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1. Welcome Back!
Ian MacDonald  MSc Vocal Pathology, DipRCM, ARCM, ALCM
Editor

After nearly eight years, we are happy to announce the re-introduction of The Journal of The British Association for Performing Arts Medicine. We plan to produce a twice yearly online publication covering a broad spectrum of topics related to clinical research, education and healthy practice within performing arts medicine.

BAPAM is a medical charity giving clinical advice to professional performing artists, students and production crew. We are based in London, providing services around the UK. We also provide training and education to health care practitioners, performers, teachers and students, support research into performing arts medicine, and host a wealth of information online. Since we last produced a BAPAM journal, we have greatly developed our activities in all these areas, and we hope that this publication will give us, and our many colleagues who contribute so much time and expertise, the opportunity to share knowledge, opinion and ideas.

Besides the traditional format of articles relating to medical research, sections will be dedicated to the dissemination of the work of students on the performing arts medicine MSc course at University College London, and from the BAPAM Student Advocate Scheme (SAS); other areas will offer a platform for comment, review and discussion.

In 2012, I attended the 30th anniversary symposium of the Performing Arts Medicine Association (PAMA) in Aspen, USA where one of the event themes was "What does the future hold for performing arts medicine?" By this time, through BAPAM in the UK, we had just completed our first year of the Masters degree in performing arts medicine at University College London" and I was in Aspen to give a short presentation on this. We were received with immense warmth and applauded for launching what is still the first and only performing arts medicine qualification of its type in the world. Though not without its difficulties, it felt as if we were attempting to shape at least some part of that future. Credit is due to the likes of such eminent minds as Dr Christopher Wynn Parry, Mr Ian Winspur, Dr Kal Parmar, Dr Mike Shipley and Dr Penny Wright who negotiated with PPL and drafted the first bones of the programme. Sincere thanks are also due to many others, acknowledged later in this Journal (section: MSc Hub).

Some of the global developments since we last went to press have been: four conferences of the Australian Society for Performing Arts Healthcare (ASPAH), three Italian international Conventions of Performing Arts Medicine, the first Performing Arts Medicine Conference of Ireland (PAMI 2012), a Cuban Conference (2012), the Osnabrück Conference in Germany (2011), an International meeting in Canada and in a few months I will present at the inaugural Nordic Conference of Music Medicine in Piteå, Sweden. It seems performers have cause to celebrate with this growing interest in the caring for their health.
We hope this rebirth of the BAPAM Journal matures well into the future to provide a platform for sharing the clinical work of BAPAM, pioneering work of the MSc students, a hub for the great health promotion work of the BAPAM Student Advocate Scheme and as a forum for the kaleidoscope of themes that make up this fascinating branch of medicine.

We would like to hear your thoughts about how we are doing and about what you are doing, what you think works and what we may need to add or develop. All contributions will be considered fully and with care. Please send correspondence to journal@bapam.org.uk.

It just remains for me to say thank you Dan, Deborah and Penny and all those who have helped get this Journal off the ground and to you for taking an interest. It is very much appreciated by our performers and practitioners everywhere.

* The MSc in performing arts medicine is a collaboration between University College London (UCL), The British Association for Performing Arts Medicine (BAPAM), The Royal College of Music (RCM), Trinity Laban Conservatoire of Music and Dance (TL) and is has been generously supported by Phonographic Performance Limited (PPL)
2. BAPAM and the New Journal

Dr. Penny Wright MA MBBS MRCGP
BAPAM Honorary Medical Director

It is very exciting to be reading a BAPAM Journal again after nearly eight years and I very much hope that everyone will find something in this edition to interest or inform them.

In the years since the last journal was produced (2005), BAPAM has provided direct clinical advice to thousands of individual performers through clinic appointments in London and around the country. We have also provided health promotion advice to thousands more via a host of different events and publications. We have trained clinicians in their dozens at our Training Days, and more recently have seen performing arts medicine arrive on the scene as an academic discipline with the advent of the MSc in performing arts medicine at UCL. Thus the combined experience and expertise of our clinical community grows and grows. As Professor Bird indicates in the interview that opens this re-born publication, the world of performers’ health care in the UK is becoming more visible, more professional and increasingly evidence-based.

However, this combined experience and expertise needs to be shared to be really useful. BAPAM is a modest organisation, with just three full-time-equivalent administrative staff and a core of volunteer clinicians who are often trying to fit their commitment to performing arts medicine into increasingly fraught and demanding mainstream careers. Spread around the country, many of us work in comparative isolation, only having the opportunity to discuss ideas, cases or even developments at BAPAM when we attend meetings or training events. Our hope is that the new Journal will go some way towards correcting this, including opinion and information pieces as well as research reports and reports from international conferences.

The MSc student hub is an important new section. A huge amount of work goes into the research projects that the MSc students must prepare as part of their degrees, and it is only right that there should be a forum in which they can present their papers to a wider audience than just their examiners. Their research findings will also be fascinating for the rest of us to read.

Seeing patients underpins everything that we do, but nobody sees patients without considering whether the advice they have given is still the best possible advice, whether the problems they have seen couldn’t have been prevented in the first place, and, from time to time, whether anyone else has ever seen a case quite like this one. We hope that the BAPAM Journal will provide a useful forum in the future for our corner of the performing arts medicine world to exchange information, expert opinion and best practice.
WE ARE WITH YOU THROUGH THE HIGH NOTES AND THE LOW NOTES

If you need our help or want to help us, visit helpmusicians.org.uk

Email help@helpmusicians.org.uk or call 020 7239 9100

Registered Charity No. 228089
3. Interview with Professor Howard Bird

Professor Howard Bird MA MD FRCP is an Honorary Consultant Rheumatologist who provides a free BAPAM clinic in Leeds. He is Emeritus Professor in Pharmacological Rheumatology at the University of Leeds and Visiting Professor in Performing Arts Medicine at University College, London.

You have been working with performers for some time now. How has health care for the performer developed in this time?

As a schoolboy I had to choose between a career in music or medicine. Medicine won but my instrument was and still is the piano, although I long ago gave up any aspiration of performing as a soloist and instead have moved much more down the path of an accompanist. Although less in the limelight, this allows many rewards, including close collaboration with a variety of instrumentalists and singers and requires quite different skills, for example the reading of three staves rather than two. When I moved to Leeds in 1978, Opera North had just been founded and chance allowed me to develop early associations with musicians in that orchestra. Subsequently the Northern School for Contemporary Dance was founded and a degree of collaboration with that institute seemed a natural progression, especially since I had by then completed my thesis on joint hypermobility. If we cite Leeds as a template, I like to think that the health care of the performer has developed considerably over the last thirty years, although some problems still remain. This remains one of the most challenging areas of occupational health, since both musicians and certainly dancers are athletes, yet there is still sometimes resentment on the part of General Practitioners at apparent outside interference under the auspices of charities such as BAPAM and Dance UK. But overall, I think the last thirty years have brought a much increased awareness of the needs of the performer within the medical profession and with further input from current new initiatives. The future can only look rosier.

Where do you see the most important / interesting development for the future of performing arts medicine?

BAPAM has been a major force in the development of the new Master’s degree in performing arts medicine in conjunction with University College London, ostensibly through the department of Sports Science, and with the assistance of the two partner institutions, the Royal College of Music at Kensington and the Laban wing of Trinity Laban Conservatoire for Music and Dance at Greenwich. A five year investment has been made in this and, nearing completion of the second year, future applications for the course augur well for the longer continuation, even expansion, of this course which is aimed at educating health professionals of all disciplines in some or all of the three main areas of performance. These are instruments, dance, and voice with acting. This interesting collaboration has already contributed towards unexpected and interesting collaborations. Amongst these is the success of Professor Aaron Williamson at the Royal College of Music in obtaining research funding of around one million pounds in conjunction with the Conservatoires UK ‘Musical Impact’ project. The medical and psychological needs of a large cohort of student performers will be assessed nationwide through the generosity of the Arts and Humanities Research Council, allowing for improved standards of health care across all aspects of performance and the better education of performance teachers.
You are currently unique in that you contribute to all three MSc courses that cover elements of performing arts medicine, at University College London, Royal College of Music and Trinity Laban. Can you say a little about how they complement each other and yet differ?

Almost simultaneously with the MSc in performing arts medicine at University College London, an MSc in Performance Science was introduced experimentally at the Royal College of Music. This was modelled on the existing MSc in Dance Science, successfully run by Dr Emma Redding for around ten years at the Laban campus of Trinity Laban. Following my own retirement from the NHS at the University of Leeds two years ago, therefore with more time available, I have had the privilege of providing medical lectures to all three MSc courses allowing some comparison of the clientele of each. Clearly, all three groups differ in their ages, previous experience, and the aptitude of the students, but it has been interesting that in general the same lectures can be delivered to each of the three courses with very little need for modification. At Trinity Laban and the Royal College of Music, the lectures are also advertised institute wide, allowing students in all aspects of music and dance to attend if they have a specific interest in this area. Whatever the politics, I have encouraged cross-attendance between the three student groups and this has led to considerable networking that can only be beneficial. Recently, for example, a Laban-UCL Research group was piloted to provide a forum in which students from the previous year could continue to develop their research projects under supervision. The pressure on full time students to plan and complete a research project in a single year means there is little time left to proceed to publication.

One of the most difficult areas is research into rehabilitating performers (particularly those with performance related injury). Apart from money, what are the current concerns and possible ways forward in your view?

I agree that there has been a tendency to treat injury on the basis of a single appointment or perhaps just two. Therefore, the reason why the injury might have occurred and so might recur is often neglected. A series of follow up appointments is often desirable. Sometimes the injury results from a faulty technique, but there is an increasing realisation that different body types, both in terms of anatomy and physiology, are specifically suited to particular instruments or particular styles of dance. A mismatch between performer and dance style or their instrument or even a mismatch between performer and choreography or composer can cause problems. Parts of the UCL MSc course are slanted towards addressing this omission.

You have many years’ experience working with and understanding the relationship between hypermobility and performers. What is the data saying now about this relationship?

The subject of my MD thesis in 1975 was indeed ‘joint hypermobility’ (the term hypermobility describes joints that can stretch beyond the normal accepted range of motion). It concentrates on epidemiological aspects but also used arthroscopy – the procedure of looking inside a joint with a small needle-like telescope – to define the late natural history of joint hypermobility. Contrary to expectation, arthritic conditions including osteoarthritis only occasionally seemed to arise. The thesis perhaps raised more questions than it answered, amongst them the difficulty in defining hypermobility in relation to the several different anatomical and physiological factors that contribute to it. Arguably, existing scoring systems were deficient and even now there is a need for alternative scoring systems better directed towards defining joint laxity in instrumentalists and dancers.

More and more, we now appreciate the many factors that contribute. Initially, hypermobility was largely defined in terms of collagen structure. Subsequently, the importance of the shape of the bony
articulating surfaces, the muscular control and the neuromuscular control, with particular emphasis on proprioception, have all come to be recognised. Joint hyper flexibility may enhance performance in certain types of music, and both Paganini and Rachmaninov were almost certainly hypermobile. Joint hypermobility perhaps represents the greatest management challenge of all and opinions still differ on whether hyperflexibility in dance is an asset or a liability.

How important is some degree of expertise or proficiency in an instrument, voice, and dance for the person wishing to become a performing arts medicine practitioner?

I doubt that proficiency in an instrument, voice or dance is essential, but a caring and supportive clinician interested in and willing to give time to performers is clearly a major step forward from the many General Practitioners or casualty doctors who have little or no interest in this most complex area of occupational health. However, I think a clinician who is also a performer, in whatever genre, probably has extra sympathy for the medical and psychological needs of other performers as well as an appreciation of the pressure under which they have to work. It remains perfectly possibly to learn about a discipline for which you have no talent (in my case, dance), through a long association with an institute of education (namely the Northern School of Contemporary Dance under the direction of Nadine Senior). As an accompanist you probably also develop a better understanding of the technique required for various instruments than musicians who are solo instrumentalists. But I am also aware that the standard of care I can provide for pianists is probably greater than for other instrumentalists since, to some extent, I can double as a clinician and technique teacher. Perhaps the way forward is joint clinics structured towards particular instruments or groups of instruments where a clinician collaborates with an appropriate technique teacher, just as combined rheumatology/orthopaedic clinics have revolutionised the orthopaedic management of patients with inflammatory arthritis.

There seems to be huge international interest in our subject, almost like a global awakening to the plight, value and profound humanness of performers. How do we account for this at this time of austerity, the collapse of the banks, revision of the NHS and a continuing decrease in those applying for university?

What a splendid, comprehensive and wide ranging question! Perhaps at one time clinicians just volunteered to look after performers in exchange for the odd free concert ticket. Nowadays, clinicians who also double as performers may have a more focused perspective, and there is little doubt in my mind that the advent of courses in Dance Science (initially based on Sports Science) and more recently Performance Science, have led performers to better appreciate medical and scientific aspects of their art form. Perhaps the last thirty years has also seen the admission of students to medical schools become much more openly competitive, with the realisation by the admission tutors that skills outside medicine, including in the arts, might actually make for a more rounded doctor. At the University of Leeds, where I obviously have had the most experience, performance at grade 8 or even at diploma level with an instrument has been strongly favoured in the selection process. One medical student even came almost directly from the Royal Ballet School. Doctors in training, and even those fully trained, may still take pride in their performing prowess, sometimes even leading to the selection of career that will allow time to specifically benefit those of their patients who are performers. With luck, the specialty of performing arts medicine will go from strength to strength against this background.

We are very grateful to Professor Bird for his time, insight and thought provoking comment and look forward to future news concerning the development of the three MSc courses.
MSc In Performance Science

About the programme

The MSc in Performance Science is an internationally distinctive programme, providing opportunities to examine the art and science of performance in real-world educational and professional contexts. Drawing on the expertise and facilities of the Royal College of Music Centre for Performance Science – as well as the lively performance environment of the RCM and of London – the programme aims to help students develop a robust understanding of performance through the lens of the scientific method, while gaining the critical and analytical skills necessary to conduct high quality practical work and independent research in this field.

About you

The programme will benefit anyone who is motivated to gain a scientific understanding of how music is created, learned, performed and perceived, including performers and educators aiming to progress their current careers through continued professional development. Equally, it serves as an ideal base for those wishing to pursue advanced research and teaching in performance science, music psychology, or musicians’ health, or in any area in which knowledge of methods and techniques in science would be an advantage.

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For further information email cps@rcm.ac.uk or visit

www.rcm.ac.uk/MSc
Royal College of Music, London
4. Overuse Syndrome in Instrumentalists

Howard Bird MA MD FRCP
Emeritus Professor of Pharmacological Rheumatology, University of Leeds; Visiting Professor in Performing Arts Medicine, University College London; Honorary BAPAM Clinician

Abstract

Overuse syndromes of the upper limb frequently occur in instrumentalists, in part reflecting the long hours spent playing. Possible pathological causes are discussed as well as the ergonomic patterns of playing required of certain instruments as well as other anatomical factors that predispose.

Introduction

Elite musicians may practise at and play their instrument for some eight hours a day, year in, year out. By athletic standards, this would be anticipated to place strain on those parts of the musculoskeletal system used, in the case of musicians mainly in the arms. Moreover, whilst instruments come in standard pre-determined size, musicians are of varying shape and size. It follows that even with adequate training in technique and sometimes the use of ergonomic aids attached to the instrument, exceptional strain can be placed on instrumentalists who are not suited to their instrument anatomically, compared to those that are. Overuse injury is accepted in sport ¹ and ‘the over-training syndrome’ ² has been intermittently fashionable. It would stretch credibility if musicians were not to be susceptible to such problems.

Most musicians are extremely dedicated. Their profession is their art such that they have every incentive to remain fit and playing, not least because the profession tends to be over-subscribed. Musicians are acutely sensitive to the precise onset and localisation of symptoms that have not previously occurred ³, making the profession an excellent model for the study of conditions contentiously termed ‘repetitive strain injury’ (RSI). Music played prior to or at the onset of symptoms can be analysed in terms of the number of notes required, often allowing surprisingly precise correlation between quite short and specific passages of music and the onset of symptoms.

This article discusses the current rather unsatisfactory definition of RSI, which in Europe is sometimes termed CANS (Complaints of the arm, neck and shoulder). It reviews previous experience of this condition, notably the ‘epidemic’ that occurred in Australia ⁴, and highlights particular instrumental pitfalls that may predispose to overuse with certain instruments. It argues, at least on the evidence from musicians, that the syndrome exists but that it is probably not a single entity with a multifactorial aetiology. Accepted medical conditions that may mimic RSI, which probably account for a proportion of all cases, are reviewed with conjecture on the possible overlap with some types of dystonia, for which accepted medical guidelines exist.
**Work-related Upper Limb Disorder**

For many, work-related upper limb disorder (WRULD) has replaced RSI – a term highly suggestive of causation – and repetitive strain disorder (RSD) – which tended to be confused with the abbreviation for reflex sympathetic dystrophy (although it will later be argued that there may be occasional overlap between these two conditions).

The term WRULD tends to be used in the face of persistent symptoms once more conventional medical conditions of the forearm such as tenosynovitis, carpal tunnel syndrome and epicondylitis at the elbow, as well as causes of referred pain such as cervical spondylosis have been excluded. It is therefore essentially a diagnosis of exclusion. To suggest it is a function of the industrial age is incorrect. Before the industrial revolution, it was endemic in agricultural workers, such as fish workers who, prior to the advent of refrigeration, had to work fast and intermittently as each catch was filleted before it decayed. Clerk’s palsy, described 275 years ago, may have been the white collar equivalent even though epidemics of ‘writer’s cramp’ in the British Civil Service around the 1830s were attributed to the introduction of the steel nib.

Various aetiologies have been suggested. Amongst these is controlled evidence for certain histological abnormalities in affected patients, though others sought to explain the condition in terms of problems with pain amplification. In the case of the Australian epidemic, the cumulative growth of symptoms coincided with the introduction of a work compensation system that allowed lump sum payments for work-related disease. Even amongst musicians, the unusual frequency of symptoms has been recorded intermittently by many authors over the last 100 years since Poore’s first description in 1887.

Various attempts have been made at defining diagnostic criteria but none have found universal acceptance.

**Problems Specific to Musicians**

These are often only highlighted through a meticulous history of playing and performance, sometimes beyond the scope of the doctor lacking experience in this area who may not be familiar with the common instruments and their many variations.

Overuse injury has been defined as ‘the damage that occurs when a tissue is stressed beyond its anatomic or physiologic limits, either acutely or chronically’. Some allow this to overlap with tenosynovitis, others with damage in the muscle, ligaments and joint capsule. Pathological studies and biopsy studies obviously create ethical difficulties in practising musicians though these have been performed on keyboard operators. The majority of injuries are precipitated by playing, particularly an increase in the time and intensity of playing.

The piano writing of composer/pianists could reflect the unique features of their respective hands. For example, Brahms, Liszt and Rachmaninov all had large hands, Rachmaninov’s middle fingers capable of significant lateral movement. By contrast, the piano works of Bach, Mozart and Schumann require a more compact hand. It is the clinical experience of this author that quite short passages of exceptional...
difficulty can tip the balance into overuse when the player is close to this threshold. If the particular passage is re-fingered, or re-structured, the problem is sometimes alleviated.

There are also certain pitfalls among instruments. The commonest is when a violin player transfers to the viola or vice versa. The difference in size and weight of these two instruments creates additional strains to which the performer is unaccustomed. A similar relationship exists between the oboe and cor anglais, the latter instrument being slightly larger and heavier, though mainly with the same fingering. The wide variation between the size and shape of the many members of the saxophone family and the strain that transfer from one of these instruments to another can cause is not always appreciated by the clinician. Although the clarinet and alto saxophone have similar size and fingering, the angle at which the instrument is held is quite different (the saxophone requiring a slight rotation of the spine) and can predispose to overuse, especially if there is a slight natural corkscrew twist of the spine in the opposite direction to that in which the instrument is held. Spinal scoliosis or rotational twist also causes a problem with the cello since the spine is slightly rotated with the pelvis additionally fixed against the instrument. Although the double bass is a larger, more cumbersome instrument, the player has more freedom of spinal movement so this is less likely to occur.

Whilst there is some dispute about the prevalence of thoracic outlet syndrome in musicians, especially amongst violin and viola players \textsuperscript{20, 21}, the evidence for ulnar nerve entrapment at the elbow whilst playing the violin is much stronger \textsuperscript{22} and is normally supported by abnormal nerve conduction studies and EMG. The pressure is thereby localised to the aponeurosis of flexor carpi ulnaris or its underlying fascia.

The complete assessment of musicians requires the musician to be observed playing their instrument. Sometimes the idiosyncrasies of positioning and holding, given the wide diversity of size and shape amongst individuals, clearly demonstrate the compression of soft tissue against a hard surface of the instrument for long periods of time, presenting a risk that is immediately apparent to the physician.

In the experience of this author, the classical guitar and flute are instruments presenting particular problems and account for many referrals to music clinics. With the classical guitar, significant lateral stretch of the fingers is required in just one hand. Although the flute appears light and easy to play, the position in which it is held is most unergonomic compared to other woodwind instruments, often requiring contortions of the arms and shoulders to accommodate it.

Similar arguments apply to embouchure in brass players and the larynx as an articulation in singers but both are beyond the scope of this review.

**Diagnoses That May Mimic WRULD**

It remains a possibility that if several discreet medical diagnoses are present in the same arm, as can often occur with the complex use of the arm required by musicians, symptoms of each may overlap causing diagnostic confusion. Normally this can be unravelling by a detailed history and careful examination, but if a nerve root compression, often at the neck, compounds with a peripheral nerve entrapment, giving an unusual distribution of nerve compression symptoms, this may in part account for the paraesthesiae that are so often a feature of WRULD in musicians.
It is also possible that discreet accepted medical diagnoses, present in mild form, sometimes sub-clinical in respect of clinical examination, may also summate to give symptoms attributable to a WRULD. Eight such possibilities are listed in Table 1.

1. Overuse (fashionable in athletes)
2. Micro trauma
3. Physiological overload (lactic acidosis)
4. Inherited abnormalities of muscle metabolism
5. Nerve entrapment
6. Compartment syndrome
7. Symptoms are often rare in the self-employed
8. Symptoms may be extremely localised in musicians (perhaps with overlap with focal dystonia as a cortical phenomenon)

| Table 1: Factors that may contribute to symptoms attributable to ‘work-related upper limb disorder’ |

Overuse, as experienced by athletes, is an accepted part of sports medicine. Accepted extrinsic factors felt to contribute include excessive load on the body (both the type and speed of movement and the number of repetitions), training errors (too fast a progression and too high an intensity) and poor equipment. All of this equates with musical training, the instrument representing the equipment.

That micro trauma may be present is partly conjectural but strongly believed by some, though this argument is hard to take further in the absence of pathological biopsy material from controlled studies, which is largely unethical in professional musicians.

Excessive training, to the point of fatigue and even exhaustion, may invoke physiological results such as lactic acidosis. Lactate accumulates in muscle during exercise and muscle strength, fibre type and enzyme activity all contribute to the severity of this in a given individual. It remains probable that this sort of inter-subject variation occurs in musicians as well as in athletes.

Inherited abnormalities of muscle metabolism such as McArdle’s syndrome may also exist in sub-clinical forms, perhaps with partial penetration, which may aggravate the susceptibility to overuse syndrome caused through lactic acidosis.

Peripheral nerve entrapment in violinists is already described above. It has also been described in flautists where the contorted position of the elbow probably predisposes to pressure entrapment. Certain myelinated conducting fibres probably more susceptible than others. Nerve compression can also occur around the shoulders in musicians, where the contour of the cervical and thoracic spines may also contribute.

Compartment syndrome might also be the cause of some symptoms. Here, a physical overuse of muscle, restricted within its collagenous fascial sheath, produces an increase in pressure which is symptomatic and in severe cases can lead to muscle necrosis. Usually associated with the legs (‘shin
splints’ in dancers), it seems inconceivable that musicians should not be susceptible to this in the arms. Investigation is by the measure of pressure in the muscle compartment and treatment is by surgical release 30. By implication, both physiological and anatomical features predispose. Examples occur in the arm after surgical trauma 31,32,33 and it seems feasible that compression of the arm against the firm surface of an instrument might precipitate this as well.

The precise localisation of symptoms in some musicians is probably attributable entirely to ergonomic factors associated with their specific instrument or, perhaps, the amount of repetitive trauma placed upon a single digit by a particular composition or even a short passage within that composition. Nevertheless, the potential putative overlap with focal dystonia 34 is clear, and such dystonias, usually presenting initially in the form of cramps, have been recognised to afflict musicians for some 150 years 35. Symptoms are often extremely task specific and highly localised in relation to that task. Electromyography often reveals certain abnormalities 36,37 and the affliction of several elite pianists is undoubted.

**Aggravating Factors**

There is a strong suspicion that certain factors aggravate. One is scoliosis of the spine, particularly with stringed instruments where a quite different function is required from each of the two arms. Symptoms of this sort are invariably unilateral contrary to a true overuse injury in a keyboard or woodwind player where the symptoms are normally equal and bilateral. In general, this also applies to brass instruments with the exception of the trombone.

There is also a strong clinical impression that joint hypermobility predisposes to overuse syndromes. This would seem logical. Simplistically, extra effort is required to stabilise the hypermobile joint in a position of function before additional effort is applied to move it. In the non-hypermobile joint, the strength of the collagen through the joint capsule and the ligaments stabilises the joint at rest prior to movement.

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**Footnote**

This article is a modified, reduced version of an article previously published in Clinical Rheumatology (2013) Vol 32; 475-479, by Springer, which is also available at the Springer website for that journal.
5. Exploring the Neuronal Fingerprints of Musicians’ Dystonia using fMRI

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Figure 1: Focal Hand Dystonia in musicians showing motor incoordination or loss of voluntary control in pianist’s right small and ring fingers.

Extended Abstract

General Background to Musicians’ Dystonia (MD)

Musicians’ dystonia (MD) is a movement disorder in which there is painless muscular inco-ordination during playing. It is a disorder of the central nervous system and is due to a problem in the coding within the brain of sensori-motor information required for the exquisite motor control necessary to play an instrument. There are both genetic and environmental risk factors involved; one environmental factor is repetitive motor training, a consequence of the many hours of practice musicians undertake. MD typically affects those parts of the body for which the instrument demands the greatest spatio-temporal motor
control. For example, pianists usually experience abnormal postures (flexion or extension) of isolated fingers of the right hand (see Figure 1).

Whilst classical guitarists often “lose control” of the right index finger and thumb, brass musicians can experience pulling and locking of the lips (embouchure dystonia). Despite estimates that suggest that MD can affect up to 1% of professional musicians, the apparent incidence amongst musicians is much less, and knowledge of the disorder is scarce, due to the fact that symptoms are often concealed in an effort to maintain competitiveness within the professional domain. Treatment of MD is difficult and the most effective approaches to date use techniques to retrain the affected areas of the body.

For many musicians, it is the control of an isolated finger that is affected in MD. We know that in certain areas of the brain, for example the motor and sensory cortices (neocortex), there are nerve cells which respond only to specific parts of the body. For example, touch to one fingertip will activate certain nerve cells in the sensory cortex, whereas movement of another finger will cause different nerve cells to activate. These activation patterns are often referred to as sensory or motor “maps”. There is evidence that both sensation and motor maps of the hand are abnormal in people with dystonia, lacking the normal differentiation of the individual fingers. There is certainly logic behind the suggestion from this work that overlapping, indistinct maps might result in overlapping and poorly controlled muscle activity. Little is known about sensori-motor representation of fingers in the cerebellum in people with dystonia. This brain structure has a central role to play in motor learning and appears to malfunction in people with dystonia. We also do not have good information about how these maps might change when people with hand dystonia rehabilitate with retraining.

**This Study**

In this study, functional magnetic resonance imaging (fMRI), which gives information about blood flow within the brain, was used to record changes in activity for different tasks. Increased blood flow is a marker of increased neuronal activity and thus can be used to identify which areas of the brain are involved in different tasks. Here, pianists’ individual fingers were either lifted passively by the researcher (sensory condition) or subjects were asked to press a specific finger (motor condition). Each of these actions gives a unique pattern of blood flow and with recent advances in the way this data is analysed we were able to collect new information on finger maps in MD and example of which is shown below (Figure 2).
Figure 2. Pilot data demonstrating digit representation in the primary motor cortex (M1) of a healthy pianist. Red and yellow areas indicate regions with the greatest specificity for individual fingers during the corresponding single finger motor condition (finger press, upper row) and sensory condition (passive finger lift, lower row).

Our data may provide further information about how the musical ‘superbrain’ encodes performance ability and exceptional motor control of individual fingers. The hypothesis that abnormal representations of sensory and motor information within the brain may be the likely neuronal correlation in MD will be re-examined in much greater detail and it is hoped that accurate finger maps of the motor and sensory cortex will be revealed and that for the first time finger maps of the cerebellum in patients suffering from dystonia will be analysed. In addition performing fMRI before and after therapy is likely to reveal what is “reset” in the dystonic brain with retraining providing a scientific rationale to support the effectiveness of hand therapy for this condition.

This study is almost complete but it is likely that a few more subjects will be invited to take part during the summer of 2013.

**Demographics**

To date, these techniques have been used in healthy subjects and this has shown fundamental differences in how the cerebellum and the neocortex integrate sensory and motor information. In the neocortex there is an almost one-to-one overlap between sensory and motor activations for individual fingers, but there is a completely different pattern in the cerebellum. Here, representations are small and fragmented, perhaps allowing for pairing of novel sensory and motor activations during learning.

Using these techniques in healthy musicians and musicians with dystonia allow us to ask fascinating questions such as: Are the brains of musicians different from the brains of non-musicians?
Future recruitment

If you are a guitarist or pianist (with or without dystonia) who has played professionally and you are interested in taking part in this study, please contact Dr. Anna Sadnicka at the Sobell Department for Motor Control and Movement Disorders, University College London (skgtas2@ucl.ac.uk). For musicians who think that they may have MD symptoms, we have an NHS clinic that your GP can refer you to and you can be seen by a consultant neurologist. Referral letters need to be addressed to Dr. Mark Edwards, Honorary Clinical Consultant and Clinical Lecturer, National Hospital for Neurology and Neurosurgery, Queen Square, WC1N 3BG. If you would like an assessment by Katherine Butler (Clinical Specialist in Hand Therapy), details can be found on her website where more articles on focal hand dystonia (publications page) are also available: www.londonhandtherapy.co.uk. We hope to report the findings of this study in the next edition of the BAPAM journal.

References


6. On Mind and Body: Autogenic Training as Self-empowerment for Performers

Giovanna Reitano MA, MMus, PGDipl Gestalt, BA (Hons) Mus, Dipl Hypnotherapy, Dipl Autogenic Training
Registered and accredited Autogenic Therapist; Hypnotherapist; BAPAM registered practitioner

Performers are the medium between the Arts and life, and Art, in all its forms, is a meaningful instrument of expression and communication. The composer John Cage 1 writes that “Arts operate to allow self empowerment … and consolidation of social empathy” (p.100). The director Peter Brook 2 underlines that “…The stage is a reflection of life” (p. 111). The dancer and theorist Rudolf von Laban 3 affirms that “Dance is … vibrant life itself … [and] as the awakener of the sense of vitality [it] can be an art of the greatest significance” (pp. 178,179). Performers are gifted with the pleasure and responsibility of representing human thoughts, emotions and universal meaning: they make it possible to draw up fantasy to concrete reality ‘bringing the stage nearer to the street’.

As much as performing is wonderful it also involves great discipline, constantly making choices, hard work and regular exposure to psychophysical stress: performers need to be constantly ‘present’.

Published research conducted within the Performing Arts 4-13 shows that a large number of performers suffer from stress and psychosomatic discomforts such as stage fright, anxiety, lack of focus and concentration, sleep disorders, anorexia nervosa, low self-esteem, depression, hyperventilation, muscle tensions and pains. Hamilton, Kella and Hamilton 9 state that

“Each performing art has its own unique stresses. In ballet the focus is on athletic prowess and physical beauty… Dancers must be thin … extremely strong, and must have a high tolerance for pain. This is in direct contrast to music, where… a premium is placed on flawless technique, in spite of the fact that an instrument can be unpredictable and ill-suited to the musician’s anatomy…Yet work dysfunctions are common in a population where the level of stress is high and coping mechanisms are not always sufficient” (p. 86).

Furthermore, according to Rife et al. 7 “Musical Performance Anxiety (MPA) is a wide-ranging debilitating problem among professional musicians … [It] can adversely impinge on the quality of musical performance and seriously affect careers in music” (p. 161). Likewise, Luke et al. 14, and Mainwaring, Krasnow and Kerr 15 found that stress is also an extrinsic risk factor associated with dance injuries.

Stress can have a negative impact on performance. Indeed, the human body has self-regulatory processes (homeostasis) which control the ‘fight or flight’ stress-response and help to maintain psychophysical balance. The stress-response is characterised by preparing the body to react to external or internal stimuli, and after this reaction, physiological equilibrium is naturally restored. However, when stress is extreme, the stress-response becomes abnormal and homeostasis is not reestablished: this often results in muscular and emotional tension, and weakness of the immune system, affecting our well-being and behaviour.
A performer needs to maintain concentration, high levels of energy, emotional flow and a positive attitude for long hours. Therefore, it is extremely important to be constantly aware of the levels of stress he is exposed to and find ‘strategies’ to maintain that degree of awake relaxation and calmness needed for peak performance. Different authors 16-19 found that relaxation and meditative techniques are useful for this purpose and also effective in treating psychosomatic discomforts in students and professional artists. For example, Autogenic Training (AT) is a relaxation technique and therapeutic approach which has been shown useful to reduce stress and stress-related conditions 20-26.

AT was developed in the 1920s by the German neurologist and psychiatrist Dr Johannes Heinrich Schultz who was influenced by Dr Oscar Vogt, a psychiatrist and neurophysiologist famous for his research into the brain. Dr Vogt and Dr Schultz worked with patients who suffered from psychosomatic discomforts and noticed that the practice of simple mental exercises to induce hypnosis were beneficial to their patients. Indeed, patients reported a sense of calmness, feelings of relaxation, and a state of well-being associated with sensations of heaviness and pleasant warmth in the body. Furthermore, discomforts such as anxiety, headaches and migraines, tiredness or fatigue were reduced or disappeared 26. Following this observation, Dr Schultz explored the possibility to induce a similar state of relaxation without practising hypnosis. He found that using passive concentration in combination with verbal formulas of ‘heaviness’ and ‘warmth’ in the limbs, and directing attention to these sensations, helped to stimulate the body’s relaxation response.

Dr Wolfgang Luthe, a physician who was interested in psychosomatic medicine, contributed to the further development of Autogenic Training which later became known as Autogenic Therapy. He collaborated with Dr Schultz conducting research on Autogenic Therapy and its application in clinical and non-clinical contexts. In particular, Dr Luthe studied the benefits of autogenic practice on asthma patients.

Dr Schultz aimed to offer his patients a tool to regulate their own experience and the body’s relaxation response by self-inducing a state of deep relaxation at will. He called his technique “autogenic” to underline that it develops ‘from within ourselves’: it is a process or ‘journey’ throughout our deepest Self. Indeed, regular autogenic practice enables us to become more aware of our emotions and have insight into how our responses to negative emotions may affect our behaviour and performance at work and in life. Emotional awareness is particularly important for a performer to be ‘present’, confident and ‘in control’ on the stage. In this sense, the psychologist Carl Gustav Jung 27 emphasizes that

“Richness of mind consists in mental receptivity … What comes to us from outside, and, for that matter, everything that rises up from within, can only be made our own if we are capable of an inner amplitude equal to that of the incoming content. Real increase of personality means consciousness of an enlargement that flows from inner sources” (p. 63).

In the last few decades there has been an increased interest in studying the mind-body relationship. For example, research on mind-body interactions 28, placebo effect, immune and related physiological responses 29 has brought evidence that there is an intimate relationship between mind and body, and mind/body/health, and that emotions can have a positive or negative impact on our physical well-being.

Our experience is registered in the brain consciously (Conscious Mind) or unconsciously (Unconscious Mind). The conscious registered experience presupposes an active or critical thinking. In the unconscious mind are registered past experiences, perceptions, beliefs, thoughts, and feelings we are not aware of,
but which may be brought to consciousness. The Unconscious is also connected to important bodily functions such as breathing and heartbeat; it plays a fundamental role in our emotional response and behaviour to new situations.

Dr. Schultz 26 observed that regular autogenic practice supports homeostasis, the balance between the sympathetic (‘flight or fight’ response) and parasympathetic nervous system (‘rest and digest’ processes). This resulted in a shift from a state of physical and mental arousal to psychophysiological rest and recuperative processes. The relaxation response achieved through regular autogenic practice was associated to a feeling of heaviness and warmth in the limbs; relief of muscular tension; slowing down of the heartbeat; drop in blood pressure and cortisol (the ‘stress’ hormone); and an improvement of blood circulation and breathing functions. For example, an increase in blood circulation and skin temperature are important to ‘warm up’ muscles and articulations before training or performing. This helps to reduce muscular tension and the risk of injuries. Through stimulating physiological and mental processes, as mentioned above, AT aids to maintain a calm attitude switching off the ‘fight or flight’ response, for example in a situation which may cause emotional stress and pressure, such as a performance. People practising AT can also become aware of emotions that they have suppressed. Indeed, regular autogenic practice brings more emotional awareness and openness to feelings helping to release disturbing or repressed emotions accumulated in the brain thus reducing stress and stress-related discomforts, including performance anxiety. Therefore, the Autogenic Therapist has an important role in monitoring the individual’s autogenic process, helping the person to manage painful feelings which may come to surface. For example, I taught AT to a dancer who had a bad knee injury which had been treated one year earlier. Her main complaint was anxiety: she woke up often during the night worried about getting ‘stiffness’ in her legs and not being able to dance. Regular autogenic practice, together with the autogenic exercise to off-load anxiety, enabled my client to be more aware of her feelings, release disturbing emotions and reduce her fear of being unable to dance. She also became aware that her anxiety and fear was related to the previous knee injury.

Autogenic Training works through the practice of simple mental exercises focusing on different parts of the body, such as the limbs, heartbeat, breathing, solar plexus, neck and shoulders, using ‘passive concentration’ (‘passive observer’ attitude). In an autogenic session, the Autogenic Therapist leads the practice, speaking several times the autogenic formulas in a specific sequence and number of repetitions (for example, “My arms and legs are heavy” when focusing on the limbs) while the client is sitting or lying down with closed eyes in one of the autogenic postures. AT brings about exploration of feelings ‘in the moment’ and the regulation of brain and body processes through self-suggestion. The autogenic exercises are short and simple and can be practiced wherever and whenever needed - taking between 1 to 15 minutes - and also before or after a performance, e.g. to enhance focus, concentration and emotional flow or restore homeostasis and promote sleep, respectively.

Regular autogenic practice has been found to be useful for enhancing physical and mental performance in writers, poets, opera singers, pianists and other artists 26. For example, Luthe and Schultz 30 found that “Sportsmen, writers, poets, opera singers, pianists, and others whose professional activity requires high standards of specialized mental or physical performance noted after variable periods of regular standard training, that their performance had greatly improved while at the same time becoming less strenuous and exhausting” (p. 154).
Passive concentration combined with autogenic formulas helps to develop Self-observation skills and awareness of our behaviour patterns so that we are more likely to influence or modify them at will. Through self-awareness we can develop an understanding of ourselves, our own strengths and weaknesses, beliefs, feelings and motivations. Indeed, as Grotowski\(^3\) states

“For each individual … it must be clearly established what it is that blocks his intimate associations, thus causing his lack of decision, the chaos of his expression and his lack of discipline; what prevents him from experiencing the feeling of his own freedom, that his organism is completely free and powerful, and that nothing is beyond his capabilities” (p.97).

For performers, self-awareness is the first step to achieve a state of flow which is characterized by intentionally directed focus and absorption in a specific activity, providing an experience of complete mastery in performance or what is described as being ‘In the Zone’.

Most training in performing arts academies focuses mainly or exclusively on fostering students’ technical skills but not on emotional awareness or prevention of performance-related distress. Performers should be aware that “The Mind affects the Body …”\(^2\) and find strategies to cope with emotional stress.

Autogenic Training can be effective for performers to be ‘emotionally and physically prepared’ as it involves mental and bodily functions simultaneously: “Apart from the fact that the autogenic exercises reduce tension and have a calming effect in general, there is substantial evidence of a gain in central nervous system elaboration and coordination.”\(^3\)

Regular autogenic practice can also be beneficial to:

- Value personal skills and inner potential
- Acknowledge the source of possibly emerging tensions
- Be ‘present’, relaxed but ‘awake’
- Enhance concentration, self-esteem and creativity
- Have a degree of positive ‘emotional arousal’
- Maintain focus and energy for long hours
- Support psychophysical balance

Either as a ‘tool box’ for preventing and reducing stress, as a way to enhance focus, self-confidence and creativity, or simply as a relaxation technique, Autogenic Training represents a useful resource to self-empowerment.
References


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www.equity.org.uk
7. An Osteopathic Approach to Treating Performers
Jennie Morton BSc (Hons) Osteopathy
Honorary Lecturer in Performing Arts Medicine at UCL; BAPAM-registered practitioner

My career started as a classical ballet dancer before moving into contemporary dance and eventually to musical theatre over a 15 year period. During this time, inevitably, I had my share of injuries and sought treatment from a wide variety of therapists. However, it was always Osteopathy that seemed to work best for me and I therefore decided that I would pursue this as a career with a view to specialising in treating performers.

The Osteopathic approach centres on the belief that the body is a self-healing mechanism which is perfectly able to deal with its own problems given the right conditions. However, life being what it is, we inevitably build tensions into our musculoskeletal frameworks that can become an obstruction to our body’s ability to heal itself. As performers, everything from the physical stresses required for the extremes of movement in dance to the asymmetrical postures required for playing instruments can cause imbalances in our muscles and joints that can lead to pain from injured tissues and, in some cases, to a decline in our constitutional health.

For all our body parts to function normally, in simple terms, they have three basic requirements - a good blood supply coming in, a good drainage pathway going out and a healthy nerve supply. Tensions and restrictions in our muscles and joints can cause an obstruction to these pathways resulting in dysfunction at the target site - be this a muscle, joint or internal organ. Therefore, the pain that a patient may be experiencing at a particular anatomical location may be the result of a blockage starting elsewhere in the body. As Osteopaths, we not only assess the symptomatic area, but also look at all those pathways serving the area in order to ascertain exactly where the cause of these symptoms may lie, which may be quite distant to the area of pain.

To illustrate this, let’s look at a hypothetical case of a typical instrumental musician presenting with musculoskeletal pain.

A female cellist presents with right shoulder pain and occasional pins and needles/numbness in the fingers of her right hand. She has also noticed that she seems to be unable to practise for long periods recently, as her right arm seems to get tired and, when exercising, she finds herself short of breath. She has recently suffered from a bad cold that she seems unable to get rid of and is feeling in a low mood.

When observing her playing her instrument, it is noted that she seems to be collapsing her torso towards the cello with her right bowing arm held high at the elbow and right shoulder rotated inwards towards the instrument. She is slumped backwards in her seat at the pelvis causing the middle of her body to fold at the diaphragm. She is gripping the bow with an excessive twist at the wrist and her thumb is tucked behind her other fingers. Her head is focussed down at the instrument and held in front of her centre of gravity.
From this brief observation, we can already begin to come up with possibilities for the symptoms she is presenting with. Her right shoulder pain may be the result of tension in the right upper trapezius, levator scapula and scalene muscles which will all be over-working in this posture. However, the most likely cause of the pain may be the supraspinatus muscle which is responsible for holding the upper arm up at 90 degrees to the shoulder and may become trapped in the anatomical bony tunnel through which it runs. The increased internal rotation of the shoulder will also add strain to this muscle causing inflammation and eventually degeneration of the tendon.

The pins and needles/numbness in her right hand may stem from a number of locations: these symptoms are typically caused by irritation of the nerves that originate at the neck. An awkward neck/head posture as we see here may be the cause of this irritation at the nerve roots. After exiting the neck, the nerves merge together to form the brachial plexus and along with the blood supply for the arm, travel together in a bundle which first passes between the scalene muscles which we have already established may well be over-tight causing this bundle to be squeezed. The next point on the journey for these nerves and vessels is to pass between the first rib and the collar bone - this space may also be narrowed by over-tension in the scalene muscles as they attach onto the first rib and may elevate it causing constriction. The bundle then travels under the pectoralis minor muscle, which acts to draw the shoulder forward, which is exactly the position our cellist is holding her joint in. This will shorten the muscle causing another likely impingement site.

Further down the arm, the median nerve is vulnerable to impingement in the forearm where it can be pinched by a muscle that turns our forearm inward (pronator teres), a position that is being exaggerated by her technique. Finally, this same nerve may become compressed at the carpal tunnel in the wrist. Her awkward thumb positioning and tension in her bow grip increases her risk of this.

As for the early fatigue in her arm, this may be as a result of the blood supply being impinged at any of the above sites causing a supply and demand issue - the muscles require blood to function, but over-tension may restrict this blood supply. The more tense the arm position, the tighter the muscles and the more restricted the blood supply becomes, leading to fatigue.

The shortness of breath and predisposition towards a lingering cold may also be down to her posture. With her weight tipped backwards in the pelvis, causing her to “slump” in the middle, causing her diaphragm to become compressed and restricted. This posture will also require her upper body to make a longer journey to reach around the instrument causing compression of the ribcage. All of this will serve to adversely affect her breathing mechanics. With her diaphragm and ribcage unable to make their full excursion, her breathing is likely to become shallower, causing overworking of the upper respiratory
muscles - the very ones we mentioned before that may also be the source of her shoulder pain and nerve impingement. This shallow breathing may result in a reduced oxygen intake with each breath - oxygen is vital for optimal functioning of the muscles required to play the instrument. Therefore, again we have a supply/demand issue where the demand outstrips the supply leading to early fatigue. The shallow breathing may also lead to poor exchange of air lower down in the lungs leading to stagnation and increased risk of bacterial growth. This may explain why our cellist is feeling under the weather and unable to shake off her cold.

In my view, her low mood may also be attributable to this poor circulation of fresh oxygenated blood which may be struggling to reach her head. With her forward head positioning, this will increase the tension in the neck muscles which may result in headaches. The drainage channels from the head run just underneath these muscles so this tension may result in a back-up of waste products in the head further contributing to this sense of malaise.

From an aesthetic point of view, the posture adopted by this cellist serves not only to crowd her own body but that of her instrument too. In an acoustic instrument such as this, the hollow wooden body serves as a resonating chamber for the sound. Likewise, the human body also has a role in this resonation, so crowding both bodies posturally is equivalent to singing with a hand over your mouth. The sound also becomes compromised. By opening up the human body posture we can increase its resonating capacity and by not crowding the instrument the sound is liberated. The result is an audible improvement in sound quality and, equally importantly, a pain-free and constitutionally healthy cellist!

This is a pattern I have seen many times in my clinic but every case is individual. As Osteopaths, we don’t treat the condition, we treat the person. There will always be similarities in the presentation of symptoms and postural features, but as no two people are identical, so no two treatments and ergonomic interventions can be identical. This means that every patient that walks through my door poses a unique set of questions to be answered which makes my job as an Osteopath both challenging and fascinating. It is also vital that we encourage the patient to take responsibility for their own body and educate them to make the necessary adjustments to their technique and posture to ensure that they have a healthy playing and practice regime.

Ultimately, my aim as an Osteopath is to create an optimal environment where the body is free to heal itself. We do not “cure” problems, just create the right conditions for the body to sort itself out. The extreme postures required in dancers, instrumentalists, vocalists, acrobats etc. will always pose challenges for the body’s ability to function optimally - my job as an Osteopath is to work with the patient to find the best possible compromise between their physical wellbeing and the profession which brings them such joy. If you can find a way back from the pain to the joy, the rest will take care of itself...
Comment

This section of the Journal is intended to provide a platform for the very many people who support the work we do in our clinics, health promotion and education programmes and elsewhere to have their say. The techniques discussed, products, props and supports mentioned, and views expressed are not necessarily endorsed by the editorial team or BAPAM.

8. Caring for Musicians’ Health and the Performing Arts Medicine MSc
Paul Michael Hughes
General Manager of the BBC Symphony Orchestra

Paul Michael Hughes has been hugely supportive of medicine for musicians for many years. This year he has supported the MSc course by providing expert professional musicians for the module entitled Practical Assessment and Wellness of the Performing Artist. This has facilitated valuable detailed assessment of musician’s injuries at the highest level.

The opportunity to contribute to the MSc programme you have created at UCL through BAPAM was one I felt strongly we could not afford to pass up. The future of our profession relies heavily on the health and well-being of our musicians, many of whom – like athletes – have specific occupational health issues that have not been widely understood or appreciated by the medical profession. I have long been aware of the excellent work of BAPAM and have referred our musicians there over the years, as well as gathering information ourselves on certain specialists who our players have seen regularly over the years. If I have any concern about BAPAM, it is that the senior professionals whose voluntary services underpin it are not being refreshed by a younger generation of medical practitioners whose specialist knowledge of our sector is crucial to effective treatment.

To say the MSc is timely is something of an understatement. So much is it in the interests of everyone in the music profession that the GPs, consultants, physiotherapists and other practitioners know as much about how we work as possible, that I had no hesitation in supporting the programme with visits by a range of musicians across our orchestra. For them to have the opportunity to meet you all, play their instruments, discuss the issues, answer questions and give feedback has been an excellent investment of resources.

Musicians often have a high degree of self-awareness and when something goes wrong the physical, emotional and psychological effects can be devastating, requiring sensitive and discreet handling. This can be achieved more effectively when the medical practitioner is fully aware of the job the musician
sitting in front of them does, as well as the inner workings of the musical body. To give one particular example: the issue of hearing has come more to the fore in the past decade as a result of amendments to European regulations on Noise in the Workplace. Primarily designed for industrial settings, the alarm amongst the musical professional caused by legislators largely ignorant of the impact this would have still rumbles on to this day. Hearing tests on joining a BBC orchestra are mandatory and confidential and yet there are still musicians who are reluctant to know what the state of their hearing is after a lifetime in the business or, more worrying, don’t want ‘the management’ to know for fear it might impact on their employment. And yet we have a duty of care to each and every musician that we take very seriously; their well-being and good health and the provision of the right conditions and environment in which to do what they do to the highest professional standards occupies much of our time.

Within the BBCSO we are, perhaps, in a privileged position to be able to take such an holistic view, and we should be taking a lead in ensuring the widest possible awareness of our needs and ensuring we have a generation of medical practitioners to meet those needs. In fact, I would argue strongly that none of us can afford to ignore this issue and that’s why we are happy to support the MSc; long may it continue because it is unique, invaluable and essential.
'Would I have made it without the MU? Probably. If I was starting out again, would I still join? Definitely.'

'The MU has been around even longer than me. Helping musicians of all ages and genres. Let's make sure they continue to do so.'

__Jimmy Page__

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Membership is open to **all** musicians.
9. The Assessment of Musicians’ Injuries - A Review
Ian MacDonald

We were lucky enough to have Barbara Paull and Christine Gale Harrison deliver this world class workshop as part of the Practical Assessment and Wellness of the Performing Artist module for the MSc in Performing Arts Medicine.

Barbara Paull MCSP MCPA is a British trained physiotherapist and a member of the Chartered Society of Physiotherapy, UK. She moved to Canada in 1967 and has concentrated on orthopaedic physiotherapy practice and post-graduate education for over forty years. She is an active member of the Ontario Physiotherapy Association and director of the Stouffville Musicians’ Injuries Clinic Canada (www.yorkcountyphysiotherapyandsportsinjuriesclinic.ca). In 2000, Barbara received the OPA's Recognition Award for outstanding achievements in Professional Contribution and, in 2005 the Award of Distinction from the College of Physiotherapists of Ontario.

Christine Gale Harrison is a Canadian freelance violinist, much in demand as a teacher and adjudicator. She examines for the Royal Conservatory of Music and is the founding director of “Basically Quartets” chamber music courses (www.basicallyquartets.net).


The book is part of the reading list for the MSc in Performing Arts Medicine at University College London.

Barbara Paull was kind enough to share some of her thoughts about the difficulties of teaching how to assess these injuries to a group of specialists from differing disciplines:

“This spring I was a visiting lecturer for students attending UCL's M.Sc. in Performing Arts Medicine. Injured musicians were assessed, examined, diagnosed and treatment plans were formulated. Guidelines also requested a "hands-on" session for the students, which left me in a bit of a quandary, so this is a request for constructive advice from UCL, other lecturers and our students.
It is always difficult to mix different beliefs, skills and levels of education in a practical session when the students all have very different backgrounds and approaches. We're not trying to teach them to be physicians, physiotherapists or Osteopaths. I can also see the dangers of teaching out-of-context techniques. Having said that, of course the physiotherapists wanted to compare their treatments with mine and that session could have filled the afternoon and would have been pretty boring for everyone else! This also highlights the predicament of "hands-on" from the students' point of view. For example, how will a teaching physician critique the examination and treatment demonstrated by a chiropractor or an Alexander teacher?"

Barbara went on to discuss with me at length her beliefs that a huge value, if not the most value, for our students would be provided by extensive sessions with real performers in which detailed histories can be taken and in which close observation of playing and performing can take place.

There will be more from Barbara and Christine in the future.
10. The Clinic for the Performer’s Voice (CPV®)
A Pioneering Concept to Help Vocal Athletes and Elite Vocal Performers

Ian MacDonald  MSc, DipRCM, ARCM, ALCM
Voice Rehabilitation Specialist; Laryngeal Manual Therapist; Singer and Coach; BAPAM clinician

Mei Lee  MSc, MA
Speech and Language Therapist; Voice Therapist; BAPAM registered practitioner

Mei Lee set up the Edgware Voice Clinic in Barnet NHS Trust, has been a Committee Member of the London Voice Special Interest Group, lectures on voice therapy techniques at Greenwich University and has been a certified Bach Flower Remedies Practitioner since 2000. She has an MSc in Advanced Clinical Voice and has a voice coaching MA from the Central School of Speech and Drama. Her interest in voice is in rehabilitation, health and the healing nature of sounds, and her approach is holistic. She has sung with the Choir of St Martin in the Fields, the BBC Symphony Chorus and currently sings with the Bach Choir. Mei is a Trustee of the Voice Care Network.

Ian MacDonald is the BAPAM registered Voice Clinician and Vocal Health Assessor as well as being the Development Director and course tutor for the Performing Arts Medicine MSc at University College London.

He has studied and worked with some of the most respected voice experts currently involved in vocal coaching (including Robert Sutherland, Janet Shell, Mary Hammond and Paul Farrington) as well as leaders in the fields of rehabilitation and clinical management (John Rubin, Lesley Mathieson, Adrian Fourcin and Ed Blake). In the past, he has also taught voice at Central School of Speech and Drama, Mountview Academy for the Performing Arts and Arts Educational Schools and for a while led the voice department at North Hertfordshire College. He graduated in voice, piano and composition from the Royal College of Music, studied music and psychology at Edinburgh and Glasgow Universities and holds a Masters Degree in Vocal Pathology from University College London. He regularly performs on the concert and lieder platform.

When we met through the British Association for Performing Arts Medicine (BAPAM), we both realised that our skill sets were complementary, discovering that when applied simultaneously they amplified the benefit of the therapeutic process to elite vocal performers and vocal athletes. We decided to set up the CPV. Previously, Mei was privileged to be part of the multidisciplinary Sidcup Voice Clinic team, led by Tom Harris (ENT Consultant) and Sara Harris (Speech and Language Therapist), both being founding members of the British Voice Association (BVA). Tom and Sara pioneered the gold standard of the Diagnostic Voice Clinics over 25 years ago, involving other disciplines such as vocal coaching (Dinah Harris) and laryngeal Osteopathy (Jacob Liebermann).
At the Clinic for the Performer’s Voice (CPV) we similarly adopt a multidisciplinary approach to the treatment of vocal performance pathology. We believe this to be a natural progression from gold standard NHS diagnostic approaches to voice, to the therapeutic care of the professional voice.

The patients we have seen have consistently given very positive feedback about this holistic, supportive approach offered in response to their unique needs. We appreciate that patients are often dealing with difficulties such as post-operative complications, performance anxiety, a career on hold or even the despair that this could be the end of a career.

Speech therapists are trained to focus on restoration, healing and what Ian has described as “holding” the patient in a safe place. The emphasis in these sessions is on the micro level, looking to optimise vocal fold closure, finding and sustaining the patient’s modal voice, recovering lost vocal range and improving vocal health and stamina. Vocal comfort, release of constriction and a clear understanding of the physiological nature of the problem is fundamental. This in itself can be reassuring and help reduce anxiety.

In these joint clinical/coaching sessions, Ian works simultaneously with this holding process on a macro level, seeking optimal production and ease of performance. He encourages the performer to be aware of the different muscle groups involved in voicing, and how to manage the necessary tensions and anxiety that performance involves. Ian concentrates on hearing subtle changes within the vocal tract and demonstrating many styles and vocal qualities, offering exercises that facilitate alternative, less hyper-functional modes of voicing. Simultaneously Mei focuses on discerning whether there are any entrenched patterns of supra-laryngeal effort and internal constriction during this process of performance. This complementary patient-centered partnership opens up the opportunity to explore voice concerns through a variety of assessment and rehabilitation programmes that would not be possible in the normal run of NHS clinics where this ‘clinic to stage’ transition is not catered for.

We are inspired and enthused by this undertaking where there is mutual learning, and respect for each other’s skills. We are complementary and yet different. This combination augments the value of the session for the performer, with first-hand knowledge of the unique stressors and demands faced by the working voice professional – which is a hugely valuable asset to the therapeutic process.

We both believe that collaboration between the voice therapist and voice coach provides some of the best rehabilitation and support available for the care of the professional vocalist.

The CPV is also dedicated to holistic treatment paradigms and, with patient consent, is able to consult with other experts to quicken the performer’s recuperation when necessary or appropriate.
Nicole Wilson is a graduate of the Royal Academy of Music. Nicole joined the first violin section of the London Symphony Orchestra in 1999 and enjoyed travelling the world with them for 9 years. Since then she has been an orchestral contractor, fixing orchestras for TV and Film including the 6th Harry Potter film.

In 2008 she joined English National Opera. Nicole also enjoys presenting programmes for TV and Radio and concerts throughout the UK. As executive producer of FunKey Rhymes, she has released CDs and Apps of children's nursery rhymes with an amusing slant for long suffering parents.

Nicole and her colleague, Helena Wood presented at the BAPAM State of Play 2013 instrument day on the subject of upper strings supports such as chin rests and neck rests. They also talked us through some general points regarding ergonomics and posture.

Violinists and viola players presenting with neck/shoulder/upper back pain should have a think about their shoulder rests. Good ones I've come across include *Willy Wolf Forte Primo*, an easily moldable addition that can be made bespoke in a straightforward way. There is also *Play on Air*, which as it almost says, is an inflatable cushion type addition that can be controlled for comfort and size. Another is *Libero* (a one point attachment).

Also to be considered is the use of a *central chin rest*. This does not suit everyone but is worth trying, as is a *Strad Pad* to help alleviate gripping with the jaw and to reduce 'violin marks ' on the neck (they look like love bites)!

The instrument case itself can be very heavy and cause a lot of aches. Therefore why not consider adapting to have two spaced back straps allowing your rib cage to move easily and not cramp your shoulders.

Look at the player’s working position. Chairs can be sloping backwards and the player may have to turn at a strange angle to see conductor/leader. Things that can help are a] Blocks to place underneath back legs of chair to tilt chair forward or b] Wedge shaped cushions available from *the back shop*, Wigmore street, London but also available easily online.

My blog has reviews of many of these things: [www.fiddlersonthehoof.blogspot.com](http://www.fiddlersonthehoof.blogspot.com)
12. Play Safe Now, Play For Life!

Jono Heale  B/Mus (Hons), Tech IOSH, AIIRSM, AiL
Event & Project Manager; Event Health & Safety Advisor /Officer; Consultant for Access to Music

Jono’s background is the entertainment industry, working both sides of the curtain for over 15 years plus a further decade in the contemporary music education sector. Formerly a professional freelance session musician he has performed across a broad spectrum from cabarets and clubs to full scale European tours as well as performing on Channel 4 and the BBC. He also composes and creates within the commercial new-media audio-visual industry.

He has organised events at a range of venues from small clubs to the Barfly and O2 Academy venues, the NEC Birmingham, BAFTA, BBC and other major venues. Within Jono’s event portfolio he has worked with many celebrities including: Goldie, Edith Bowman, Lauren Laverne, Skinnyman, Basement Jaxx, Nitin Sawhney, Soweto Kinch, Nathan East, TM Stephens and Sir George Martin to name but a few.

He is a contributor to the MSc course, lecturing on the hazards of travelling and touring for the performing artist.

Access to Music (ATM) provides music qualifications to many Further Education colleges and music centres, nationally funded by the government’s Education Funding Agency. ATM sees itself, in part, as a link between music education and the music industry, which is a positive initiative to have in place. However, more needs to be done to make young musicians aware of the occupational health and safety issues related to being a performing musician, especially protecting them from the dangers of loud music. We don’t want to find that once in their thirties, if not before, musicians are suffering from repetitive strain injuries, noise-induced hearing loss or tinnitus.

There are concerns amongst those of us who work between sectors that occupational health, which is taken very seriously in other industries, is somewhat relegated in importance when it comes to the creative arts sector, perhaps especially in rock and roll.

Mechanical engineering, hair and beauty students and those on Apprentice Schemes are all instructed from day one as to the health and safety issues within their profession! So why not musicians? This is fundamental occupational health. Embedded within the control measures in any health and safety system should be culture and training. Education should be paramount even before we have put the earplugs out. And we are not just talking about working with high sound pressure levels, but also manual handling, repetitive strains, working at height, working with electricity, fatigue, stress…the list goes on, as in other industries.

In my work I provide projects and events linked to curriculum outcomes that engage the students to make them more aware of the occupational hazards related to the music industry. One such project is Play...
Safe. This is a campaign aimed at raising awareness amongst students about health and safety and hazards related to music environments, which can be integrated into Functional Skills and Tutorial Sessions as well as linked to curriculum outcomes. Play Safe has generated resources and materials for tutors to use with the support and guidance from BAPAM, Action on Hearing Loss (formerly the RNID and Don’t Lose the Music campaign) and hearing protection specialists, Advanced Communication Solutions. There’s even a competition to win custom-moulded earplugs!

We are aware from our engagement with young people that the perception of hearing protection is better than 10 years ago, but it could still be better. Unfortunately, the effects upon hearing of loud music are more chronic so protection is often seen as of secondary importance. The concept of just turning the music down is not commonplace. However, the danger to students’ hearing during rehearsals at gigs and in clubs is of serious concern. We have to change young people’s perception of wearing earplugs – they could even become a fashion accessory. Not many years ago, bicycle helmets and high-vis’ clothing were uncool. Now everyone, more or less, wears them!

Hopefully this project will help raise awareness and aid a culture change needed in music education. However, the only way to get the message across would be to seemingly embed occupational health for student musicians firmly into the curriculum.

For young people engaging in any other vocational training, Health and Safety is covered on day one! The main concern for these young aspiring musicians must be that they play safely now so they can enjoy and work in music for life!
MSc DANCE SCIENCE

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For more information, please contact Edel Quin, Programme Leader MSc Dance Science
e.quin@trinitylaban.ac.uk or visit trinitylaban.ac.uk

THE VARIETY ON THE PROGRAMME BOTH STIMULATED US AS STUDENTS AND ENCOURAGED US TO CHALLENGE OURSELVES TO BECOME OPEN-MINDED PRACTITIONERS.

Kim Hutt, MSc Graduate
Ian MacDonald

Event organiser, Ian MacDonald, reports on the State of Play – A study day for performers, healthcare practitioners, music teachers, manufacturers and modifiers of musical instruments, 23rd March 2013.

This mini-conference was inspired by all the wonderful inventions, additions and props created by passionate musicians, teachers and practitioners to assist their performing. Though for some, the process of amending and/or adjusting ‘the musical interface’ (the instrument) is second nature – better facilitating them to do what they love – it strikes me that it is still generally considered a black art.

Where adapting the traditional instrument dimensions in a bespoke manner really comes into its own is in helping youngsters play instruments without injury and in helping musicians recover from injury and accident. There is also amazing work being done with disabled children and adults at places like www.joyofsound.net, for example, creating guitars that have special vibrating panels for deaf people, cellos that are fixed and angled to make wheelchair approach possible, two-way zithers that have double docking space for two wheelchair users to sit at it.

Playing aids, props, straps, rests and other instrument modifications are also of interest to clinicians and practitioners working with performers, but often either practitioners don’t know specific items exist, or have seen products on the web but are not sure how they work in practice or indeed if they actually work safely, as empirical evidence supporting the marketing claims is difficult to find.

State of Play delegates were a mixture of professional performers, conservatoire teachers, students, lecturers, researchers, healthcare professionals, musicians and a dancer. A number had suffered some form of nerve compression problem in the past so had a vested interest in the presenting subject. Across the board, feedback about the day was positive with particular pleasure from all in seeing a right-handed trumpet being taken apart by Dave Woodhead then reassembled for a left-handed player with cable ties in about 5 minutes; perfectly playable with no need for any new bits to be made. Dave explained to us that there is no limit to adjustments you can make to brass instruments. Materials can be changed for look, weight or to avoid allergic reaction. Crooks (U-shaped bits of the tubing) and the direction of tubing can be shaped and amended to suit hand size, arm length, neck length or to assist getting back to playing again post-trauma… in fact there is now a small plastic trombone on the market that is light and easier to control even if you are a small person of 6 or 7. And it sounds okay too!

Marcus Reynolds presented his invention, Stratos, demonstrating it with a nifty trombone solo. He has worked on the Stratos for many years, since a serious accident left him injured. The device is used to facilitate better lip, jaw and head posture for trombonist (and for all other brass instrumentalists) as well as to provide structural and stabilising support. It was great news to hear that he is now getting
commissions from all over the country to reward him for the time and money he has invested and the ingenuity of his creation.

The afternoon gave us the duet of Nicole Wilson and Helena Wood, violinists with ENO Orchestra. All the delegates agreed that these two musicians could go on the road with a fantastic and presentation covering their experience in the working environment, ergonomics, musicianship, technical expertise, and knowledge of the great variety of available equipment (e.g. chin and neck rests, seating).

Guitar tutor, Paul Sogaard rounded off the day, expertly reviewing the different posture issues faced by the three main designs of guitar – acoustic, electric and bass. As a long time member of the BAPAM Directory of Performing Arts Medicine Practitioners, he focused on many of the ergonomic problems tackled by musicians, demonstrating the various adjustments to the guitar interface and discussing the eternal questions of what additional tools and equipment (if any) to use… Again, research into the long term health benefits of using foot stool, neck straps or ergoplay support is sparse.

**Student Research Projects**

The day also included representatives from the first year of the MSc in Performing Arts Medicine at UCL, with presentations from Efthalia Palaiokastriti, physiotherapist and guitarist (Functional scoliosis in guitarists using different guitar support tools), Isabel Artigues Cano, physiotherapist and flautist (Evaluating hypermobility of finger joints in flautists) and Dr Hara Trouli (Performance measures in pianists with clinical symptomatology in the upper limbs: a cross-sectional study using EMG, digital pianos recordings and video postural analysis).
14. BAPAM Training Day: The Perils of Percussion Playing and Alcohol and the Performing Arts

Cardiff University

Saturday 18th May 2013

Dr Jonathan White MB ChB
NHS General Practitioner; BAPAM Trustee; AMABO Medical Advisor to CBSO; BAPAM Advisor to Birmingham Conservatoire and School of Acting; BAPAM GP - West Midlands.

The latest BAPAM Training day was held in the splendid surroundings of the Main Building of Cardiff University. A small but enthusiastic group of practitioners and other interested individuals gathered in the Wallace Lecture Theatre for a day of informative, interactive and practical sessions concentrating on the physical problems faced by percussionists, and the impact of alcohol in the performing arts workplace.

After a welcome from Dr Penny Wright – BAPAM Honorary Medical Director and Trustee – we were treated to one of the best anatomical lectures and demonstrations I have ever attended, *Everything You Used to Know about the Functional Anatomy of the Hand*. If Dr Alan Watson – Senior Lecturer in Anatomy and Neuroscience at the School of Bioscience, Cardiff University – had been my lecturer at medical school I am sure I would have a much better understanding of what goes wrong with musicians. Clear diagrams and explanations accompanied by clever animations really made the subject simple and straightforward. I hope Alan will present again at future training days.

Next came a presentation by Jennie Morton, an Osteopath working with BAPAM and an Honorary Lecturer at UCL on the MSc Performing Arts Medicine course. *Posture for Percussion: Optimising Performance through Efficient Biomechanics* focused on the upper arm, shoulder, neck and head, particularly concentrating on posture and position. Detail about the lower limb and the problems experienced by kit drummers were included. A practical demonstration with a final year percussionist from the Royal Welsh College of Music and Drama (RWCMD) illustrated how small changes in position not only improved posture but playing efficiency and tone.

After a break for refreshments and an opportunity to warm up (the air conditioning was set to ‘cool’) we returned to the lecture theatre for a video presentation by Katherine Butler – Clinical Specialist Hand Therapist (unfortunately Katherine was unable to be at the Training Day due to illness). In this masterclass, *Assessment and Treatment Techniques for Percussionists*, Matt Oliver, the drummer from JettBlack, a heavy metal band, was interviewed in front of a live audience by Katherine who discussed how she diagnosed his problem, treated him and set up a rehabilitation program. The video is available on the London Hand Therapy website [www.londonhandtherapy.co.uk](http://www.londonhandtherapy.co.uk)

The lunch break was an opportunity to network with colleagues old and new. As usual, it was not long enough to speak to everyone but there was lively discussion and exchange of ideas.

We were then able to take a walk in the spring sunshine across the park to the new building occupied by the RWCMD where we were treated to a demonstration of percussion instruments. The specific problems associated with playing timpani, vibraphone, marimba and drum kit were ably illustrated by three
informative and eloquent students from different years. This was a very interactive session and we were all able to learn a great deal about the difficulties of four stick technique, French and German stick grip and balancing on one leg to use the pedal on the vibraphone. Inevitably in a small room full of serious hardware, the question of noise induced hearing loss was raised and it was reassuring to know that the students use appropriate ear protection as a matter of routine.

Returning to the University, we were given a review of the problems associated with alcohol in the world, the UK and in the workplace. It was sobering to learn that the last time BAPAM had addressed the alcohol issue was back in 2000 and that although the awareness of alcohol abuse is more prevalent, there is still very little in the way of policies in place, particularly in orchestras. Dr Jenny Lisle – Consultant in Public Health and former AMABO doctor to the English Chamber Orchestra and ENO – put the whole subject into context and this was followed by practical thoughts from Peter Harrap – Chorus and Orchestra Director, Welsh National Opera. WNO have implemented an Alcohol Policy which has been in place for several years and could stand as a model for other orchestras. However there must be a full commitment to the policy by management and musicians alike. There needs to be further discussion with the major players including the Musicians Union and the Association of British Orchestras who are promoting Health and Wellbeing in the orchestra.

And so ended a most successful day. Everyone appeared to have learned a considerable amount from the well presented talks and demonstrations and left looking forward to the next training day. If you are on the BAPAM Directory and have not been to a BAPAM training event for two years, you must attend the next one, which will be in London in November. The events always have interesting presentations and are relevant to all practitioners, whatever the speciality. They are an opportunity to network and meet up with likeminded individuals who all have an interest in this fascinating area of performing arts medicine. I look forward to seeing you there.

Dr Hara Trouli MD, MSc Performing Arts Medicine
CEO of The International Society for the Study of Tension in Performance (ISSTIP) and clinical adviser for performers at the Tech Music School, London

Abstract

As part of my MSc in Performing Arts Medicine, I chose a research project on detecting measures that may evaluate physical aspects of piano performance. This is a study looking into how these measures can be communicated to the pianist and the clinician. I used digital piano recording (midi), surface electromyography and video postural analysis. In the process of the assessments and the evaluation of the results, a chart was created in order to provide a record of the pianist’s performance that can be re-visited at follow-up and compared with a new record in the process of recovery from illness or rehabilitation from injury.

Introduction

Pianists with clinical symptoms in the upper limbs are a challenge for the medical practitioner. History taking, clinical examination and investigations are essential but the assessment of a pianist cannot be complete without looking into the biomechanical elements of their technique. These can be demonstrated with digital recording of their performance, visual filming and electromyographic representation that can produce measures of performance. The ProformaVision® multimodal system of combined MIDI, EMG and Video was used. The aim was to use this present work as a platform for future research.

Methodology

Ten pianist volunteers were recruited and they had a 2-hour session that included musical and medical history taking and the Proformavision® assessment. The volunteers are presented in the following table (Table 1).
A midi keyboard was connected to the computer. The midi recording identified notes and placed them in the correct octave on the piano roll. A pair of adhesive electrodes (sEMG) were placed on the skin over the examined muscle groups of the forearm extensors, the upper trapezius or the forearm flexors. Four sEMG channels were labelled within the software and the muscle activity was shown as a red line on the graph representing the extensors’ activity and as a blue line on the graph representing the trapezius’ or the flexors’ activity (Image 1 – middle section). Two web cameras were positioned on either side of the keyboard in order to film the movement and the position of the arms and fingers on the keyboard (Image 1 – lower section).

Eight tests for each hand were performed, 3 tests for baseline muscle activity and 5 tests with basic elements of piano technique. We looked at five measures for each modality and these were recorded on a
chart which we named **M.E.V. Chart** (Midi, EMG, Video Chart) that was designed to accommodate all measures producing a comprehensive profile of the pianist’s assessment. The numeric and symbolic measures were summarised in the form of a descriptive report.

## Results

Charts of the readings from three volunteers are given below (volunteers 003, 004 and 008). The symptoms/diagnosis, recorded in the interviews, were none for pianist 003, tendonitis/polyarthritis both hands for pianist 004 and focal dystonia right hand for pianist 008.

The 16 tests are on the top horizontal axis and the 15 measures on the left vertical axis. The chart presents the left hand on the left side and the right hand on the right side. A key to the measures is outlined on the far right side of the chart. Measures considered outside the expected are in red colour.

Under the chart there is a report, which verbally summarises the findings. The following examples of the chart are intended to show how all data can be represented on one plane making it helpful when cross-referencing different scores. Click on each chart for a larger image (online).
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**VIDEO Chart - 004**

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## M.E.V. Report - 004

**Left Arm** (diagnosis from He - tendonitis, palmarflexion):
- M.E.V. Chart: Left hand flexion with temporal equality and stable pattern.
- EMG: High activation of extensors in paraplegics and onsets and high activation of extensors in paraplegics and onsets.
- VIDEO: Elbow and wrist angles are measured throughout. The metacarpal palm collapse in paraplegics and onsets where the fingers also tauten out. In the left hand the 4th and 5th metacarpophalangeal joints collapse. There are contralateral dystonic elements in the 4th and 5th fingers.

**Right Arm** (diagnosis from He - tendonitis, palmarflexion):
- M.E.V. Chart: Right hand flexion with temporal equality and stable pattern.
- EMG: High activation of extensors in all tests. There is no high activation of extensors in any tests.
- VIDEO: Elbow and wrist angles are measured throughout. The metacarpal palm collapse in paraplegics and onsets where the fingers also tauten out. In the right hand the 4th and 5th metacarpophalangeal joints collapse. There are contralateral dystonic elements in the 4th and 5th fingers.

**Date:**

**Signed:**

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**Left Arm** (diagnosis from He - flexion/hyperextension right hand):
- M.E.V. Chart: Left hand flexion with temporal equality and stable pattern.
- EMG: High activation of extensors in all tests. There is no high activation of extensors in any tests.
- VIDEO: Elbow and wrist angles are measured throughout. The metacarpal palm collapse in paraplegics and onsets where the fingers also tauten out. In the left hand the 4th and 5th metacarpophalangeal joints collapse. There are contralateral dystonic elements in the 4th and 5th fingers.

**Right Arm** (diagnosis from He - flexion/hyperextension right hand):
- M.E.V. Chart: Right hand flexion with temporal equality and stable pattern.
- EMG: High activation of extensors in all tests. There is no high activation of extensors in any tests.
- VIDEO: Elbow and wrist angles are measured throughout. The metacarpal palm collapse in paraplegics and onsets where the fingers also tauten out. In the right hand the 4th and 5th metacarpophalangeal joints collapse. There are contralateral dystonic elements in the 4th and 5th fingers.

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Discussion

The existing literature emphasizes the pressing necessity to bridge communication between pianist and clinician\textsuperscript{1,2}. Authors and clinicians have often pointed out that Performing Arts Clinics need to provide ‘extra’ service with understanding of the peculiarities of the instrumentalist’s technical applications\textsuperscript{3,4} and that a closer assessment of basic piano technique can become an integral part of the consultation\textsuperscript{5}. This study makes us believe that basic elements have to be achieved perfectly from an ergonomic and energy saving perspective so that the musician can sustain endurance, avoid fatigue and eliminate physical injuries stemming from faulty technique.

The methods of MIDI\textsuperscript{6,7}, EMG\textsuperscript{8,9,10} and Video\textsuperscript{11,12,13} are musician-friendly and non-invasive and they can become ancillary methods of assessment in the clinical setting\textsuperscript{14}. In this study, the ProformaVision\textsuperscript{®} multimodal system was used. In addition, the M.E.V. Chart was designed where the assessor can record all the measures after viewing the recordings. A written descriptive report is a summary of the measures.

This study is a preliminary stage and a platform for further research. No trends or correlations are shown at this stage. More volunteers are needed in order to validate measures, make comparisons, correlate with clinical symptoms and signs and analyse statistically the outcomes. The aim was to see whether accumulating the measures from all three modes of assessment can give the clinician enough information to understand the patient’s technical profile and correlate this to clinical findings. The multimodal system and the M.E.V. Chart can give indications of harmful habits in early stages and become a prevention tool for these conditions. It is therefore anticipated that the multimodal system and the M.E.V. Chart can help not only in the diagnostic but also the therapeutic and rehabilitation stages as a means of monitoring progress. The M.E.V. Chart can be used in the Performing Arts Clinic, potentially bridging the clinician-pianist distance and improving communication between clinicians.

This study was approved by the UCL Research Ethics Committee and was submitted for the final examination in September 2012.

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**Acknowledgements**

I would like to thank Professor Howard Bird for his medical and research input, BAPAM, ISSTIP and EPTA for helping me recruit the volunteers and Dr Kathleen Riley from Proformavision, USA who arranged for the system to be set up in London, UK and for her time to train me on how to use it. I am also grateful to Myovision, USA for their generosity to let me borrow their system for the duration of the study and for their technical support throughout.
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16. An investigation into Functional Scoliosis in Guitarists, Examining Different Guitar Support Tools

Efthalia Palaiokastriti  MSc Performing Arts Medicine BSc MCSP
Physiotherapist and guitarist

Abstract

This small-scale pilot study set out to assess whether lateral deviations can occur due to the repetitive movements and the requisite non-neutral postures employed by guitarists. Ten classical and acoustic guitarists were measured using different guitar support equipment in different seated positions. The methodology used was primarily based on photo assessment of each musician’s different playing positions using two-dimensional measurements to examine lateral deviations and the risk of functional scoliosis. Results have shown that all guitarists involved in the project appear to present lateral transient deviations of the vertebrae while playing. In addition, two cases with an already present scoliosis found their posture resolved back to a more neutral position whilst playing in certain positions.

Introduction

Guitar is currently one of the most popular instruments played worldwide, and guitarists represent one of the largest and fastest expanding groups of instrumentalists. Learning guitar is a demanding and laborious process requiring long hours of practice. While practising and performing, guitarists adopt various positions in respect to the type of guitar and their performing style. Examples of different positions are: standing - usually employed by electric and bass guitarists; sitting with the instrument on the legs (usually crossed) - usually adopted by acoustic or flamenco guitarists; and sitting with a support tool (e.g. a footrest) - often preferred by classical guitarists.

Research into guitarists’ playing postures has highlighted the extended time periods of static loading of neuro-musculoskeletal structures. A guitarist also has a greater range of innately peculiar gestures in comparison with other instrumentalists due to position and technique. Research on musculoskeletal changes related to instrumentalists shows that 11% of the subjects presented scoliotic curves, with players of string instruments having developed lateral deviations with convexities to the right, in the lumbar, thoracic and thoraco-lumbar regions. Studies on posture and postural disorders have also revealed that music students present a variety of such conditions related to instrument playing, in contrast to other students who do not present similar deformities as often.

It is possible that guitarists develop excessive spinal lateral curvatures due to long term professional playing. From a medical standpoint, these postural deviations are described as functional or occupational scoliosis and are defined as transient reversible curvatures towards either the left or right side of the spine, and can occur naturally due to asymmetric posture required for the playing of guitar and other instruments. This research aims to assess whether guitar-playing positions may be responsible in any way for the postural disorder of functional scoliosis.
Methods

Participants

Guitarists were recruited through BAPAM clinics and advertisements on the BAPAM website. Participants had to be over eighteen years of age and have played either classical or acoustic guitar professionally for at least three consecutive years. Ten guitarists (one female and nine male) within the range of 22 to 44 years of age volunteered to participate in this study.

Data Collection

Questionnaire

A questionnaire was used to collect information on medical and guitar playing history, as well as playing habits, symptoms and occurrence of pain or discomfort related to performance.

Physical Examination

Physical assessment of the participants was performed by the author (a professional physiotherapist) who took detailed data regarding their general health and body alignment.

Photography and marking

Participants were asked to expose their backs so that a series of markers could be placed on their spine and certain anatomical landmarks (see Table 1). They were photographed during a series of simple tasks related to guitar playing.

a. Sitting (figure 1); b. Holding guitar (figure 2); c. Playing with legs crossed (figure 3)

d. Playing with a footstool (figure 4); e. Playing with a Tappert ergoplay tool (figure 5)

Comparisons were made between the lateral deviations from the sitting position to each performing position and then plotted onto a graph (Charts 1 & 2).
Table 1. Posterior Thoracic Spinal Markers

<table>
<thead>
<tr>
<th>Line Identification</th>
<th>Correspondent Sticker Mark</th>
</tr>
</thead>
<tbody>
<tr>
<td>a1</td>
<td>C7</td>
</tr>
<tr>
<td>a2</td>
<td>T4</td>
</tr>
<tr>
<td>a3</td>
<td>T12/L1</td>
</tr>
<tr>
<td>SL</td>
<td>Left acromion process</td>
</tr>
<tr>
<td>SR</td>
<td>Right acromion process</td>
</tr>
<tr>
<td>AL</td>
<td>Left axillary cavity</td>
</tr>
<tr>
<td>AR</td>
<td>Right axillary cavity</td>
</tr>
<tr>
<td>ScL</td>
<td>Left lower scapula edge</td>
</tr>
<tr>
<td>ScR</td>
<td>Right lower scapula edge</td>
</tr>
<tr>
<td>IL</td>
<td>Left inner edge of upper iliac crest</td>
</tr>
<tr>
<td>IR</td>
<td>Right inner edge of upper iliac crest</td>
</tr>
</tbody>
</table>

Figure 1. Anatomical Landmarks

Figure 2. Holding the guitar using the footstool

Figure 3. Playing the guitar in crossed legs position
Figure 4. Playing the guitar using the footstool

Figure 5. Playing the guitar with tappert play ergonomic tool

Figure 6. Tappert Ergoplay support tool

Figure 7. Footstool

Chart 1. Subject 3

Chart 2. Subject 5
Findings

There was some correlation between hours of play per day or week and the occurrence of symptoms, such as pain and tension. The shoulder region and the wrists were found to be the sites of greatest discomfort.

In a typical guitar playing posture, the left shoulder is more abducted than the right and, as anticipated, shoulder asymmetry was evident in all participants in the current study. The majority of the subjects also had decreased lumbar lordosis, which could be related to scoliosis in this region. In the cases where lumbar hypolordosis is accompanied by thoracic hyperkyphosis, lack of lumbar lordosis could appear due to muscle shortening triggered by the over-lengthening of thoracic muscles caused by kyphosis. Additionally, hyperkyphosis is likely to appear due to the sustained leaning forward position adopted while playing the instrument. Finally, all participants had scapular prominence likely related to repetitive arm/shoulder elevation.

All guitarists in this study portrayed lateral shifts of the sticker marks to the right while both holding and playing the guitar. The magnitude of these shifts differed depending on which playing tool or position was adopted. Conversely, in the crossed-legs position and in a no-support tool position, where the guitar was placed on the left thigh, the shifts of the stickers were mostly towards the left. In the cases where there was no presence of scoliosis, the footstool triggered greater deviations compared to the Tappert ergonomic support tool and crossed-legs position. However, in the cases where an already present scoliosis was observed, the footstool aggravated the deviations when playing, whereas the crossed-legs position seemed to significantly improve it.

Special Cases

One participant characteristically placed the footstool on his right thigh due to his playing technique. This holding position seemed to improve his scoliosis. The Tappert Ergoplay equipment was shown to be beneficial for him and another participant, improving scoliotic curvature. In only one case did it prove less suitable than the footstool.
### Discussion

Studies with instrumentalists\(^7\) have identified tension on the shoulders and back as primary symptoms characterizing high-level musicians. These findings were replicated in guitarists in the current study. Participants also exhibited a variety of symptoms directly associated to different seated positions and different playing tools.

In the current study, it was evident that guitar playing generates transient scoliotic curves which ceased to exist as soon as the body returns to the neutral position without the guitar. This phenomenon could be said to be functional or postural scoliosis since it occurs due to constant and repetitive occupation with the instrument, which corresponds with Hawes & O’Brien’s theory\(^6\) that adoption of extreme positions can lead to momentary movements of the vertebrae. In fact, the incidence of scoliosis in instrumentalists is not unknown. A study of music students in the early 1990s identified acquired scoliosis in guitarists due to repetitive playing\(^5\). Similarly, an investigation\(^4\) with a group of instrumentalists found guitarists presenting with scoliosis had a convex curvature to the right side of the spine.
In the two special cases highlighted, curvatures were reduced by cross-legged playing and playing tools. It is possible that improvement was caused by the shorter leg being placed on the longer one and that the tool also corrected for this anatomical perturbation.

Based on this study’s findings, it could be said that all guitar tools potentially cause postural scoliosis. Indeed, there is no clear evidence that the use of specific support equipment will maintain the spine totally upright during guitar playing. Use of a specific tool or position may not be the ideal option, and it may be preferable to alternate between support tools and positions. Shifting from one tool to the other could also help to prevent a habitual postural pattern.

**Conclusion**

This pilot study of the different playing positions and supports used by guitarists found lateral deviations of specific vertebrae both while holding and playing the guitar. These deviations from the midline could make guitarists susceptible to functional scoliosis. However, good guitar technique, maintenance of body fitness, frequent breaks in between practice sessions, interchange of guitar support equipment and playing positions could reduce the risk of development functional scoliosis.

*This study was approved by the UCL Research Ethics Committee.*

**References**


17. My Route to UCL/BAPAM’s First MSc in Performing Arts Medicine

Dr Alison Loram PhD
Alexander Technique Teacher; BAPAM registered practitioner

My initial training was as a violinist at the Royal College of Music in the 1980s. Towards the latter part of my four-year course, I started experiencing aches and pains in my hands and arms, and in particular, my left shoulder, which eventually forced me to stop playing midway through a postgraduate year leading the orchestra of the National Centre for Orchestral Studies at Goldsmith College.

I saw various consultants and therapists, but the treatments suggested, including rest, physiotherapy, acupuncture and Osteopathy, offered little improvement. There seemed to be nothing clinically wrong with my shoulder, but I was in constant pain, whether I played my violin or not. Eventually, I saw a neurosurgeon in my home town who suggested that I go for some lessons in the Alexander Technique. Initially, I wasn’t keen as I had had some lessons whilst in London but hadn’t been able to make sense of it or how it could help. However, I felt I’d reached the end of the road in terms of medical support, so I booked a lesson with a local teacher, Victoria Door. To my surprise I was met with the first explanation of my problems that made sense and provided a way forward. Victoria explained to me that my shoulder pain wasn’t just related to playing my violin but to everything I did. It was part of the way that I put my whole mechanism – brain and body - into activity – any activity. I was using far too much muscular effort even in simple everyday tasks such as standing and sitting, let alone playing the violin. The result was that my body was physically pulled out of shape so that the different parts of me didn’t work together as they should, affecting my coordination, and causing discomfort and pain. This “misuse” was demonstrated to me in my very first lesson, not only because Victoria showed me in a mirror how my shape changed through the lesson as she worked on me with her hands, but also because it was the first time in months that my shoulder had stopped hurting. Over time, I realised that because our brain and body function as one, there was a mental aspect to my misuse in that there was a relationship between the physical problems I was having and my attitudes to different aspects of everyday life, including the way that I thought about my playing.

I began weekly lessons which included applying the Alexander Technique to my violin playing as well as ordinary everyday activities, and the different thought processes involved. I very quickly progressed to the Teacher Training Course of the Professional Association of Alexander Teachers (PAAT, www.paat.org.uk), directed at that time by Brian Door who had trained and worked with Walter Carrington who, in turn, had trained and worked with Alexander himself. The course, based in Birmingham, is part-time, taking place mainly on weekends which makes it possible for students to continue their regular jobs. The curriculum is one of the most comprehensive in the UK, involving academic study and written examinations in anatomy, physiology, and the writings of Alexander and others, as well as practical exams in working with the hands. So, not only did I receive a thorough training in the Alexander Technique, how to apply it to almost any situation in life and, thus, how to teach people from many different backgrounds, I learned how to study, which enabled me later to go on to gain a BSc and a PhD in science. In addition to teaching the Alexander Technique, I worked as a postdoctoral researcher in ecology at the University of Sheffield and for an independent countryside organisation. I also qualified as a garden designer which tapped into my...
interests in ecology and gardening, and in drawing and painting (if I hadn’t been so completely besotted with music, I probably would have attended art college after leaving school).

Throughout this time, my passion for the violin has remained and has been at the root of my work as an Alexander teacher, which has also been a constant in my life. Early in the 1990s, shortly after qualifying as a teacher, I took over from one of my colleagues as Visiting Tutor in the Alexander Technique at Birmingham Conservatoire, where, with my PAAT colleague Roy Thompson, I run courses in the Alexander Technique. The courses, delivered in a combination of classes and individual lessons, include practical work and the theory of the Technique, and students are able to participate throughout their time at the Conservatoire. Over the years, I have developed a particular interest in the problems of musicians, including what might be regarded as more psychological issues, such as performance anxiety. Students often bring their instruments to classes and lessons, or sing, and after almost 20 years, I reckon to be able to help most of them to improve their mechanical set up in playing/singing, and their mental approaches to performance and practice.

I’m always keen to help students prevent problems from occurring in the first instance, and to stop any they may already have from worsening. My own problems reached a level where I had to stop playing because I didn’t have the right advice sufficiently early. That wasn’t anyone’s fault, more that performing arts medicine was a relatively new discipline and there wasn’t the knowledge that there is now. Things have moved on considerably since then and, through BAPAM, there is a better system of available support and an emphasis on helping people to keep playing wherever possible. There is also increasing recognition that misuse is a missing link in getting to the root of many musicians’ problems. Traditionally the finger has been pointed at “poor posture” or “poor technique”, as underlying causes, but these are simply limited manifestations of misuse. Misuse is fairly universal and affects different people in different ways, many of which they are frequently unaware of. However, as Alexander teachers, we know that if we can help people to improve their use so that they go about their everyday lives using less muscular effort, problems such as discomfort, tension, aches and pains, technical difficulties, poor posture and psychological issues, such anxiety or depression, also improve. And of course, musicians have the same problems in ordinary life as anyone else, but by helping them to gain conscious control of their mental and physical states, the Alexander Technique can help them to deal with many of these. My students often report that they are better able to function in social or work situations, or in their academic studies, as well as in their practising and performing.

I joined the BAPAM Directory as an Alexander Teacher in 2008 and as a result of attending some of the training days and hearing about the research that was being carried out, I began to think that it would be interesting to put onto a more scientific basis some of the things I’d found out through my work with instrumentalists and singers at the Conservatoire. Around the same time, the MSc at UCL came up and so I decided to apply and, was delighted to get a place. I’m doing the course part-time over two years, (2011-13) so coming to the end very soon: It’s been really interesting and has given me a good deal of insight into what else is going on in performing arts medicine and the different approaches to the problems encountered not only by musicians, but dancers and actors as well. We have had lecturers from a wide range of backgrounds, but many of them are at the very top of their field and/or at the cutting edge of research, so we’re really learning “how it is”. I would recommend anyone with an interest in performing arts medicine to consider applying for a place on the course.
For my research project, I am collaborating with movement scientists at the Institute for Biomedical Research into Human Movement and Health at Manchester Metropolitan University, to look at the movements throughout the whole body and muscular activity of the neck and shoulders involved in playing the violin/viola. I’m hoping to attract students, professionals and amateurs to take part in an individual laboratory session lasting around two hours.

Any violin or viola players interested in participating can contact me on alison@loram8.freeserve.co.uk
18. How I Have Been Inspired by my Participation in the MSc in Performing Arts Medicine

Dr Michael Durtnall
Chiropactor & Acupuncturist, Fellow Royal Society of Medicine, Chairman: Sayer Clinics London

I am a practising chiropractor and have been Chairman of Sayer Back Pain Clinics in central London for the last 30 years, and after my very musical and artistic children had graduated from university, I decided it was my moment to look at post-graduate education again.

When I saw the listing for the Performing Arts Medicine course at University College London eighteen months ago I was electrified. This was exactly the course for me as I always especially enjoyed treating dancers and musicians and I wanted an in-depth as well as broad course on treatment of performers which included research.

This new and unique course is a fascinating experience involving musculoskeletal conditions and psychology for performers, evidence-based therapeutics and rehabilitation of injuries for dancers, musicians and performers. It is so interesting to be lectured by some of the UK's most experienced and cutting edge experts on hand surgery, orthopaedics, Osteopathy, voice pharmacology and psychology.

Studying part time has been perfect for me as I can treat patients in my practice whilst studying one day a week with evenings at home to keep abreast of the latest research and studies.

My fellow students have included chiropractors, Osteopaths, physiotherapists, orthopaedic surgeons, GPs, voice coaches and nurses from all over the world. We are all experienced practitioners who voice our opinions freely during lectures, making for very interesting discussion and multi-faceted points of view on every subject - it is this that makes it so interesting and informative, allowing healthy discussions around the subject of orthodox and complementary attitudes in medicine... That is the only way that progress is made ... by questioning, occasionally proving wrong and improving on the status quo.

The programme includes studies at the Laban Trinity Conservatoire of Music and Dance (an amazing building in Deptford) with Dr Emma Redding – course director –involving watching dancers perform, and discussion of their medical conditions, stresses and injuries and the latest research into injuries, rehabilitation and treatment.

We also have had lectures at the Royal College of Music with Professor Aaron Williamson and Professor Howard Bird, both experts on medical conditions in musicians. We have been able to walk amongst the musicians of the BBC Symphony Orchestra at the Maida Vale Studios studying in close detail, while they rehearse, the ergonomic and positional asymmetry of their instruments and the stresses and strains on their joints, muscles and tendons of the neck, shoulder, elbow, wrist and hand.

We completed a very intense course on medical statistics to update us and enable us better to write our projects and any future medical research papers. This was most certainly not easy but, as the examination neared, it actually became unexpectedly and inexplicably quite enjoyable.
Conducting the MSc is our course leader, honorary lecturer and teaching fellow, Ian MacDonald. Ian is an expert on vocal pathology and voice therapy as well as being a professional singer: he has been a brilliant supervisor and a wonderful help to all of us on the course, helping make it enjoyable and efficiently run.

I think the real gem of this MSc is the hands-on nature of the teaching, with one of the world’s leading hand surgeons, Mr Ian Winspur, explaining and precisely demonstrating on our own hands, how to examine properly various hand and wrist conditions, or Osteopath, Jenny Morton, teaching us with her background of musical theatre. We have also benefitted greatly from contributions by Dr Mike Shipley, Consultant Rheumatologist; Professor Howard Bird, Professor of Pharmacology; Professor Rodney Grahame, world authority on hypermobility; Katherine Butler, Hand Therapist; Dr Mark Edwards, Neurologist; and many other experts.

My research has involved accurately measuring leg-length differences in musicians and dancers using a novel system of ultrasound and laser which avoids the use of x-rays. I am also assessing and analysing posture, spinal curvature, overall health and medical conditions of musicians and dancers at Central Ballet School and Ballet Rambert, as well as musicians at the Royal Academy of Music.

At the end of the first year I was overheard saying that, "I felt sorry for the full time students who had just finished the course in a year because I still had another year to enjoy and experience the multifaceted array of musical and dance medicine which makes this fascinating Masters course so unique".

Well, sadly, the course is almost over from me now as I have my finals in May and June.

I have applied to do long, part-time Ph.D research at University College London and have been successful. I start in December this year to investigate stimulation of bone lengthening to equalise significant leg length discrepancy in children - if I can successfully prove this, it will be a world first and I can expect my Nobel Prize in about 10 years!

It has been a fantastic journey and I have grown as a person and have learnt hugely more than I imagined possible and developed a confidence that I never had before. I am not exactly young, yet for the first time in my life I will be teaching a workshop at the Eighth World Congress on Back Pain and Pelvic Pain in Dubai in November this year. I could not even have imagined having the confidence to do this, two years ago.

So thank you Ian and the team at Performing Arts Medicine UCL. It's been great!!!
I would like to thank the following people, without whom the MSc in Performing Arts Medicine would not have been possible. Its inception is due entirely to your passion, enthusiasm and sustained contribution.

Aaron Williamon
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Brigitte Wrenn
Bruce Lowe
Carol Chapman
Catherine Butler Smith
Catherine De Val
Chris Mimnagh
Christella Antoni
Christian Herbst
Christine Dean
Christine Harrison
Christopher Wynn Parry
Cindy Jourdaine
Clare Hicks
Dan Hayhurst
Dave Webster
David Hargreaves
David Mooney
David Powell
David Sulkin
Deborah Charnock
Declan Costello
Diane Widdison
Drusilla Redman
Eleanor Quested
Emma Delanoy
Emma Redding
Esther Ruth Elliot
Fares Haddad
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Jig Patel
Jill Guymer
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John White
Jono Heale
Julie Kingsbury
Kal Parmar
Karen O’Connor
Kate Ashcroft
Katherine Butler
Kimberley Hutt
Leo Crabtree
Lesley Mathieson
Lisa Lotte
Louise Grainger
Mark Edwards
Mei Lee
Mike Shipley
Naomi Norton
Naomi Wayne
Nick Owen
Paul Chekley
Paul Hughes
Paul Roberts
Paul Thawley
Penny Wright
Peter Davis
PPL
Rodney Grahame
Roger Sutton
Rowan Pool
Royal Ballet
Royal College of Music
Ruth Epstein
Sarah Beck
Selma Gokcen
Shashi Hirani
Simon Davies
Styliquents
Tom Doughty
Tommi Sliiden
University College London
Val Walters
Zoe Lau
We don’t just help with broken bones
Hello and welcome to the BAPAM Student Advocate Scheme (SAS) hub within the newly reinstated BAPAM journal. I founded the SAS at the University of Leeds in 2011 and now work for BAPAM as the Student Advocate Scheme Manager. I am currently based at the Royal Northern College of Music in Manchester, where I am conducting my Arts and Humanities Research Council (AHRC)-funded PhD entitled Health Education in Instrumental/Vocal Lessons: The Teachers’ Perspective. Prior to this, I studied music at the University of Leeds at undergraduate (BA First Class, awarded 1st July 2011) and Masters level (MMus in the Applied Psychology of Music, Distinction, awarded 12th December 2012).

My personal involvement with BAPAM began in 2009 when I sought the help of Professor Howard Bird (BAPAM Rheumatologist – Leeds clinic) for chronic back and neck pain (spot the violinist!) and was diagnosed with Joint Hypermobility Syndrome (JHS). Since then, I have continued to be involved with BAPAM through freelance presentations about my experiences as a young musician with a performance-related problem and the development and introduction of the SAS (see below). In addition to my general support of health and wellbeing for musicians, I have also researched various aspects of musicians’ health throughout my academic studies so far and hope to continue to do so beyond my PhD.

The Student Advocate Scheme

The SAS is a health promotion initiative that aims to inspire tertiary level performing artists to act as health promotion advocates within their establishment. The scheme partially grew out of my experiences as a musician and music student, in particular being diagnosed with Joint Hypermobility Syndrome and finding the support I needed to continue with my studies. Through collaboration with the Music Department and Society at Leeds and the BAPAM team, the Student Advocate Scheme (SAS) was developed as a model for health promotion in tertiary level performing arts establishments. Thanks to the success of the scheme during its first two years at Leeds, BAPAM is now supporting an expansion of the scheme to include other performing arts establishments across the UK.

The idea behind the SAS is very simple. A student within the culture at an establishment is often best placed to understand how health education and support for themselves and fellow students can be improved. From my experiences at Leeds, and thanks to the input of others involved in the scheme, I have suggested a framework for development that includes three elements: education, advocacy and support. This framework is intended to be flexible and provide opportunities for future student advocates to develop certain elements that may be less accessible or available at their establishment.
Education: This could include the organisation of lectures, seminars and workshops for students to attend to learn more about how to prevent or manage performance-related concerns. This education could be included in the curriculum, however at many establishments this is not currently an option.

Support: Although advocates do not give health advice they can support students by discussing performance-related concerns and reducing the isolation that some affected performers have experienced. The presence of the advocate at Leeds has encouraged more open discussion of performance-related concerns and how to prevent and manage them. Advocates can also direct students to appropriately qualified care; this may include introducing a clinic within the establishment or promoting existing health care services outside the department. Participation in the SAS can enhance an establishments’ duty of care to their students by demonstrating a commitment to preventing injury and promoting life-long health and wellbeing.

Advocacy: In addition to providing clinics and treatment for affected performers, BAPAM is committed to supporting health promotion initiatives in order to reduce the number of performers who are affected by performance-related problems in the future. Therefore BAPAM Student Advocates are advocates of health promotion and should promote all health education and support whether it is offered by BAPAM and their associates or not. This could include distributing materials, resources and information by way of the internet, social media, hard copies or face-to-face conversation.

The SAS will work differently at every establishment that participates. Each advocate will have a different role to play that may involve more or less of each element from the scheme’s framework. If education projects are already in place then it may be the advocate’s job to promote them and improve support for students. Alternatively an establishment may already boast a supportive atmosphere, but provide little practical health education for students. Even in establishments where there is already a healthy culture that provides education, advocacy and support there will still be a role for a Student Advocate as someone from within the student body who can facilitate communication and offer suggestions for improvement.

The SAS at Leeds University

Student Advocate Scheme Research

In September 2011 I undertook a research project that investigated the musical environment at the University of Leeds, explored the prevalence of performance-related problems amongst university musicians and pinpointed where and how student musicians currently receive health education and support. The secondary aim of this research project was to provide results that would inform the effective and appropriate development and introduction of a health promotion scheme aimed at improving health education and support for tertiary level musicians studying at a university. The research involved distributing a survey to members of the Leeds University Union Music Society (LUUMS). 282 members participated and the sample included representatives from all major instrument families including voice, all 8 LUUMS ensembles (4 auditioned), all university year groups and 91 different university courses (categorised into music and non-music students for analysis). Participants completed the survey during ensemble rehearsals in September 2011. Following completion of the survey they were provided with the researcher’s contact details and contact information for BAPAM.
Results indicated that nearly 60% of participants had a history of performance-related problems (PRPs), 22% were currently experiencing physical pain and 14% had been experiencing physical pain for at least 3 months. In addition, 134 participants had experienced Music Performance Anxiety (MPA) and the average intensity of symptoms was 3.29 (SD = 1.22) when rated from 1 (less intense) to 5 (more intense). There were significant instrument differences relating to the location of physical pain with string players mainly experiencing back, shoulder, arm and neck pain; woodwind, piano and percussion players mainly experiencing hand or wrist pain and brass players and vocalists experiencing pain in the ears, nose and/or throat. The majority of participants reported that they would seek advice if they experienced a PRP, usually from an instrumental/vocal teacher or friend/family member. Participants would be most comfortable discussing a PRP with a friend, instrumental/vocal teacher or injured musician. Less than a quarter of participants had received health education prior to the study and few participants had heard of BAPAM. However, nearly 45% were interested in taking part in health education in the future.

From this research I concluded that introducing a health promotion scheme within a university setting was justified. This research highlighted the importance of involving a student musician from within the environment (in particular one who has personal experience of a PRP) as a co-ordinator as participants were most willing to talk to friends and/or injured musicians regarding their performance difficulties and how to gain access to appropriate advice and support. In addition to the student co-ordinator, it was suggested that a health promotion scheme should involve and be supported by a multi-disciplinary team involving faculty staff, peripatetic instrumental/vocal teachers and a range of medical specialists who are trained to deal with the range of problems that participants reported. Through these research conclusions and personal experience within the research environment the Student Advocate Scheme was developed and introduced in collaboration with BAPAM, LUUMS and the University of Leeds Music Department.

It is my intention to expand this research and embed a survey element within the SAS in order to assess the impact of the SAS in various participating establishments and also chart the health of student performing artists across the UK. Despite methodological limitations and the difficulties associated with generalising from one environment to another, the results of this research provide clear support for the SAS at Leeds and it is expected that future research will support its expansion to other establishments. An updated survey was carried out at Leeds in September 2012 and preliminary analysis of the results suggests that the SAS has raised awareness of health education and improved access to health support; this is supported by informal feedback from staff and students and the School of Music’s continued support of the scheme.

The information contained in this section was first presented as a poster at the British Psychological Society’s Annual Conference in Harrogate (9th – 11th April 2013) and I am currently drafting an article for publication based on the survey study and introduction of the Student Advocate Scheme. For more information regarding this work please contact me at naomi.norton@bapam.org.uk.
Katherine Lambeth, Leeds Student Advocate 2012/13

Kat is the current Student Advocate at the University of Leeds. Below, she briefly describes what is involved in the role, her experience of being a BAPAM Student Advocate and some of the projects that she has organised this year.

My Experience as a BAPAM Student Advocate

My name is Katherine Lambeth and I am the BAPAM Student Advocate at Leeds University this academic year (2012-13). This experience has been thoroughly rewarding, both for my own personal development and in seeing the positive effects of the scheme on other students. Naomi writes above that the framework for the scheme is education, support and advocacy. Enabling the education element to thrive has demanded good organisational skills and taught me some lessons about time management and prioritising. The advocacy part is simply being aware of other health-related events and promoting them amongst the students in as many ways as possible. Where the advocate really makes a difference, in my opinion, is through the support of other students: whilst I am not able to offer health advice, students have found it useful to have an approachable person to come to where they need reassurance or want pointing in the right direction.

Many people still consider admitting instrument-related health problems to be embarrassing, or a sign of weakness. Since the introduction of the SAS at Leeds University this is not the case: students are mostly very open about their experiences with such problems, and this enables them to confront those problems and seek advice for rehabilitation. The SAS has definitely encouraged the concept of Musicians’ Health to be taken seriously within the Leeds University School of Music. Feedback from all events proves that its aims and objectives are being met, as it is providing students with knowledge that will train them to become both healthier and better-informed musicians.

Student Advocate Scheme Events at Leeds University: 2012/13

This year the SAS ran four Health Clinics with Professor Howard Bird, in addition to five lectures/workshops and the ‘Enhancing Performance Workshop’. All sessions were successful in terms of student attendance, and feedback afterwards was always positive. Details of each event are as follows:

The first event of the BAPAM Lecture Series at Leeds University this year was on ‘First Aid for Musicians’ and presented by Professor Howard Bird. As the opening lecture of the year, this talk comprised a general introduction to musicians’ health problems and ways in which students can obtain help with such issues, including a brief introduction to BAPAM.

Following this, a new initiative was introduced to the Scheme through the organisation of the ‘Enhancing Performance Workshop’. This workshop comprised four different sections. The first was an introduction to soft tissue massage, run by Virginia Whitely, which involved students being taught about pressure points and what to feel for in order to identify and relieve pain in problem zones. Virginia then gave an
introductory workshop in Pilates, talking the attendees through basic standing positions and exercises, providing equipment with which students could try the exercises out. Dr Alison Loram then presented a lecture on the Alexander Technique, explaining the origins of and theory behind the discipline. The final part of the Workshop was presented by Professor Howard Bird, discussing Repetitive Strain Injury and how to avoid developing it.

In semester two Dr Alison Loram visited the university a second time to hold an interactive session on the Alexander Technique. This session was very well attended and introduced the basic principles of the technique, giving the students an opportunity to try it out in simple sitting and standing positions. There were also demonstrations of the application of the Technique to different instruments, for example the violin, oboe and flute.

This year introduced the first session specifically for one group of instrumentalists, which involved in this case a workshop for singers led by Ian MacDonald. This session involved an in-depth discussion about various health problems facing singers, with plenty of opportunity for the students to ask questions and raise their own points. The session ended with three singers performing, and Ian making suggestions as to how they could improve their performance from a health viewpoint.

Another first for this year was the incorporation of Performance Anxiety into the programme. Dr Carol Chapman presented a lecture on this topic to the largest number of students to ever attend an SAS event at the University. The students were able to explore the reasons behind Performance Anxiety and some key methods used in dealing with and overcoming it, as well as having opportunity for questions.

The final lecture of this successful year was presented by Dr Jonathan White, who gave an overview of the most common health problems and considerations for musicians to make in their everyday lives. In the light of upcoming performances and exams for many of the students, this lecture encouraged healthy practice and suggested ways in which not to overwork oneself in the run-up to exams.

Feedback on all events has been collected and analysed by myself in order to ascertain how the SAS can best cater for the students’ needs. Responses on feedback forms show that all students who attended SAS events would attend a similar talk again, and that they had learned from the event, knowing how to apply the topics covered to their own music-making. All feedback forms asked students to identify topics they would like covered in future BAPAM events, and the majority of students suggested that interactive sessions were more appealing, although there was an acknowledgement that background knowledge of certain topic areas is necessary to have before trying it hands-on.

**Concluding Remarks**

The year has been very successful, with invaluable sessions presented by all guest speakers and over fifty students attending SAS events over the course of the year. Every advocate who becomes involved with the scheme will have a different approach to the role, and bring their own ideas to it, all of which complement the building blocks put in place by previous advocates. Whilst this year the sessions I have organised have generally been more practical, the fantastic work that Naomi Norton put in during the Pilot year came...
from a more academic viewpoint, and the two approaches to raising awareness of musicians’ health problems are equally vital. Each year the new advocates will be able to build upon what has already been established, and in this way the scheme will continue to move forward each year and enjoy the success that it has done thus far.

Clive McClelland, Academic Supervisor at Leeds University

In the last two years at Leeds University, the impact of the BAPAM Student Advocate Scheme has been enormous. Attendance at a variety of talks and workshops has been strong, and has included some who are not music students. There is now an acceptance among most of our performers that it is both professional and healthy to address the medical issues that arise in a musician’s life. The opportunity to discuss difficulties and learn practical approaches is recognised as valuable, and worth the small investment in time. Several participants go on to attend clinics individually in order to tackle specific physical problems. Of course the energy and organisational skills brought by the student advocates is vital to this. The fact that the scheme is seen as student-led helps to engage people’s interest, and events are better supported as a result.

My experience as an academic supervisor has not been an onerous one. Meeting the advocate from time to time to discuss plans is useful to both parties, and provides confidence-building support. I have learnt a lot from the talks and workshops that I have attended, and these have helped me to improve my own health and give better advice to others. I look forward to working with a new advocate next year.

The SAS Conference and Training Day

The inaugural BAPAM SAS Conference and Training Day took place on Wednesday 19th June 2013 at the BAPAM offices in London. Representatives from the Birmingham Conservatoire, Royal Welsh College of Music and Drama, Trinity Laban, Royal Conservatoire of Scotland, Institute of Contemporary Music Performance, London Studio Centre, Dance UK and Leeds University attended to discuss the development and expansion of the scheme into new areas. Potential advocates, faculty members and medical supervisors were enthusiastic to learn more about the SAS and discuss how it could be introduced within their learning and working environment. At least one representative from each establishment planning to introduce the SAS in future will need to attend next year’s conference.

The programme for the day follows:

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<tr>
<th>Time</th>
<th>Session</th>
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<tbody>
<tr>
<td>10.00</td>
<td>Welcome</td>
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<tr>
<td>10.20</td>
<td>The Student Advocate Scheme so far</td>
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</tbody>
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If you are interested in learning more or receiving a report of the day please contact Naomi Norton (SAS Manager) at naomi.norton@bapam.org.uk.

**The Future of the Student Advocate Scheme**

Following the SAS Conference and Training Day outlined above it is hoped that several new establishments will introduce the SAS at their establishment starting in September 2013. Representatives from establishments across the UK have already shown strong support and interest in the scheme including Birmingham Conservatoire, The Institute of Contemporary Music Performance (London), the Royal Welsh College of Music and Drama, Trinity Laban, Royal Conservatoire of Scotland, Coventry University and the London Studio Centre (acting college). The Conference and Training Day will be a fantastic opportunity for representatives from these varied establishments to network and develop ideas regarding how the scheme will work in different environments. BAPAM and the SAS Manager aim to extend the scheme over the next few years to include more establishments in order to develop a network of advocates and services. This network will provide insight into the difficulties that tertiary level performing artists face and contribute to improved health education and support across the country. If you would like to learn more about the scheme or get involved please get in touch with Naomi Norton (naomi.norton@bapam.org.uk) or BAPAM (enquiries@bapam.org.uk). A devoted SAS section on the BAPAM website is currently in development.