, more research concerning somatic approaches and piano performance should be conducted to help us better understand the benefits that these methods can bring to musicians and pianists in particular.

There are two research questions to be answered by this study:

1. Do somatic approach workshops have an observable and quantifiable effect on body usage during piano performance?
2. Do somatic approach workshops have an observable and quantifiable effect on musical quality during piano performance?

Based on the accounts presented earlier, two hypotheses were made:

1. It is hypothesized that there will be improvements in body usage.
2. It is hypothesized that there will be improvements in musical quality.

Method

Participants

Ten pianists (eight women, two men, $M = 31.8$ years, age range: 23-66 years) were recruited for this study. All participants had studied and majored in piano at a university. Participants also had little to no previous experience with the Alexander Technique, Body Mapping and Feldenkrais Method. Three pianists received sessions in the Alexander Technique, four in Body Mapping, and three in the Feldenkrais Method.

Materials

All participants were informed of the playing requirements prior to the day of their test session (see Table 1). The scales and arpeggios were selected so that body usage could be

Table 1	
<i>Playing Requirements</i>	
<u>Playing Requirement</u>	<u>Specifications</u>
C-major scale in quarter notes	Hands together, two octaves, bpm=120
C-major scale in eighth notes	Hands together, two octaves, bpm=120
<i>Für Elise</i>	M. 1-22, no repeats
<i>Wilder Reiter</i>	Entire piece, with repeats
* Repeats were specified to ensure pieces were played for the same amount of time.	

evaluated from a linear perspective. Pianists generally move from one side of the piano to the other while playing scales and arpeggios, providing this linear motion. These two technical

requirements would also aid in evaluating tempo, rhythm, and evenness of sound in particular. The pieces were chosen for their contrasting musical styles. Examining both technique and repertoire would provide a balanced assessment on the effects of somatic approaches on piano performance. Scales were played first, followed by arpeggios, *Für Elise*, and *Wilder Reiter* in both the pre-somatic and post-somatic performances. A metronome was used when participants played scales and arpeggios during the test sessions. Two video cameras were used to record pianists' backs and right side during test sessions while a Yamaha Disklavier Mark III was used to record the audio portion. Because the recordings from the Disklavier were MIDI files and performances needed to be reproduced with audio files for the evaluation portion of the study, all performances were played back directly from the Disklavier once test sessions were completed and recorded using an iRiver H120 digital audio player. Audio recordings were simultaneously separated according to playing requirement to create the clips for the evaluation process. All video recordings were cut into short clips using Final Cut Pro X 10.1. The sound was removed from all video clips so that evaluations could be made based on body usage alone.

Procedure

All test sessions were held in the Piano Pedagogy Research Laboratory at the University of Ottawa. Upon arrival, participants completed a consent form and a questionnaire which collected demographic information along with background information concerning the number of years participants had played piano and the name of the university where they had studied piano. The questionnaire also asked participants to indicate whether or not they had had experience with the Alexander Technique, Body Mapping or Feldenkrais Method. Participants were then directed to the piano where they performed the playing requirements in the specified order while being recorded. Pianists received a 50-minute somatic session with a certified

Alexander Technique, Body Mapping or Feldenkrais teacher. A total of five teachers gave lessons to pianists. These included two Alexander teachers, two Body Mapping teachers, and one Feldenkrais practitioner. All somatic sessions were conducted in their usual manner.

Alexander and Feldenkrais teachers were present in the room while the pre- and post-somatic session recordings were being held. During the somatic session, Alexander and Feldenkrais teachers would physically manipulate participants as well as give verbal directions regarding body usage both away from the piano and at the instrument. A massage table and chairs were provided for use during these sessions. Lessons in Body Mapping were held online. This is common practice for this method to be offered via the Internet and it was the intention of this study to recreate workshop sessions as closely as possible. These sessions were also held individually with Body Mapping teachers verbally giving directions and making suggestions or bringing participants' attention to a particular issue both away from the piano and at the instrument. Chairs were provided for participants' use during these sessions. Participants performed the playing requirements in the same order after the lesson and were recorded again.

The evaluation process took place once all test sessions were completed, after which the data was analyzed. The video and audio recordings of the performances were cut into short clips and posted privately online. The link to view or listen to those recordings was sent to the evaluation panel along with the evaluation charts and response sheets. Upon the return of these documents, all responses were converted to percentage scores to facilitate graphing and comparison between pre-somatic and post-somatic session performances. Bar graphs were created using Excel, again to facilitate comparison between pre- and post-somatic performances. Statistical analysis was conducted with SPSS to determine the significance between scores.

Measurement 1

Video and audio clips of the test sessions were sent to two blind-review evaluation panels: a viewing panel to evaluate body usage and a listening panel to evaluate musical quality.

Body usage. The viewing panel included five somatic approach teachers consisting of two Alexander Technique teachers, one Body Mapping teacher, one Feldenkrais practitioner, and one Euthonie teacher. All judges were unaware of participants' conditions, that is, they were not informed of whether the performances they were watching were recorded before or after the somatic session. Judges were able to view the video clips more than once. To control for order effects, the order to view the videos were randomized for each judge – every evaluator received a different order in which to view the clips. The evaluation chart for the viewing panel consisted of 7-point rating scales, one for each rating parameter, to assess body usage. Judges were to watch each video clip and rate performances on the usage of the head and neck, upper back and chest, lower back, shoulders, arms, hands and wrist, legs and feet, and perceived overall body usage with 1 indicating very good usage and coordination and 7 indicating severe misuseage. Good usage of these body parts involve a structure that is not collapsed or excessively tensed and will produce movement that is free. During data analysis, the rating scale was reversed so that 1 indicated severe misuseage and 7 indicated very good usage for consistency with the musical quality scale.

Musical quality. The listening panel consisted of four piano teachers, all of whom were either piano professors at a university or experienced piano teachers who were members of the Ontario Registered Music Teachers' Association. Again, all evaluators were unaware of participants' condition. Judges were able to listen to the clips more than once. Every judge was presented with a different, randomized order of clips to control for order effects. The evaluation

chart for the listening panel consisted of a 7-point rating scale for each parameter to be assessed. Piano teachers were to rate performances on musical quality, specifically consistent tone, steady rhythm, expressive or inexpressive performance, appropriate expressivity, even sound, harsh or musical tone, weak or rich tone, suitable tone, consistent tone, and the perceived ease with which the playing requirement was played. For these scales, 1 indicated an answer in the negative (ex. very uneven sound, very unsuitable tone) while 7 indicated an answer in the positive (ex. very even sound, very suitable tone).

Measurement 2

The video and audio clips were again sent to a viewing panel and a listening panel, this time asking judges to identify the post-somatic performance.

Body usage. The viewing panel included seven certified somatic approach teachers consisting of one Alexander Technique teacher, two Body Mapping teachers, two Feldenkrais practitioners, and two Euthonie teachers. All evaluators were unaware of participants' conditions. Judges were presented with a total of 30 sets of video clips, each set comprised of a pre-somatic and post-somatic performance from the same pianist. The panel was to identify post-somatic performances by body usage and were able to view the clips more than once. The file names of each set of video clips were juxtaposed on a response sheet and judges were to indicate their answers by circling it on the sheet.

Musical quality. The listening panel included eight pianists who were either piano professors at a university, piano teachers that are members of the Ontario Registered Music Teachers' Association, or graduate students in the Piano Pedagogy program at the University of Ottawa. All judges were unaware of participants' conditions. Evaluators were presented with a total of 30 sets of audio clips, each one including a pre-somatic and post-somatic performance by

the same pianist. Judges were able to listen to the clips more than once. Basing their decision on musical quality, the panel was to identify post-somatic performances. A response sheet was created with the file names of all pre-somatic audio clips juxtaposed with their corresponding clip. For each set of audio clips, judges were to indicate which they thought was the post-somatic performance by circling their answer on the response sheet.

Results

Data Analysis for Measurement 1

Body usage. The pre-somatic and post-somatic average scores of each rating parameter were compared to view the physical differences between the performances. The score for head and neck increased from 62% to 67% while upper back and chest increased from 63% to 64%. The score for lower back increased from 67% to 69% and shoulders increased from 60% to 62%. The score for arms increased from 65% to 69%, hands and wrists increased from 66% to 69%, and legs and feet increased from 68% to 72%. The score for judges' perception of overall body usage increased from 62% to 66%. The average for overall change for all these parameters increased from 64% to 67%. The graph of these results shows an improvement in the post-somatic score for every parameter (see Fig. 1). At times, the changes are small, but the pattern is consistent. Paired sample *t*-tests were computed to calculate the statistical significance of the

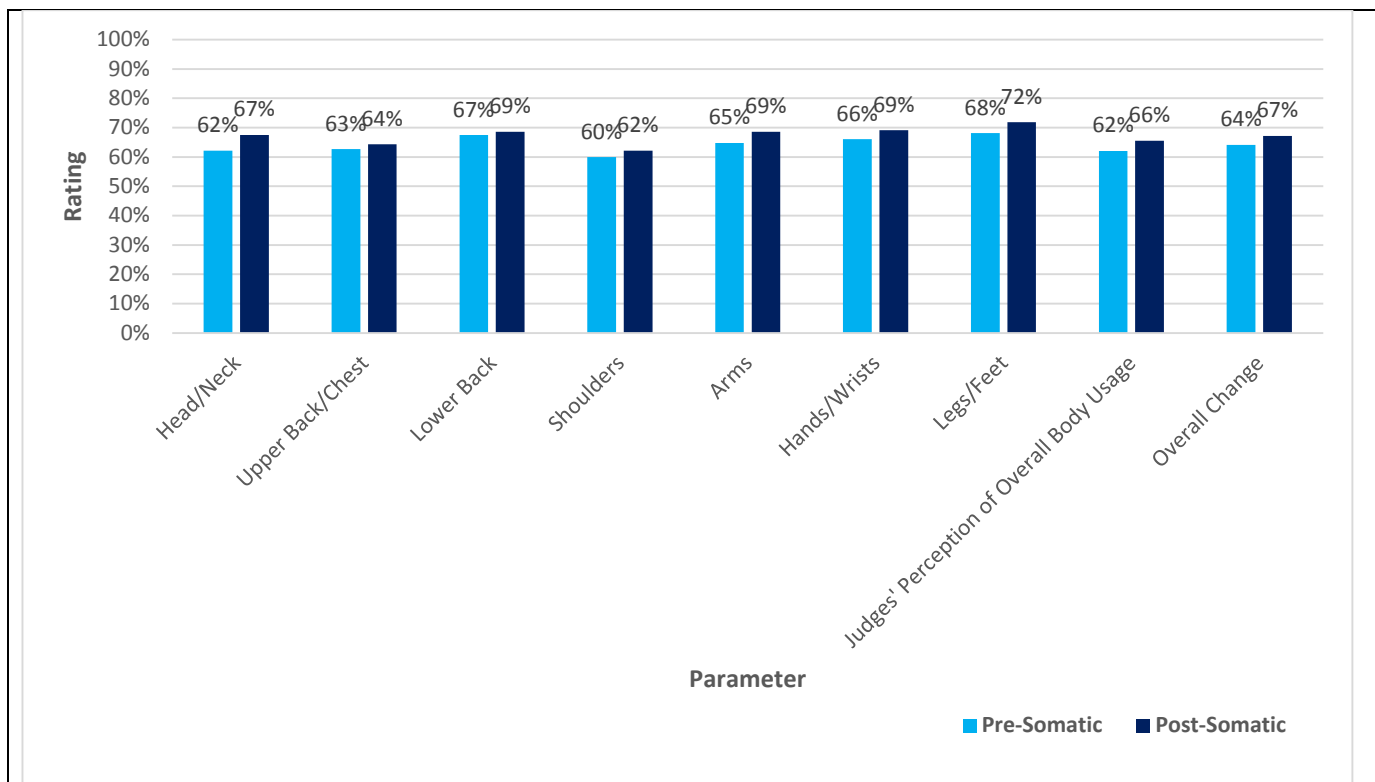


Figure 1. Changes in score for body usage between pre-somatic and post-somatic performances.

changes in score. Calculations showed a strong significant effect on the usage of the head and neck, $p = .02$, $d = 1$. No other significant effects were found (see Table 2). Although improvements in every rating parameter are indicated in the graph, only the usage of the head and neck had improved to the extent of being considered statistically strongly significant.

Table 2		
<i>Paired Samples Test for Body Usage</i>		
	<i>Cohen's d</i>	<i>Sig. (2-tailed)</i>
Head/Neck	1.00	0.02
Upper Back/Chest	0.29	0.51
Lower Back	0.19	0.65
Shoulders	0.29	0.42
Arms	0.50	0.17
Hands/Wrists	0.41	0.17
Legs/Feet	0.48	0.14
Judges' Perception of Overall Body Usage	0.59	0.24
Overall Change	0.54	0.20
* Significant at the $p < 0.05$ level.		

To further investigate the results, a chart was created to compare the ratings of each judge (see Fig. 2). From this, it was possible to see every individual's contribution to the final results.

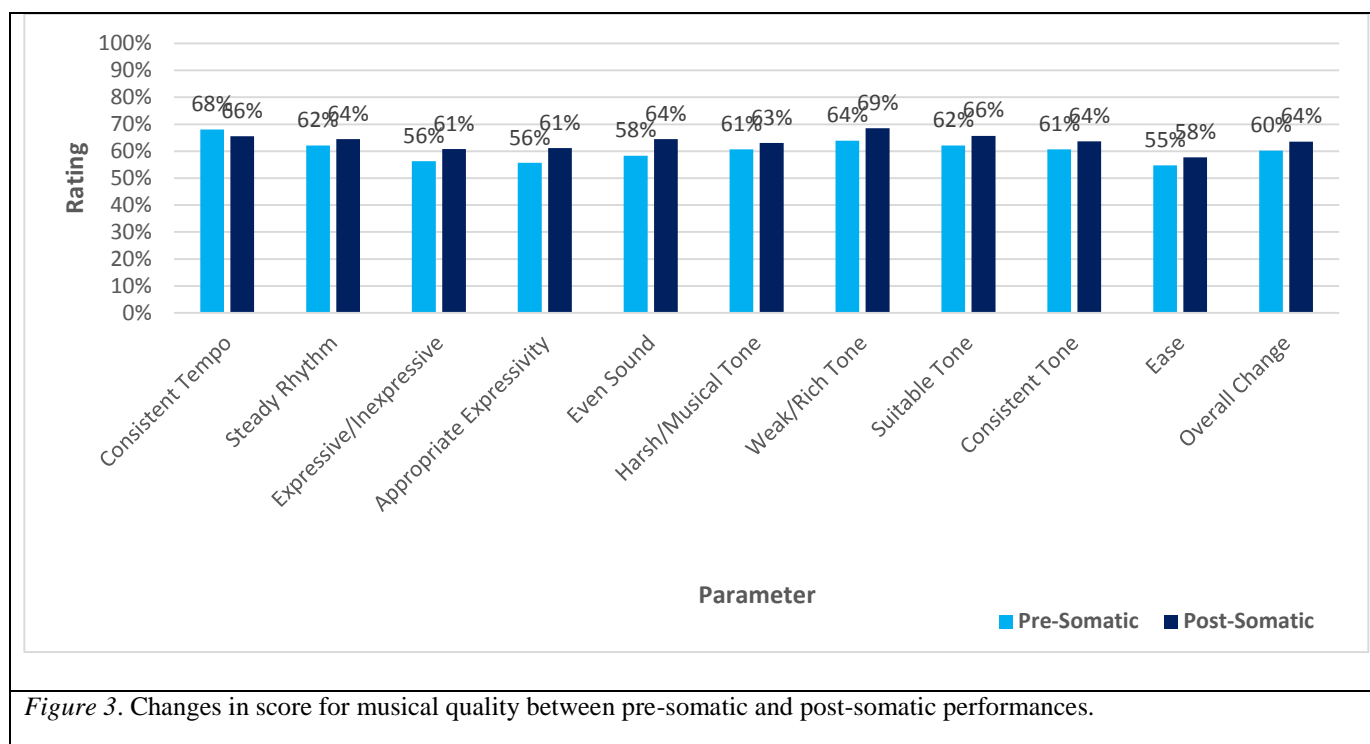
	Judge 1		Judge 2		Judge 3		Judge 4		Judge 5	
	Before	After	Before	After	Before	After	Before	After	Before	After
Head/Neck	67%	71%	48%	45%	72%	78%	59%	70%	64%	73%
Upper Back/Chest	65%	68%	48%	46%	74%	77%	60%	65%	66%	69%
Lower Back	65%	67%	49%	47%	80%	86%	67%	69%	75%	76%
Shoulders	60%	67%	47%	45%	68%	71%	56%	60%	69%	70%
Arms	63%	66%	49%	49%	68%	76%	66%	71%	76%	79%
Hands/Wrists	65%	67%	50%	49%	69%	75%	69%	74%	76%	78%
Legs/Feet	67%	71%	48%	47%	79%	84%	67%	75%	79%	83%
Judges' Perception of Overall Body Usage	63%	67%	48%	47%	67%	75%	64%	70%	67%	69%
Overall Change	64%	68%	48%	47%	72%	78%	63%	69%	71%	75%

Figure 2. Comparison chart for judges' ratings concerning body usage.

It was found that all judges, except for one, rated post-somatic performances higher than pre-somatic ones in every parameter. The only judge who did not show this rated post-somatic performances lower than pre-somatic ones in every parameter. The largest difference was a change of 3% in the usage head and neck with the rest of the parameters decreasing by one or two percent. The overall average score for this judge decreased from 48% to 47%. The overall average scores for all other evaluators increased between 4% and 6%.

Musical quality. The scores for musical quality were compared to examine if any changes had occurred after a somatic session. The score for consistent tempo decreased from 68% to 66% while steady rhythm increased from 62% to 64%. Scores for both expressive or inexpressive playing and appropriate expressivity increased from 56% to 61%. In the case of expressive or inexpressive playing, an increase in score indicated a positive change (i.e. the post-

somatic performance was more expressive than the pre-somatic one). The score for even sound increased from 58% to 64%. The average score for harsh or musical tone increased from 61% to 63% while weak or rich tone increased from 64% to 69%. Both these increases indicate that the post-somatic performance had a more musical and rich tone. Suitable tone increased from 62% to 66% and consistent tone increased from 61% to 64%. Ease of playing also showed an increase in score from 55% to 58%. Overall, the average score for all parameters increased from 60% to 64%. The graph shows a clear increase in the post-somatic score for each rating parameter with the exception of consistent tempo (see Fig. 3). Although the changes are



sometimes small, the pattern indicates an improvement. Paired sample *t*-tests were used to calculate the statistical significance of the difference in post-somatic scores for musical quality. A strong significant effect was found for even sound, $p = .04$, $d = .57$. No other significant effects were found (see Table 3). All rating parameters except for consistent tempo

demonstrated an improvement after a somatic session. A statistical analysis revealed that only even sound had improved to the extent of being considered statistically strongly significant.

Table 3 <i>Paired Samples Test for Musical Quality</i>		
	<i>Cohen's d</i>	<i>Sig. (2-tailed)</i>
Consistent Tempo	-0.15	0.52
Rhythm	0.16	0.58
Expressive/Inexpressive	0.41	0.19
Appropriate Expressivity	0.53	0.11
Even Sound	0.57	0.04
Harsh/Musical Tone	0.21	0.33
Weak/Rich Tone	0.52	0.15
Suitable Tone	0.33	0.18
Consistent Tone	0.27	0.30
Ease	0.21	0.27
Overall Change	0.39	0.12
* Significant at the $p < 0.05$ level.		

A chart comparing each judge's contribution to the final results was created for further analysis (see Fig. 4). The results of this comparison was much more scattered in comparison

	Judge 1		Judge 2		Judge 3		Judge 4	
	Before	After	Before	After	Before	After	Before	After
Consistent Tempo	59%	47%	54%	53%	94%	91%	65%	71%
Steady Rhythm	53%	36%	49%	53%	81%	87%	66%	76%
Expressive/Inexpressive	46%	52%	44%	61%	68%	69%	64%	61%
Appropriate Expressivity	50%	54%	39%	52%	67%	66%	63%	69%
Even Sound	48%	53%	43%	53%	80%	88%		
Harsh/Musical Tone	56%	51%	43%	54%	77%	83%		
Weak/Rich Tone	56%	58%	48%	58%	86%	90%		
Suitable Tone	58%	56%	43%	50%	81%	84%		
Consistent Tone	56%	57%	41%	48%	83%	87%		
Ease	46%	44%	38%	48%	77%	79%		
Overall Change	53%	52%	43%	53%	79%	83%	64%	68%

Figure 4. Comparison chart for judges' ratings concerning musical quality.

with the results of body usage. It was found that judges did not always agree with each other, yet there was never a 50% division of opinions between all four evaluators. Even for consistent tempo, the only parameter to have shown a decrease in average score, there was one judge who had rated the post-somatic performance higher. For a number of rating parameters, there was a judge who rated the parameter differently from all the other judges, although there was never a specific evaluator who differed from the rest.

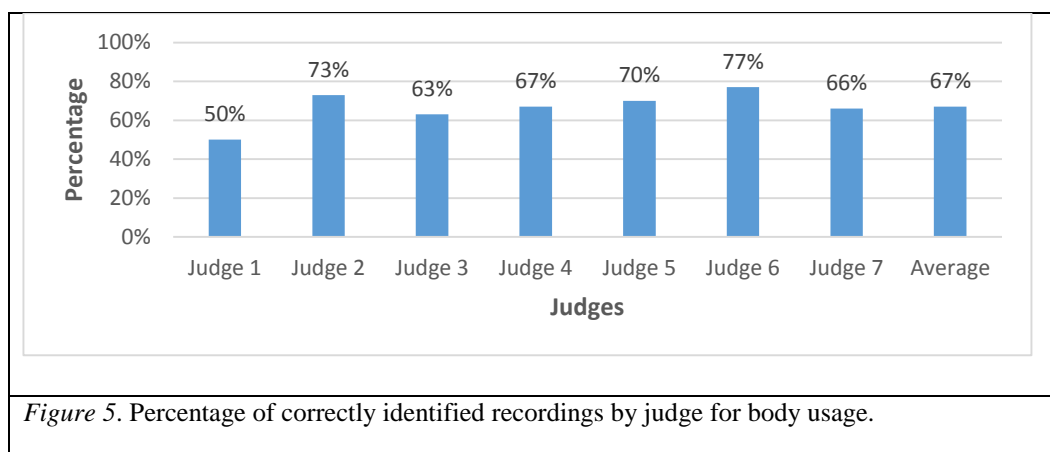
It should be noted that some judges did not complete all questions and that results were derived from the data that was returned. One evaluator did not complete the section on even sound, tone quality, and ease of playing for all performances. One other judge was not able to

access the video clips for *Für Elise* for the first method of evaluation and was unable to complete the questions concerning body usage for those particular performances.

Data Analysis for Measurement 2

For the second mode of evaluation, judges were presented with pairs of clips, each consisting of a pre- and post-somatic performance, and asked to identify the post-somatic clip.

Body usage. Each of the seven judges were numbered for anonymously graphing scores. Judge 1 was able to correctly identify 50% of post-somatic recordings. Judge 2 scored 73% while Judge 3 scored 63%. Judge 4 was able to identify 67% of post-somatic performances while Judge 5 was able to identify 70%. Judge 6 identified 77% correctly and Judge 7 identified 66%. The average score for correct responses across all judges was 67% (see Fig. 5).



Musical quality. Judges were again numbered to anonymously graph scores. Judge 1 was able to identify 41% of post-somatic recordings while Judge 2 identified 60%. Judge 3 was able to identify 67% of post-somatic performances and Judge 4 identified 50%. Judge 5 scored 80% while Judge 6 scored 57%. Judge 7 was able to correctly identify 50% of post-somatic performances while Judge 8 identified 43%. The average percentage of correctly identified post-somatic recordings across judges was 56% (see Fig. 6).

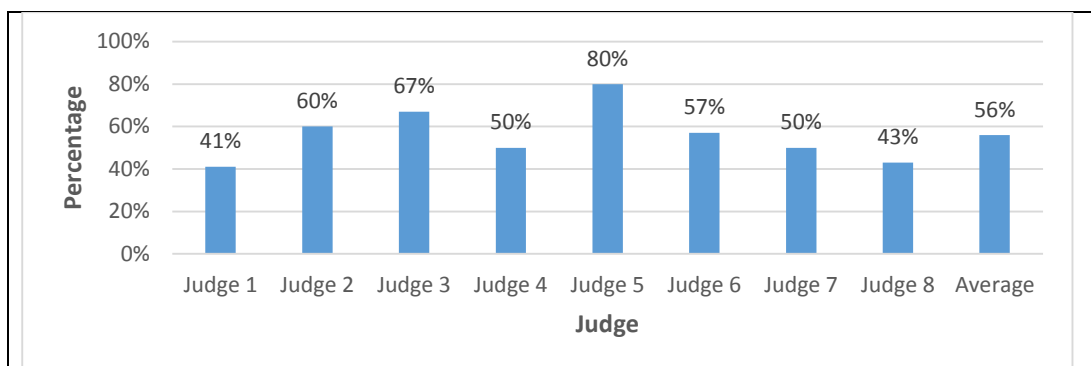


Figure 6. Percentage of correctly identified recordings by judge for musical quality.

Comparison between body usage and musical quality. To further examine the mean scores for body usage and musical quality, an independent samples *t*-test was conducted to determine whether there is a difference in identifying post-somatic performances based on one particular performance aspect. Because the average score for body usage was higher than the score for musical quality, the results seemed to indicate that it was easier to identify post-somatic performances through body usage. A statistical analysis was conducted to determine if this difference was significant. Calculations showed a marginally significant effect for identifying post-somatic performances through body usage, $p = .085$ (see Table 4). This result revealed that body usage may be a more obvious indicator of post-somatic performances than musical quality.

Table 4					
<i>Independent Samples Test</i>					
	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Equal variances not assumed	1.875	12.236	0.085	10.57143%	5.6373%

* Significant at the $p < 0.05$ level and marginally significant at the $p < 0.1$ level.

It should be noted that some judges did not indicate an answer for every set of recordings. Results were derived from the returned responses.

Comparison of Results from Measurement 1 and Measurement 2

There appears to be a disparity of results for musical quality between the first and second methods of measurement. In the first measurement, there is a consistent increase in every parameter. In the second measurement, the results are very uneven. Because the judges in the first measurement also participated in the second measurement, a comparison was made of the responses given in both measurements. It is difficult to make an accurate assessment of whether or not evaluators had the same opinion on post-somatic performances for technique in Measurement 1 and Measurement 2 as judges listened to scales in the first measurement and arpeggios in the second measurement, so only a comparison of *Für Elise* and *Wilder Reiter* was made. To analyze the consistency of responses across both methods of measurement, the number of times a judge identified a post-somatic performance in Measurement 2 correctly was compared to whether or not he or she rated the same post-somatic performance higher in Measurement 1. The ratings in the first method of measurement do not reflect the choices made in the second method of measurement very often. For *Für Elise*, two of the four judges showed a consistency of response between Measurement 1 and Measurement 2, 40% of the time. The other two showed consistency 30% of the time. For *Wilder Reiter*, one judge showed consistency 30% of the time, one judge showed consistency 20% of the time, and the other two showed consistency 10% of the time.

Discussion

The results of this study show that there are objectively observable effects immediately after one somatic lesson. The graphs depicted a consistent pattern of improvement from the pre-

somatic to the post-somatic performance. With the exception of consistent tempo, all rating parameters demonstrated a perceivable improvement. Two of those parameters, namely usage of the head and neck and even sound, showed statistical significance. This indicates that those improvements are most likely a result of the somatic session. The effect size for head and neck was large, indicating that there was a substantial difference between the pre-somatic and post-somatic average scores. The effect size for even sound was moderate, indicating a modest difference between pre- and post-somatic scores. Other parameters, specifically overall body usage, appropriate expressivity, and weak or rich tone, also exhibited moderate effect sizes, but statistical calculations indicated no significant change. It can be inferred that there were consistent observable changes in body usage and musical quality, although those differences were small. The lack of significant change may be attributed to the number and length of somatic sessions the pianists participated in. Having only had one lesson, it may have been difficult to readjust the body and fully integrate the information that was given during the session. However, the attempt to apply new principles seemed to have affected body usage and the musical quality of the performance, leading to constant patterns of improvement in these findings. If participants were given more time to apply concepts to their playing, perhaps more parameters would have shown a statistical significance.

The results of this study also reveal that it is possible to identify post-somatic performances through body usage. The average score for correctly identified post-somatic recordings was above chance level, indicating that judges were less likely to be simply guessing when identifying the clips. There must have been, to some degree, a visibly noticeable difference between the two clips for judges to correctly decide which recordings took place after a somatic session. The results for musical quality show otherwise. The average score was quite

low, indicating that judges were not in agreement when identifying post-somatic performances. From this, it can be implied that there appears to be a less noticeable difference between the two performances, making it more difficult to determine which clip was taken after a somatic session. A comparison between the mean scores for correctly identified recordings showed that it is easier to recognize post-somatic performances through body usage than musical quality. The effect of one somatic lesson appears to have a greater influence over immediate changes in body usage. From the comparison of mean scores in the second mode of evaluation, it seems as if a single session has an immediate and beneficial effect, although mild, on body usage, but its impact on musical quality is not very apparent or detectable. The statistical analysis revealed a marginally significant effect when assuming body usage had a greater influence over decisions than musical quality. This implies that the presence of visual information may affect an evaluator's decision concerning which performance took place after a somatic session.

It was hypothesized that there would be an observable difference in body usage and musical quality after a single somatic session. The results of this study support this prediction. In the first method of evaluation, the results showed an increase in score for every rating parameter except for one. This indicates that there was a consistent change from the pre-somatic to the post-somatic performance. Because the graphs indicate a clear and constant pattern in the increase of scores, it can be assumed that there is an observable difference after a somatic session. It can also be inferred that the change is a positive one as the scores are higher for post-somatic clips. In the case of body usage, this finding was not the result of a few judges rating performances higher than others, but the result of all judges, with the exception of one, rating post-somatic performances higher for every parameter. Although the increase in scores were small, the pattern was consistent. This could account for the constant improvement seen in the

final results. It implies that, on average, there is a positive change in body usage after having participated in a somatic workshop. In the case of musical quality, the judges' contributions were less consistent. The findings were likely to have been the result of an agreement among most of the judges, though there was not one specific judge who disagreed with the others in every parameter as in body usage. It can be concluded, then, that everyone has a different opinion concerning what good musical quality is. There does not appear to be a standardized or concrete concept of what is acceptable. However, overall average scores show an improvement in almost every parameter, indicating that positive changes have occurred.

Combined with the results from the statistical analysis, it can be assumed that although the changes in both body usage and musical quality were quite small, there is a clear pattern towards improvement. The results from the second evaluation showed a slight discrepancy with the findings of the first. In the case of musical quality, it seems that judges were, on average, at chance level, indicating that while the evaluators were attempting to identify post-somatic performances as best they could, the end result was not much better than people who would be guessing. This implies that the difference between the performances may not have been very obvious. It appears to be difficult to clearly discern between pre- and post-somatic performances through musical quality alone once clips of performances are juxtaposed. However, when evaluations were based on body usage, it was found that evaluators were mostly able to identify post-somatic performances. It should be noted that physical improvements may have also been the result of participants becoming accustomed to their surrounding environment during the test session. Overall, the results indicate that there is a difference in post-somatic performances for body usage. However, any difference in post-somatic performances for musical quality appears to be less obvious. It could be implied then, that perceivable changes in musical quality are

slight. It may also be suggested that body usage does not always have a positive effect on musical quality as this aspect did not show a similar percentage of correctly identified post-somatic performances as body usage. Perhaps if physical changes were fully integrated, more obvious improvements in musical quality will follow as well.

The findings of this study differ somewhat from the feedback seen and heard in somatic workshops. In these sessions, audience members are apparently able to clearly discern changes in body usage and musical quality (CUNYQueensborough, 2011; Johnson, 2014; Hagitvardi, 2010; WildacresFlutes, 2014). These developments appear to be quite big and immediately noticeable. However, this study shows that although there are perceivable differences between the pre- and post-somatic performances, they are quite small, with the exception of the head and neck and the production of even sound. These findings support the results of van Vugt and colleagues' (2014) paper. The authors stated that subjective reports show more positive responses than objective reports. However, when an objective perspective was used to evaluate the same changes, the amount of improvement became smaller. From this, it can be inferred that it is more likely for people to notice improvements when they themselves are directly involved in sessions. In the context of our study, many obvious and positive changes were noticed in a workshop situation, but when a blind-review panel evaluated performances objectively, the differences were shown to be smaller and perceived less easily. Responses tend to become subjective once respondents allow a preconceived notion of what a performance ought to be like to influence their decisions concerning the effects of a session. Because the evaluations for this study were completed by a review panel blind to participants' condition, judges were not partial toward one performance over another, providing an objective basis from which unbiased results

could be obtained. Thus, we can conclude that most changes are small but observable, although changes in musical quality are much harder to detect than differences in body usage.

These results suggest that changes in body usage and musical quality, which seemed to be so apparent in workshop situations, are not as easily perceived as was previously thought. While it is clear that there is a noticeable pattern of improvement between pre- and post-somatic performances, the difference in change is rather slight. It appears to be especially difficult to discern a difference in musical quality. This suggests that visual information may be an influential factor in differentiating between pre- and post-somatic performances. This study improves our understanding of the immediate effects that a single somatic session can have on a pianist's body usage and musical quality. Through an objective examination of performances, it was possible to determine the amount of change that had occurred after a somatic lesson. Blind-review evaluation panels allowed for this external insight on a situation that is normally quite subjective. This paper is one of the few quantitative studies that have examined somatic approaches, specifically the workshop and its immediate effects, from an objective perspective. This is an issue which had not previously been thoroughly researched from a scientific perspective.

There were, however, limitations to this study. One limitation was the small number of participants. A larger sample size may be able to confirm if the changes found in this study are consistent with a greater number of musicians. Perhaps the results would have been more statistically significant if there were more participants. If more pianists had participated, it may have been possible to involve a control group. This might have helped strengthen or identify changes that occurred. Another limitation was the selection of pieces. Although they were familiar to most of the pianists, the participants may not have been as familiar with the act of

playing those particular pieces. Perhaps if the participants had selected repertoire that they had practiced with great detail and attention, applying new changes may not have been as difficult. The difference in teaching styles during somatic sessions may also have had an effect on the results of this study. Some pianists may have responded differently to the way in which a somatic teacher imparted concepts. Incomplete responses may have contributed to the limitations of this study as well. If every evaluator had answered every question, the results may have been different. Another limitation was the length of the study. This was a short-term project so only immediate outcomes could be examined.

Conclusion

The results from this study indicate that there are many perceivable changes in pianists' body usage and musical quality after having participated in a single somatic session. However, contrary to the feedback from workshops, the change is very small and not as immediately apparent. Because the evaluations were completed by blind-review panels, objective results concerning the effects of single somatic sessions were obtained. This brought new insight into the examination of the immediate effects of somatic workshops as this was an issue that had not been previously researched from this perspective. It was also found that in comparing performances, visual information appears to be an influential factor. Additional research should be conducted to further examine the effects of somatic workshops. One such study could involve testing participants immediately after the somatic session, testing participants again after 30 minutes, and again the next day. An analysis could be conducted to determine if the effects are still apparent at each test session. Another study could involve a longer period of training. For example, a comparison could be made between performances before a week of intensive workshop sessions and after the week has been completed. An analysis could be done to

examine if there is a more noticeable effect after a lengthier training session in comparison with the single somatic workshop. Future research is required to advance our understanding concerning the full extent to which somatic workshops have an effect on pianists.

CHAPTER 4: CONCLUSION

4.1 Summary

Music workshops are a popular means through which concepts from somatic methods can be introduced to musicians. Often, positive feedback concerning changes in the performer's body usage and musical quality are seen and heard in these sessions. Judging from the reactions of audience members and the practitioners themselves, these differences appear to be substantial. However, van Vugt and colleagues (2014) have stated that there are a higher number of positive responses from subjective reports than objective reports. Because the reactions heard in these workshops are all from people directly involved in the session, these responses are considered subjective. To date, there have been few objective and quantitative studies to examine the workshop and its effects. There have also been few writings specific to somatic approaches and pianists. This provided the premise for this study – to objectively and quantifiably assess the effects that somatic approach workshops have on pianists. The research questions to be answered were these:

1. Do somatic approach workshops have an observable and quantifiable effect on body usage during piano performance?
2. Do somatic approach workshops have an observable and quantifiable effect on musical quality during piano performance?

A methodology was developed to address these questions. Based on the research of others, it was possible to create methods of evaluations that could objectively assess performances after a somatic workshop and provide quantitative data. The first method of evaluation involved blind-review panels rating performances on a 7-point scale. The second method of evaluation also

involved blind-review panels, this time comparing clips of two performances and identifying the post-somatic one.

Results from the first method of evaluation revealed that there was a consistent pattern in rating post-somatic performances higher than pre-somatic ones for both body usage and musical quality. Statistical analysis revealed that most of these changes were not very large or statistically significant. Results from the second method of evaluation showed that there was a change in body usage after having had one somatic session. The average score for correctly identified performances was above chance level, indicating that judges were perceiving a difference and were not merely guessing. However, it appeared to be more difficult to identify post-somatic performances through musical quality. The average score for correctly identified performances was close to chance level, indicating that evaluators were mostly guessing, at least in many cases. A comparison of the average percentage of correctly identified post-somatic clips for body usage and musical quality through statistical analysis revealed that it may be easier to identify post-somatic performances through body usage than musical quality. It can be concluded then, that there are perceivable differences between performances that take place before and after a somatic session. However, those changes are small and not as obvious as was previously thought. It can also be concluded that visual information is an influential factor in identifying post-somatic performances. This finding is in line with a study that examined the impact of visual information on evaluating music performance. Tsay (2012) found that judges rely primarily on sight to decide the winners of a music competition. The author stated that the “dominance of visual information emerges to the degree that it is overweighted relative to auditory information” (Tsay, 2012, p. 14580).

4.2 Exploratory Analysis: Comparison of the Alexander Technique, Body Mapping and Feldenkrais Method

A comparison of the results by somatic approach was conducted to examine the influence each method had on the final outcome for the first method of evaluation. A bar graph depicting the amount of change that occurred between the pre-somatic and post-somatic performance for every parameter was created for each somatic approach. The amount of change that occurred was then graphed on a separate bar graph to compare the differences between somatic approaches (see Appendix E).

4.2.1 Body usage

It was found that the Alexander Technique had the greatest amount of change between pre-somatic and post-somatic performances for every rating parameter. There was a 9% increase between the pre-somatic and post-somatic average scores for overall change in body usage for the Alexander Technique. The post-somatic average score for Body Mapping decreased by 1% while the score for the Feldenkrais Method increased by 2%. This could suggest that the Alexander Technique has a greater influence on changes in body usage than Body Mapping or the Feldenkrais Method. It is interesting to note that the most significant change was the usage of the head and neck. The Alexander Technique emphasizes leading bodily movements with the head and neck and beginning lessons often focus on this concept. It can be implied that because the Alexander Technique focuses on the head and neck during beginning lessons and appears to have the greatest impact on body usage, the statistically significant change in the usage of the head and neck could be attributed to this method. Alexander lessons also produced large differences in the usage of the shoulders, arms, and perceived overall body usage. Ratings for performances after an Alexander session were also higher for each parameter, a clear indication

of the strong impact of this method. It was found that judges do not necessarily rate their own methods higher. Sometimes, evaluators from other methods rated a method not their own higher while judges of that method did not. Judges do not appear to be partial to their own methods and mostly rated post-Alexander performances higher than post-somatic performances in other methods.

4.2.2 Musical quality

In the case of musical quality, it was found that the Feldenkrais Method produced the greatest amount of change between pre-somatic and post-somatic performances for every rating parameter. Overall, there was a 6% increase in the average score for all parameters. The Alexander Technique showed an increase of 2.3% and Body Mapping showed an increase of 2.1%. This could suggest that the Feldenkrais Method has a greater effect on musical quality than the other two methods. However, the difference between the scores for musical quality is not as large as the difference between scores for body usage. This may be due to the discrepancies between judges concerning what acceptable musical quality is.

4.2.3 Implications of findings

The results of these comparisons provide an interesting insight into the influence each method has on body usage and musical quality. The Alexander Technique appears to have a greater impact on body usage than the other approaches while the Feldenkrais Method appears to have a greater effect on musical quality. This may be because the Alexander and Feldenkrais workshops were conducted with a hands-on approach. Body Mapping sessions were conducted online with only verbal instructions to guide the pianist. This may have affected the final results. While the numbers from this comparison are not strong enough to formulate a conclusion, it provides a possibility for future research. Further research could examine whether or not some

methods are more effective than others with a larger sample group. Another study could investigate the long-term effects of such training. Would the differences between these methods remain the same or would they all eventually achieve the same results? Do some methods begin with rapid and immediate improvements followed by very little change while others begin with few obvious differences but demonstrate a steady improvement over a period of time?

Additional research could examine these issues further.

4.3 Insight into a Judge's Thought Process on the Second Method of Evaluation

Several evaluators provided feedback concerning how they felt about both the first and second method of evaluation. One such judge was Alan Fraser, certified Feldenkrais practitioner and accomplished pianist, who was on the viewing panel. Mr. Fraser was involved with the second method of evaluation and provided a short written report on his thought process during assessments and has agreed to make these comments public:

It was often difficult to make a choice, for a number of reasons:

- 1) There was no sound. The most telling indicator of a positive change evoked by a somatic intervention would be improvement in the sound quality.
- 2) The films were in slow motion. I found it difficult to evaluate the motions because they don't look like anything I am used to seeing.
- 3) I would often notice a difference in the degree of motion, let's say more flamboyant motions with larger range in the second clip. However, this is no guarantee that the second clip had been taken after the somatic intervention. It is possible that a somatic

intervention would lead to the pianist economizing their movements and finding the smoother, quieter way physically.

I finally took to looking at the B version before the A version, to see if I was picking B as the “after” clip more often than A simply because when I viewed B I was more used to the player’s style. When I watched B before A, more often I found it hard to see any difference.

Overall, I picked the freer, larger amplitude movements as the post-intervention clip. But there were two or three where I went with the quieter movement as being post-intervention. One or two I left blank because I really couldn’t tell any difference.

(personal communication, August 19, 2014)

Mr. Fraser stated that he had a difficult time identifying post-somatic performances without any sound. This is an interesting point as Mr. Fraser mostly teaches the Feldenkrais Method in the context of piano lessons. The slow motion of the clips may have been the result of technological issues. Only one other evaluator reported a similar problem although this did not occur for all videos. The remaining judges stated that all the videos they viewed played in real time. Overall, Mr. Fraser provided valuable insight on how an evaluator might make their decisions concerning post-somatic performances and it also clearly shows how difficult it was. According to this juror, the changes were never obvious.

4.4 Contribution and Need for Further Research

This thesis is one of the few quantitative studies that have examined the effects of somatic approaches on pianists in particular. Scientific studies had not previously investigated,

to the author's knowledge, somatic approach workshops and their effects on musicians. This thesis provides a basis from which further research may be conducted. It developed a methodology for the objective evaluation of somatic sessions. Through the usage of blind-review evaluation panels and rating scales, it is possible to obtain unbiased responses concerning the effects that workshop sessions may have. Future research is needed to further our understanding of these methods. One such study could examine the long-term effects of a single somatic session. Interviews could be held with participants periodically to verify if they have been applying principles to their playing. Another test session could be held and performances evaluated to examine if there are noticeable differences between the pre-somatic and post-somatic recordings. Another study could examine the effects of a week of intensive workshops. An evaluation could be made of post-somatic performances to determine if there are more obvious changes after participants have attended sessions every day. The results of this research indicate that perceivable changes were small. However, these differences were external. It is possible to conduct a study with EMG to determine if there are any immediate changes on an internal level, such as changes in muscular activity. Although this thesis provides insightful information concerning the effects of somatic approaches on piano performance, further research is needed to advance our understanding of this issue.

APPENDIX A

Pianists – Letter of Information, Consent Form, Questionnaire



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Letter of Information

Title of the study: The effects of somatic approaches on the physiology and tone quality of pianists

Principal Investigator: Grace Wong
Department of Music
University of Ottawa

Project Supervisor: Dr. Gilles Comeau
Department of Music
University of Ottawa

Invitation to Participate: You are invited to participate in the abovementioned research study conducted by Grace Wong, supervised by Dr. Gilles Comeau. We are conducting a research study to examine the possible effects somatic training approaches (i.e. Alexander Technique, Feldenkrais, Body Mapping) may have on pianists. So far, there has been little scientific data to show that these methods can help to change a pianist's body usage at the piano as well as their tone. This project aims to discover whether or not this is true. We are currently recruiting participants and need your assistance. Should you wish to volunteer and take part in the study, or if you would like more information, please do not hesitate to contact Grace Wong or Dr. Gilles Comeau.

Purpose of the Study: The objective of this study is to examine whether the perceived effectiveness of somatic approaches can be accounted for through external observation in terms of posture and movement at the instrument as well as the tone quality and expressiveness of the performance.

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Participation:

Participants must:

- a. Be 18 years of age or older;
- b. Be currently studying piano as their major instrument in university OR have studied piano as their major instrument in university;
- c. Have had no regular sessions in the Alexander Technique, Body Mapping, or Feldenkrais Method.

Pianists will be required to come to the University of Ottawa's Piano Pedagogy Research Laboratory located at Perez Hall, Room 204, 50 University St., Ottawa, ON, K1N 6N5.

Pianists will be asked to complete a few general questions regarding their piano playing history. Participants will then play a C Major scale at two different tempi (120 bpm in quarter notes and eighth notes) followed by a C Major arpeggio at two different tempi (112 bpm in quarter notes and eighth notes). Pianists will then play m. 1 – 22 of *Für Elise*, no repeats followed by *Wilder Reiter* in its entirety with repeats. Following this brief playing session, pianists will be given a 30 minute somatic training session with a somatic approach teacher after which the scales, arpeggios, and pieces will be played again. Video and audio recordings will be taken throughout the testing session.

Benefits:

This study stands to benefit the piano playing community and the music community in general. There has been little quantitative research done on the observable effects of somatic training on various aspects of piano playing. The focus of this study is to determine if there are visually and audibly observable changes in piano performances after a somatic training session. Should this project demonstrate that there are positive results concerning visual and audible aspects of performance, the music society would be provided with a quantifiably proven way to examine and improve on playing posture and tone quality.



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Risks:

Participants may feel slightly tired after the testing session due to playing or somatic training. The somatic training session will not be physically taxing although levels of physical discomfort may vary from person to person.

Confidentiality and anonymity:

Data collected for participants in the study will only be identified through alphanumeric identification. Any personal information collected (name, gender, email) will only be used in the context of this study and the consent form containing this information will be kept securely and removed from the laboratory at the end of testing sessions so that it will not be possible to link participants to the data collected. Audio and video data collected will only be associated with the alphanumeric identification of the participant and will be securely stored. Video will be watched by the blind panel for the purposes of evaluating posture and body usage during piano playing. Any personal information provided by the participant will not be shared with members of the blind panel. Only selected people directly involved with the research project will have access to the data during this time.

Conservation of data:

All data will be destroyed five years after the completion of this study.

Compensation:

Participants will not receive any form of compensation for participating in this study.

Voluntary participation:

Participation in this study is strictly voluntary and participants have the right to refuse to answer any questions during this session without fear of reprisal or ill treatment. Participants can choose to withdraw from the study at any time while the experimental session is being conducted. After the testing session, participants will not be able to withdraw from the study since it will not be possible to identify the data associated with them. Participants do not have to provide any reason or justification to withdraw.



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Information about study results: We would be pleased to share the results of this project with you. In order to receive a summary of the results, please contact Grace Wong.

If you have any questions or require more information about the study itself, you may contact the principal investigator or her supervisor at the numbers mentioned herein.

If you have any questions with regards to the ethical conduct of this study, you may contact the Protocol Officer for Ethics in Research, University of Ottawa, Tabaret Hall, 550 Cumberland Street, Room 154, Ottawa, ON K1N 6N5, tel.: (613) 562-5387 or ethics@uottawa.ca.

Please keep this form for your records.

Thank you for your time and consideration.

Grace Wong

Apr. 2014

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Consent Form

- Title of the study:** The effects of somatic approaches on the physiology and tone quality of pianists
- Principal Investigator:** Grace Wong
Department of Music
University of Ottawa
- Project Supervisor:** Dr. Gilles Comeau
Department of Music
University of Ottawa
- Invitation to participate:** I am invited to participate in the abovementioned research study conducted by Grace Wong, supervised by Dr. Gilles Comeau.
- Purpose of the study:** The objective of this study is to examine whether the perceived effectiveness of somatic approaches can be accounted for through external observation in terms of posture and movement at the instrument as well as the tone quality and expressiveness of the performance.
- Participation:** I:
- a. Am 18 years of age or older;
 - b. Am currently studying piano as their major instrument in university OR have studied piano as their major instrument in university;
 - c. Have had no regular sessions in the Alexander Technique, Body Mapping, or Feldenkrais Method.

My participation will consist of completing a few general questions regarding my piano playing history and then playing a C Major scale at two different tempi (120 bpm in quarter notes and eighth notes) followed by a C Major arpeggio at two different tempi (112 bpm in quarter notes and eighth notes). I will then play m. 1 – 22 of *Für Elise*, no repeats followed by *Wilder Reiter* in its entirety with repeats. Following this brief playing session, I will be given a somatic training session with a somatic approach teacher after which the scales, arpeggios, and pieces will be played again. Video and audio recordings will be taken throughout the testing session. This session has been scheduled for (date) at the Piano Pedagogy Research Laboratory in the University of Ottawa, and will take approximately 60 minutes to complete.

- Risks:** My participation in this study may result in my feeling slightly tired after the testing session due to playing or somatic training. I have received assurance from the researcher that every effort will be made to minimize these risks (i.e. I may take a break if I need to).
- Benefits:** My participation in this study will benefit the piano playing community and the music community in general. There has been little quantitative research done on the observable effects of somatic training on various aspects of piano playing. The focus of this study is to determine if there are visually and audibly observable changes in piano performances after a somatic training session. Should this project demonstrate that there are positive results concerning visual and audible aspects of performance, the music society would be provided with a quantifiably proven way to examine and improve on playing posture and tone quality.
- Confidentiality and anonymity:** I have received assurance from the researcher that the information I will share will remain strictly confidential. I understand that the contents will be used only for the purposes of this study and that my confidentiality will be protected. Anonymity will be protected through alphanumeric identification. Any personal information collected (name, gender, email) will only be used in the context of this study and the consent form containing this information will be kept securely and removed from the laboratory at the end of testing sessions so that it will not be possible to link me to the data collected. Audio and video data collected will only be associated with the alphanumeric identification of the participant and will be securely stored. Video will be watched by the blind panel for the purposes of evaluating posture and body usage during piano playing. Any personal information provided by the participant will not be shared with members of the blind panel. Only selected people directly involved with the research project will have access to the data during this time. Any data collected for this project will be used for this project only.
- Conservation of data:** The data collected (personal information, consent form, answers to general questions, video and audio recordings) will be kept in a secure manner (kept under lock and key, password protected on laptop). Only selected people directly involved with the research project will have access to the data

during this time. All data will be destroyed five years after the completion of this study.

Compensation: I will not receive any form of compensation for participating in this study.

Voluntary participation: Participation in this study is strictly voluntary and I have the right to refuse to answer any questions during this session without fear of reprisal or ill treatment. I can choose to withdraw from the study at any time while the experimental session is being conducted. After the testing session, I will not be able to withdraw from the study since it will not be possible to identify the data associated with me. I do not have to provide any reason or justification to withdraw.

Acceptance: I, _____,
agree to participate in the above research study conducted by Grace Wong of the Department of Music, Faculty of Arts, University of Ottawa, which research is under the supervision of Dr. Gilles Comeau.

If I have any questions about the study, I may contact the principal investigator or her supervisor.

If I have any questions regarding the ethical conduct of this study, I may contact the Protocol Officer for Ethics in Research, University of Ottawa, Tabaret Hall, 550 Cumberland Street, Room 154, Ottawa, ON K1N 6N5
Tel.: (613) 562-5387
Email: ethics@uottawa.ca

There are two copies of the consent form, one of which is mine to keep.

Participant's signature:

Date:

Researcher's signature:

Date:

Questionnaire

First Name:	Last Name:
Gender: Male / Female	Year of Birth:
Email (optional):	
List your musical background Number of years playing piano: University(ies) at which you studied piano:	
Have you ever had sessions in the Alexander Technique, Body Mapping, or the Feldenkrais Method? Yes / No	

APPENDIX B

Blind-Review Evaluation Panel – Letter of Information



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Letter of Information

Title of the study: The immediate effects of somatic approaches on the body usage and sound quality of pianists

Principal Investigator: Grace Wong
Department of Music
University of Ottawa

Project Supervisor: Dr. Gilles Comeau
Department of Music
University of Ottawa

Invitation to Participate: You are invited to participate in the abovementioned research study conducted by Grace Wong, supervised by Dr. Gilles Comeau. We are conducting a research study to examine the possible immediate effects somatic training approaches (i.e. Alexander Technique, Feldenkrais, Body Mapping) may have on pianists. So far, there has been little scientific data to show that these methods can help to change a pianist's body usage at the piano as well as their tone. This project aims to discover whether or not this is true. We are currently recruiting participants and need your assistance. Should you wish to volunteer and take part in the study, or if you would like more information, please do not hesitate to contact Grace Wong or Dr. Gilles Comeau.

Purpose of the Study: The objective of this study is to examine whether the perceived effectiveness of somatic approaches can be accounted for through external observation in terms of posture and movement at the instrument as well as the tone quality and expressiveness of the performance.



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Participation:

Participants must:

- a. Be 18 years of age or older;
- b. Be currently teaching piano either in university or privately (at least 10 years teaching experience and/or a member of ORMTA or similar organization) OR;
- c. Be a somatic approach teacher (Alexander Technique, Feldenkrais Method, Body Mapping).

The blind panel will be required to watch or listen to clips from the piano performance testing sessions held at the Piano Pedagogy Research Laboratory. Performances will be sent to all members of the blind panel. There will be two parts to the evaluation process. In the first part, members of the panel will be required to answer questions on a rating scale provided by the principal investigator concerning the performances in the areas of either posture and body usage, or tone quality and expressiveness. In the second part, judges will be asked to guess which performances took place after the somatic session. After completing the viewing or listening process and answering the questions, members of the panel will send their responses along with the recordings (for the protection of privacy of the pianists) back to Grace Wong by July 31, 2014 at latest.

Benefits:

This study stands to benefit the piano playing community and the music community in general. There has been little quantitative research done on the observable effects of somatic training on various aspects of piano playing. The focus of this study is to determine if there are immediate, visually and audibly observable changes in piano performances after a somatic training session. Should this project demonstrate that there are positive results concerning visual and audible aspects of performance, the music society would be provided with a quantifiably proven way to examine and improve on playing posture and tone quality.



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Confidentiality and anonymity:

Data collected from participants in the study will only be identified through alphanumeric identification. Any personal information collected (name, mailing and email addresses) will only be used in the context of this study (i.e. communication with participant) and the consent form containing this information will be kept securely so that it will not be possible to link participants to the data collected.

Conservation of data:

All audio and video data will be destroyed five years after the completion of this study.

Compensation:

Participation in this study is strictly on a voluntary basis. Participants will not receive any form of compensation for participating in this study.

Voluntary participation:

Participation in this study is strictly voluntary. Participants can choose to withdraw from the study at any time. After submitting responses, participants will not be able to withdraw from the study since it will not be possible to identify the data associated with them. Participants do not have to provide any reason or justification to withdraw.

Information about study results:

We would be pleased to share the results of this project with you. In order to receive a summary of the results, please contact Grace Wong.

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If you have any questions or require more information about the study itself, you may contact the researcher or his/her supervisor at the numbers mentioned herein.

If you have any questions with regards to the ethical conduct of this study, you may contact the Protocol Officer for Ethics in Research, University of Ottawa, Tabaret Hall, 550 Cumberland Street, Room 154, Ottawa, ON K1N 6N5, tel.: (613) 562-5387 or ethics@uottawa.ca.

Please keep this form for your records.

Thank you for your time and consideration.

Grace Wong

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APPENDIX C

Evaluation Charts for Body Usage and Musical Quality

Evaluation Chart

Complete the following rating chart for each video clip. **Rate the performance on the use or misuse of the following parts of the body.** Circle or highlight the number that best reflects what you perceive. Remember to answer the question at the very end of the chart. **Do not forget** to indicate the file name in the appropriate space.

Rating Scale

1 = very good usage and coordination	2 = good usage and coordination	3 = slight misusage	4 = slight misusage likely to cause impairment to performance	5 = misusage likely to cause impairment to performance	6 = serious misusage	7 = severe misusage
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FILE NAME:							
Head/Neck	1	2	3	4	5	6	7
Upper Back/Chest	1	2	3	4	5	6	7
Lower Back	1	2	3	4	5	6	7
Shoulders	1	2	3	4	5	6	7
Arms	1	2	3	4	5	6	7
Hands/Wrists	1	2	3	4	5	6	7
Legs/Feet	1	2	3	4	5	6	7
General Impression of Overall Body Usage	1	2	3	4	5	6	7

Do you think that this clip was recorded BEFORE the somatic session or AFTER? Please circle or highlight your answer:

Before

After

Evaluation Chart

Complete the following rating chart for each audio clip. Circle or highlight the number that best reflects what you perceive. Complete all sections unless inapplicable to the clip. Remember to answer the question at the very end of the chart. **Do not forget** to indicate the file name in the appropriate space.

FILE NAME:																
Scales																
Very inconsistent tempo							Very consistent tempo		Very unsteady rhythm							Very steady rhythm
1	2	3	4	5	6	7		1	2	3	4	5	6	7		
Für Elise																
Very inexpressive							Very expressive		Very inappropriate expressivity							Very appropriate expressivity
1	2	3	4	5	6	7		1	2	3	4	5	6	7		
Wilder Reiter																
Very inexpressive							Very expressive		Very inappropriate expressivity							Very appropriate expressivity
1	2	3	4	5	6	7		1	2	3	4	5	6	7		
ALL CLIPS																
Very uneven sound							Very even sound		Very harsh tone							Very musical tone
1	2	3	4	5	6	7		1	2	3	4	5	6	7		
Very weak tone							Very rich tone		Very unsuitable tone							Very suitable tone
1	2	3	4	5	6	7		1	2	3	4	5	6	7		
Very inconsistent tone							Very consistent tone		Played with much effort							Played with much ease
1	2	3	4	5	6	7		1	2	3	4	5	6	7		

Do you think that this clip was recorded BEFORE the somatic session or AFTER? Please circle or highlight your answer:

Before

After

APPENDIX D
Response Sheets

Response Sheet

Which was the “after” clip? Circle “A” or “B” to indicate your response.

* “After” refers to clips taken after the somatic approach session.

Video 1	A	B
Video 2	A	B
Video 3	A	B
Video 4	A	B
Video 5	A	B
Video 6	A	B
Video 7	A	B
Video 8	A	B
Video 9	A	B
Video 10	A	B
Video 11	A	B
Video 12	A	B
Video 13	A	B
Video 14	A	B
Video 15	A	B
Video 16	A	B
Video 17	A	B
Video 18	A	B
Video 19	A	B
Video 20	A	B
Video 21	A	B
Video 22	A	B
Video 23	A	B
Video 24	A	B
Video 25	A	B
Video 26	A	B
Video 27	A	B
Video 28	A	B
Video 29	A	B
Video 30	A	B

Response Sheet

Which was the “after” clip? Circle “A” or “B” to indicate your response.

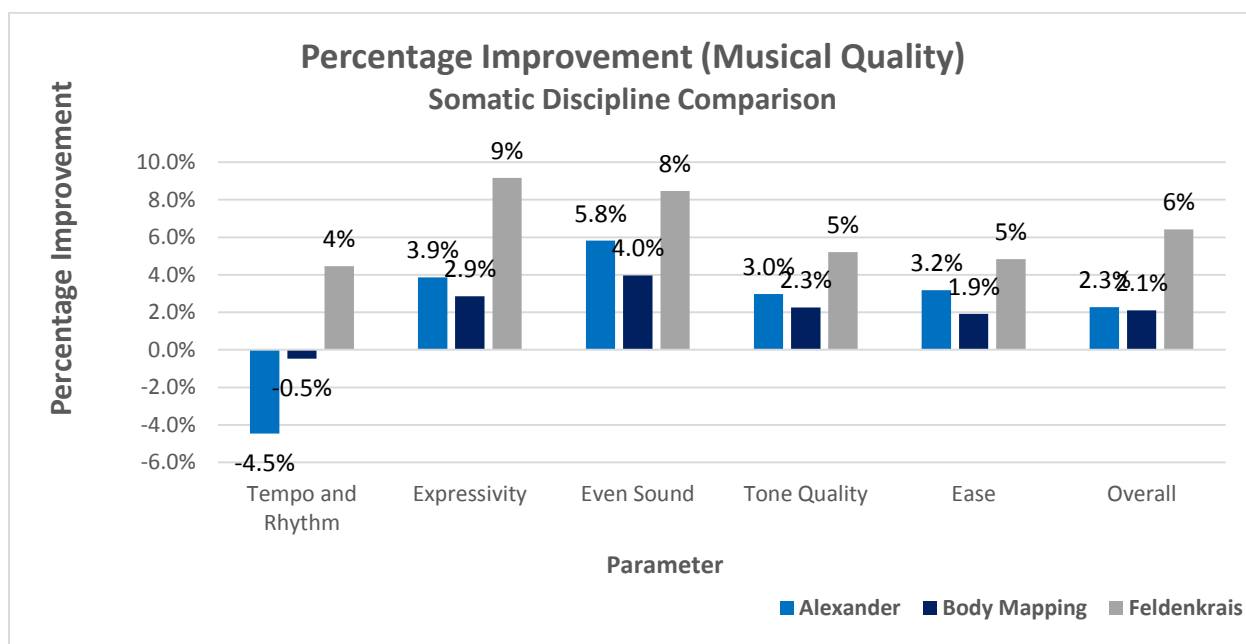
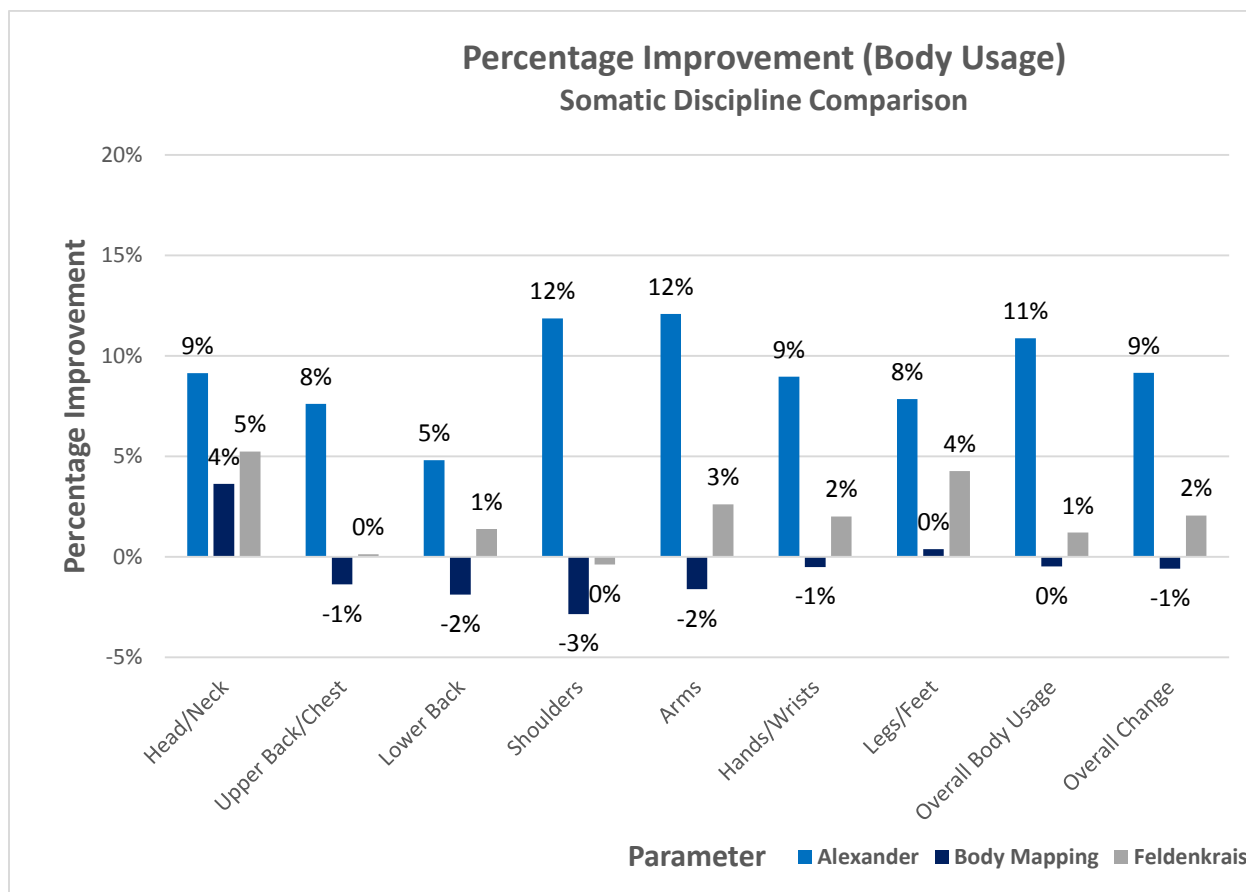
* “After” refers to clips taken after the somatic approach session.

Audio 1	A	B
Audio 2	A	B
Audio 3	A	B
Audio 4	A	B
Audio 5	A	B
Audio 6	A	B
Audio 7	A	B
Audio 8	A	B
Audio 9	A	B
Audio 10	A	B
Audio 11	A	B
Audio 12	A	B
Audio 13	A	B
Audio 14	A	B
Audio 15	A	B
Audio 16	A	B
Audio 17	A	B
Audio 18	A	B
Audio 19	A	B
Audio 20	A	B
Audio 21	A	B
Audio 22	A	B
Audio 23	A	B
Audio 24	A	B
Audio 25	A	B
Audio 26	A	B
Audio 27	A	B
Audio 28	A	B
Audio 29	A	B
Audio 30	A	B

APPENDIX E

Bar Graphs for Comparison of the Alexander Technique, Body Mapping and Feldenkrais

Method



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