THE WINSTON CHURCHILL MEMORIAL TRUST OF AUSTRALIA

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2010 CHURCHILL FELLOW

To Undertake the Professional Certificate Program in Injury-Preventive Keyboard Technique

with Barbara Lister-Sink

Salem College, Winston-Salem, North Carolina USA

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Signed Kathryn Hui Tan

Dated 25th October 2012
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INTRODUCTION

The core of piano technique lies in the brain having total control over the whole body and to this end requires total awareness. It had never occurred to me how important this was until I came across the teachings of Barbara Lister-Sink.

The Lister-Sink Method is an injury preventive keyboard technique based on sound physiological and biomechanical principles - a knowledge of how the body works and how it works best with the instrument, so that one can achieve the maximum result from the minimum effort. It allows for well-coordinated movements at the piano which keeps the pianist fully available for music making and musical expression.

The opportunity to pursue my investigation further came in the form of the Winston Churchill Fellowship Trust. I was able to spend four weeks at Salem College working with Lister-Sink.

I have had highly skilled, professional teachers in the past. They were all very encouraging and supportive. Most importantly, they gave me the inspiration to carry on with my music and I would like to pay them tribute — Siew Geok Chua (Kuching, Malaysia); the late Hui Ling Chan (Kuching, Malaysia); Alexandra Vinokurov (Sydney, Australia) and Noretta Conci (London, UK).

I would like to thank Professor Martin WB Jarvis, my immediate supervisor and Acting Head of School, Creative Arts and Humanities, Charles Darwin University, Darwin, NT, Australia for his support of my application, and Barbara Lister-Sink for her reference and guidance. My appreciation also goes to fellow colleagues for their assistance.

I am grateful to the Churchill Trust for this opportunity to enable me to move a step further in my professional development.
EXECUTIVE SUMMARY

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PROJECT  
To undertake the Professional Certificate Program in Injury Preventive Keyboard Technique with Barbara Lister-Sink

VENUE  
Salem College, 601 South Church Street, Winston-Salem, NC 27101, USA

MENTORS  
Barbara Lister-Sink - Director of School of Music, Salem College and founder of the Lister-Sink Method. Lister-Sink is an internationally acclaimed pianist and teacher. She is acknowledged as a global pioneer and leader in injury-preventive keyboard technique.  
Susan Perkins – Violinist and Alexander Technique Instructor, School of Music, Salem College

MAJOR LESSON AND CONCLUSIONS

Many books have been written about piano technique but they do not provide information about how the body works, or how to make use of this information and apply it to the instrument.  
An understanding of how the human body is constructed and how it is designed to move should be taught to every student starting to learn an instrument. They can then use this knowledge in conjunction with the knowledge about how their instruments work.
William Conable, Professor of Cello, Ohio State University School of Music “observed that students move according to how they think they are constructed rather than how they are actually structured. …..Conable’s observations are currently being confirmed by discoveries in neurophysiology concerning the locations, functions, and co-ordinations of body maps in movement”.\(^1\)

However, all the knowledge in the world is not going to guarantee a technique if awareness is missing. One has to be able to sense and control the state of the muscles of the body.

A healthful technique is one which involves the whole body where different parts work in harmony with each other, directed by the brain. The essential components are kinesthetic awareness, optimal skeletal alignment and efficient muscle use.

**DISSEMINATION AND IMPLEMENTATION**

Upon certification, I plan to promote and teach the Lister-Sink Method. My first challenge would lie in successfully acquiring the necessary skills to demonstrate such a technique. Only then can I be confident to transmit this knowledge to my peers and my students.

I would also be mindful of the fact that this training requires time and a high level of sensory perception. Being able to communicate and convey this knowledge effectively will also be dependent on the student’s physiology, individuality and learning style.

In the meantime, I am restructuring my teaching to include physiology, biomechanics and principles of good co-ordination.

I will recommend at my institution that:

- a course in body education be made compulsory for all music students. This could be in the form of the Alexander Technique that will be taught by a certified Alexander teacher.
- Introduce a unit in teaching injury preventive keyboard technique based on the Lister-Sink Method.
- Promote discussions with my colleagues on the subject of injury preventive techniques and practice strategies.
- Disperse information via contributions to music magazines, newsletters and piano teachers’ associations.
- Present workshops to teachers.
- Present papers at conferences.
- Identify a healthcare team to treat musicians’ injuries
- Subscribe to the Australian Society for Performing Arts Healthcare and attend conference December 1\(^{st}\) - 2\(^{nd}\) in Sydney, NSW, Australia

\(^1\)Barbara Conable, What Every Musician Needs to Know About the Body, (Oregon:Andover Press) Pg.5
PROGRAMME

Salem College, Winston-Salem, North Carolina USA

25th August 2012  Orientation for Students
29th August 2012  Start of Fall Semester
15th September 2012  Attended Salem’s Organ Legacy Celebrations and Organ Recital by Kimberley Marshall and Timothy Olsen
19th September 2012  Attended Guitar Recital “Poet of the Guitar” by Maestro Francesc de Paula Soler
27th September 2012  End of my Fellowship in Winston-Salem

From 29th August to 26th September: I attended lectures, piano lessons, Alexander Technique lessons and observed Lister-Sink teaching students of different levels as well as students who had injuries.

MAIN BODY

DEFINITION OF TECHNIQUE

I have been playing and teaching the piano for twenty seven years. It has always been fascinating to observe the many and varied playing techniques, some of which look easy and effortless, yet some evoke a sense of discomfort and tension in my own body.

I was taught in the tradition of the Associated Board of the Royal Schools Examination syllabus. As in most examination requirements, scales and arpeggios make up the “Technical Work”.

I was under the impression that learning scales and arpeggios was supposed to contribute to one’s piano technique!

Of course there were also studies by Hanon and Czerny which we had to learn, sometimes under great pain and duress. Looking back, I realize that it was because I did not have the necessary technique to play them with ease and freedom.

The Professional Certificate Program in Injury Preventive Keyboard Technique is the first of its kind to be offered in the United States at the Salem College School of Music. It attracts a host of students, performers and teachers from different backgrounds. Some are injured while others wish to learn how to play with or teach such a technique to help prevent playing-related injuries. One of Lister-Sink’s goals which has been realized, as attested by her injured students, is the successful rehabilitation and retraining she has been able to provide.
The aim of the Lister-Sink Method is “to convey effectively the biomechanical knowledge, sensations and co-ordinations necessary to prevent injury and to promote consistently good co-ordination and development of full artistic potential.”

Lister-Sink defines healthful, “enlightened” technique as the optimal co-ordination of the whole body, directed by the brain, with the instrument.

The predicament that teachers face is that there are so many confusing technical approaches. It could also be the confusing language and terminology used in trying to present technical ideas. Lister-Sink strongly believes that there is a need to establish a common language and terminology between science and music. In the first instance, a universally accepted, scientifically informed definition of technique is long overdue.

To this end, teachers must choose the correct language to emphasize so that potentially confusing language can be avoided. Using clear and plain English wording is more effective than using highly technical terminology or confusing, contradictory language.

To illustrate this point: the concept of ‘relaxation’ and ‘release’ are two different states. Relaxed muscles are different from muscles that are released. Using the word ‘alignment’ is preferable to ‘posture’ when referring to how one sits on the piano bench. The word ‘posture’ immediately connotes rigidity as we have been told to “sit up straight” all through our childhood days!

INJURIES

Some pianists can go through their career without any incident. But for those who suffer injury in some form, this can have serious implications. People are often surprised to learn that playing the piano can be an occupational hazard! Injuries can result from misuse and or overuse of the muscles. These playing related disorders can also be triggered by existing conditions or mal-adaptations of the body to trauma or stress. Sometimes the source of the injury may not be readily evident and misdiagnosis of the condition may lead to unsuitable or unnecessary surgical procedures.

When the wrong treatment is prescribed, matters are compounded that may have physiological, emotional and psychological implications for the patient.

Financially, it could prove disastrous if there is a loss of income and escalating medical bills. Insurance policies may not provide adequate cover.

SALEM COLLEGE

Injured keyboard players who have chosen to go to Salem College would have found it the perfect place for healing. The campus consists of several restored historic buildings spread over sixty-four acres of beautiful grounds and very majestic trees. There is an emphasis on personal wellness and holistic health as evidenced by the services provided for students in the gymnasium with programs to meet their physical, emotional and spiritual needs.

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2Barbara Lister-Sink, Instruction Manual 2007 Pg. 1
The School of Music is located in the Fine Arts Centre on campus where Lister-Sink works with her students who include pianists and organists.

Those who require medical evaluation and attention are referred to the appropriate healthcare professionals. Lister-Sink then works with and in conjunction with such professionals, to develop an optimal training strategy based as much as possible on her model. It may be a modified form of the Lister-Sink method but one that still follows the same principles.

Salem provides a stress free environment where the pace is unhurried and expert guidance, care and support are available. There is no sense of competition and no judgments passed. Students have credited Lister-Sink with establishing:

“the perfect place not only to recover from my injury but also to further my musical understanding and ability” as summed up by Brent Neuenschwander, BM in Organ Performance, Salem College; also studies at Indiana University, Bloomington.

Neuenschwander was injured after an intensive learning and practice session in an effort to learn a long piece in one and a half weeks. After this exercise he developed pain in his fingers, hands, and the arms. He was unable to drive a vehicle or perform everyday activities. Neuenschwander acknowledges the expertise and knowledge of Lister-Sink in saving his career, and also Susan Perkins who taught him the Alexander Technique in the foundational work.

Regina Pozzi, Instructor in Piano at Salem College who also holds a Masters in Organ Performance, completed the Professional Certificate Program in 2009/2010 and confirms that this program has been life-changing. She had never been able to express her musical ideas due to an inadequate technique. The Lister-Sink Method has given her the technical freedom and ability to fulfil her artistic potential.

INJURY PREVENTIVE KEYBOARD TECHNIQUE

The three essential components of this technique are:

- Kinesthetic Awareness
- Efficient Muscle Use
- Optimal Skeletal Balance and Alignment

KINESTHETIC AWARENESS

Kinesthetic awareness is the key to embodiment. A pianist can be primarily focused on getting the correct notes and rhythm but not on how the actions in playing are carried out.

“Concentration means directing attention to one thing and shutting out everything else. Concentrating on one thing, even something as important as the music, excludes the numerous other things that also affect our performance, such as the quality of our movement”.³

Students are seldom trained to attend to their playing apparatus. As a result of concentrating on the music, they lose awareness of what is going on as they play in their fingers, hands and arms.

³Thomas Mark, What Every Pianist needs to know about the Body (Chicago: GIA Publications, Inc.) Pg 9
The kinesthetic sense is our sixth sense which tells us about “our size, our position, whether we are moving and, if so with what quality.”

“When we expand our awareness to include the parts that have been fixed and stiff, they come alive”

In playing the piano, we need to develop our kinesthetic awareness to include not just fingers and hands but also the arms, back, legs and the entire body, eg: muscles that move our arms are located in the chest and back.

Pianists can also accumulate muscle tension in the arms, hands, shoulders, neck and back which can lead to injuries and malfunctions as the body tries to compensate. The channels for energy transmission from the torso through to the arms are blocked as muscles become chronically contracted. As a result, movements are impaired and inefficient.

In his book “Somatics”, Thomas Hanna compares chronically contracted muscles to “a motor that one cannot turn off. It continues to run and burn up energy.”

A constant buildup of lactic acid from the combustion of glycogen in the process continues to irritate the muscle’s sensory cells.

Hanna’s book introduces the concept of sensory motor amnesia which he describes as “a habituated state of forgetfulness. It is a memory loss of how certain muscle groups feel and how to control them. And because this occurs within the central nervous system, we are not aware of it, yet it affects us to our very core.”

An interesting point Hanna brings up is that the human body, upon reaching a certain age begins to degenerate. He is adamant that this degeneration occurs because we equate aging with degeneration. In doing so, we give the body an excuse to bring on the process whereby the structure breaks down and functions are lost.

What one expects of life will shape the outcome of the process. Instead, if one looks at aging as a process of ongoing growth and progress, this attitude complemented with basic somatic skills, will bring about a positive outcome.

EFFICIENT MUSCLE USE

Being kinesthetically aware of the state of our muscles enables us to control their use. In moving at the piano, some degree of tension or contraction is required, but it is in knowing how much muscular effort to use and being able to release the muscles that an efficient technique can be developed.

Injury results from muscles being in chronic contraction and accumulation of tension.

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4 Conable, B. What Every Musician Needs to know about the Body Pg. 45
5 Mark, T. What Every Pianist needs to know about the Body Pg. 9
6 Thomas Hanna, Somatics (Da Capo Press) Pg. 13
7 Ibid. Pg. xiii
“A healthful keyboard technique allows for the muscles not only to contract at will but also to be continually refreshed and restored to their original state of release.8 The body has a remarkable shock-absorption or shock-transmittal system built into it. This system incorporates the body’s ability to relax muscles instantaneously, thereby releasing the joints and allowing shock to be transmitted freely from the object of resistance through the limbs to the spine.”9

In the training of the “Basic Stroke” (Refer Page 11), the student has to maintain kinesthetic awareness in order to sense the state of the muscles in the upper arm (the brachialis biceps) that will be engaged to lift the forearm. After sound production, time is taken to scan the whole body and ensure that all unnecessary muscle tension in the forearm is released.

OPTIMAL SKELETAL BALANCE AND ALIGNMENT

The skeletal system is structured to hold the body upright and allow movements from the central axis. “With its highly engineered joints, the living skeleton is intimately connected with the muscular system. It provides a framework of stiff levers and stable plates that permits a multitude of movements”.10

One of the foundation steps in the Lister-Sink Method is to develop a sense of the spine, sitting bones and core support. In the absence of this, body use will be compromised.

The method directions include balance torso on the sitting bones; allow spine gently to lengthen; allow shoulders to remain released; free neck of unnecessary tension; balance head lightly on torso; allow arms to be supported by torso; sense feet supported by floor and allow legs to fall gently apart. These are cues for optimal body use at the piano. Kinesthetic awareness needs to be maintained throughout the exercise.

THE ARM AND HAND ARCHES

In the Lister-Sink Method, there is also the alignment of arm and hand bones that we assemble to form natural arches. The hand arch is formed with the metacarpal bones in the hand as the keystone and provides the best structure for supporting and transmitting weight. (See Photo 1)

THE TRAINING

Due to the complex physical co-ordinations, this technique must be taught through the senses – kinesthetic, tactile, aural and visual in a hands-on manner. It is impossible to learn the technique by watching a video or reading a book about it.

Lister-Sink uses what she terms “Professional Tactile Guidance”. Touch is used in a professional manner, using only the tips of the fingers and very lightly, usually on the head, neck, upper back, arms, hands and fingers and only if the video camera is running. The hands-on guidance of a trained teacher is invaluable in the training of this technique. (See Photo 2)

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8 Lister-Sink, B. Keeping it Simple: Fundamentals of a Healthful Piano Technique from A Symposium for Pianist and Teachers (Ohio:Heritage Music Press) Pg. 195
9 Ibid Pg.212
10 Steve Parker, The Human Body Book (London: Dorling Kindersley Ltd) Pg. 34
The Lister-Sink Method is based on deep, long-term learning through neuromuscular programming. Due to the nature of this training, a certain amount of time is required for the brain to absorb new information and learn new patterns of movement.

In this respect, it is also a time to unlearn inefficient body use patterns at the piano. Research and studies have shown that “the brain is capable of change and its neuroplasticity has been used to transform lives of people with disabilities and learning difficulties”\textsuperscript{11}.

A leading researcher on brain plasticity, Michael Merzenich claims that when learning occurs in a way consistent with the laws that govern brain plasticity, the mental “machinery” of the brain can be improved so that we learn and perceive with greater precision, speed and retention.\textsuperscript{12}

Studies also show how mental practice can be an effective tool in the learning process. This knowledge is especially important in giving hope to injured keyboard players in their retraining. If physical practice is not sustainable, they can do mental practice during the rehabilitation.

“One reason we can change our brains simply by imagining is that, from a neuroscientific point of view, imagining an act and doing it are not as different as they sound....Brain scans show that in action and imagination many of the same parts of the brain are activated. That is why visualizing can improve performance”. \textsuperscript{13}

At the initial stages of retraining, instructions have to be given and monitored consciously. This takes a lot of mental effort and can prove demanding. It is important to stay focussed and not to lose attentiveness to the task at hand.

The “Basic Stroke” is the fundamental gesture and sensation of sound production in the Lister-Sink Method. The process of learning this gesture is broken down into four components to be mastered one at a time:

- Easy and efficient lift of the forearm
- Free fall of the forearm
- Optimal alignment of arm and hand arches on landing
- Instantaneous release of muscle contraction

When the “Basic Stroke” is mastered, very simple notation is introduced. This tests the pianist’s ability to focus on sound production without getting distracted by the notes on the page. Multiple notes are gradually added to the “Basic Stroke” as more and more notes are added in one arm stroke. Muscles and joints function in the same way as in performing the one note stroke.

Piano works are assigned for these exercises that reinforce the concepts and help the student to fully master the co-ordinations.

This fundamental training provides a solid foundation for learning to play rapid, perpetual motion passages on the keyboard with the highest level of co-ordination, in which there is no accumulation of muscle tension.

\textsuperscript{11}Norman Doidge, The Brain that Changes Itself (London: Penguin Books)
\textsuperscript{12}ibid. Pg. 47
\textsuperscript{13}ibid. Pg 204/205
BENEFITS OF HEALTHFUL, WELL CO-ORDINATED TECHNIQUE

- Prevents discomfort, fatigue, strain and injury
- Promotes a sense of physical well-being while playing
- Enhances suppleness, speed and facility
- Increases tonal power
- Broadens dynamic range and tonal palette
- Promotes greater concentration
- Reduces performance anxiety
- Keeps the player fully available for listening and music making

“ONE SIZE FITS ALL”

Pianists are always disadvantaged when it comes to instruments. We cannot always perform on the same instrument that we use for practising. We therefore have to readjust and figure out very quickly how to work with the piano concerned.

Another difficulty that pianists face is that there are no keyboards of different sizes to cater to smaller hand sizes. Pianists with smaller hands (usually females) are clearly at a disadvantage when playing pieces with huge stretches and repeated octaves on the standard keyboard. If this exercise is taken to the extreme, the hands could become fatigued and sore.

An article by E. Yoshimura and Kris Chesky 14 mentions the fact that Yamaha and Steinbuhler have built and sold narrow sized keyboards. However, Yamaha stopped making these keyboards in 2003 due to the lack of demand after fourteen years of production. Steinbuhler still offers keyboards that can be temporarily or permanently placed into any piano.

Incidentally, there are three pianos at Salem College that have been retrofitted with Steinbuhler’s smaller keyboards – 7/8 scale and 15/16 scale. Students with smaller hands are able to practice big stretches or intervals comfortably and then perform on the standard sized keyboard. The transition to a standard sized keyboard is not problematic as the brain is able to remap the bigger distance.

In terms of ergonomics, this is an ideal solution although smaller sized keyboards are hard to come by!

Therefore, there is even more reason to learn injury preventive techniques that does not only prevent playing related disorders but also allows one to play with the best co-ordination of the whole body with the instrument. In this way, the pianist can maintain a sense of well-being, control and self-empowerment.

14 The Application of an Ergonomically Modified Keyboard to Reduce Piano-related Pain. MTNA E Journal November 2009
CONCLUSIONS

My sojourn at Salem has taught me some important lessons. These are:

- **The importance of anatomical knowledge**

Because keyboard technique is a co-ordination of the whole body with the instrument, we need to have a certain amount of anatomical knowledge of muscles, bones and joints and how these parts work together.

- **Awareness through body education**

Awareness is the key to technical freedom. Dan Millman states in his book “Awareness of a problem is the beginning of the solution”.\(^{15}\) How true! Firstly, if one is not aware of a problem, there is no problem. If one is unable to sense that part of the structure that is causing the problem, there is no way of fixing it.

“Awareness transforms that vague ‘something’ into a specific action you can correct or improve”.\(^{16}\)

Body education through the Alexander Technique, Feldenkrais, Body Mapping or Somatics helps one to become more attuned to the body. In the process, one learns to regain conscious awareness and control of the state of muscles and movements through self-observation and development of the kinesthetic sense.

- **The brain and how to engage it in the learning process**

Neuroscience has shown that the brain’s plasticity allows new patterns of movement to be learnt. The brain is capable of changing its structure and adapting itself when necessary to keep the body alive. New thoughts and new directions can be downloaded into the cerebellum and movements can be practised until they become automatic.

The cerebellum contains billions of neurons that link up with other regions of the brain and spinal cord to facilitate precise movement. It is the second largest part of the brain; responsible for balance and posture.\(^{17}\)

- **Training movements from the simplest to the most complex in a step by step manner**

A strong foundation is built on solid training. The training must be sequenced so that it starts from the simplest to the most complex patterns. Each step has to be mastered before moving on to the next level.

- **The need for a sound teaching model**

When the brain is able to direct movements, it needs a specific set of instructions as to how to use the most efficient movements at the instrument. This knowledge must be based on a sound

\(^{15}\) Dan Millman Body Mind Mastery (Novata, California: New World Library) Pg. 19

\(^{16}\) Ibid.

\(^{17}\) Parker, S. The Human Body Book Pg. 74 & 75
pedagogical model that also takes into consideration the mechanics of the instrument – how it is constructed, how it works and how it feels. It is important to understand how the body and the instrument work best together.

- **Thathealthful technique is a skill which can be acquired by all**

A technique that allows one to play with a physical sense of well-being, one that is free from pain, discomfort, injury, one that enhances suppleness, speed and facility, increases tonal power and dynamic range, is available to all who wish to learn it. It is not a talent but a skill that can be mastered through careful and mindful training and practice.

- **Technique and Artistry**

A healthful technique does not transform one into a musician or create musicality. However, it can provide the means for whatever artistry there exists to flow through. It allows the player to listen better and be free of distracting physical impediments that block access to musicality.

**RECOMMENDATIONS**

In music institutions:

- Body education programmes should be available and made a compulsory subject for all instrumental students. As the benefits of body awareness are so pertinent, I would strongly recommend that all music students be instructed in some form or other in order to develop a strong kinesthetic sense. At Salem College, all music majors are required to take a course in the Alexander Technique. Salem was one of the first schools in the United States to offer this course.

- Encourage healthful injury preventive techniques for teaching and playing

- Stress the importance of injury prevention

Performing Artists/ Teachers:

- Subscribe to the Society for Performing Arts Healthcare or Performing Arts Medicine Association
- Be informed about playing related injuries
- Identify healthcare professionals who treat musicians with injuries
- Re-evaluate their own practice routines and the effectiveness of their techniques

Piano Teachers:

- Re-evaluate own technique – does it take into consideration optimal alignment, efficient muscle use and kinesthetic awareness? Is it sustainable?
- Re-evaluate teaching strategies: initial lessons should include discussions about the human anatomy, muscular and skeletal structures, mapping the structures and places of balance, introduce programs and exercises for developing body awareness
- Are students aware of their bodies as they play?
- Are they moving efficiently or are they moving with unnecessary effort and tension?
- Do they have an accurate body map?
- Are they balanced on their sitting bones?

These are some of the questions that teachers may want to ponder. If students do not report pain or injuries, there may not be a reason to investigate further into the effectiveness of their teaching. However, bearing in mind the benefits of a healthful technique, it is certainly worth considering. Furthermore, injuries can be cumulative. What works now may not in the future; what works now may be responsible for later conditions that may present as injuries.

Photo : Learning the hand arch
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